

May 11, 2004

Gentlemen:

BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1 - RESPONSE TO NRC
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

On July 14, 1998, NRC issued GL 98-04 to alert licensees to problems associated with the material condition of Service Level 1 protective coatings inside the containment. GL 98-04 requested that licensees describe their programs for ensuring that Service Level 1 protective coatings inside containment do not detach from their substrate and adversely affect the ability of the Emergency Core Cooling Systems (ECCS) and the safety-related Containment Spray System from performing their function following a Design Basis Loss of Coolant Accident (LOCA).

TVA responded to this Generic Letter for BFN Units 2 and 3 in Reference 1. NRC closure of the Generic Letter for Units 2 and 3 is documented in Reference 2. TVA's response

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to GL 98-04 for BFN Unit 1 is provided in the enclosure to this letter.

The BFN Unit 1 program described in the enclosed response is consistent with that described in Reference 1 for BFN Units 2 and 3. Accordingly, NRC review and closure of this issue for BFN Unit 1 should be limited to NRC inspection of TVA's implementation of the program for BFN Unit 1.

There are no new regulatory commitments associated with this submittal. If you have any questions about this submittal, please contact me at (256) 729-2636.

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 11, 2004.

Sincerely,

Original signed by:

T. E. Abney
Manager of Licensing
and Industry Affairs

References:

1. TVA letter, M.J. Burzynski to NRC, "Browns Ferry Nuclear Plant (BFN), Sequoyah Nuclear Plant (SQN), and Watts Bar Nuclear Plant (WBN), 120-Day Response Generic Letter (GL) 98-04, 'Potential for Degradation of the Emergency Core Cooling System (ECCS) and the Containment Spray System (CSS) after a Loss-Of-Coolant Accident (LOCA) Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment,' dated July 14, 1998," dated November 10, 1998.
2. NRC letter, W.O. Long to J.A. Scalice, "Completion of Licensing Actions for 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' - Sequoyah Nuclear Plant, Browns Ferry Nuclear Plant and Watts Bar Nuclear Plant (TAC Nos. MA4021, MA4022, MA4023, MA4099, MA4100, MA4101)," dated November 24, 1999.

cc: See Page 3

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Enclosure

cc (Enclosure):

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ENCLOSURE

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1

RESPONSE TO NRC GENERIC LETTER (GL) 98-04,
POTENTIAL FOR DEGRADATION OF THE EMERGENCY CORE
COOLING SYSTEM (ECCS) AND THE CONTAINMENT SPRAY SYSTEM
AFTER A LOSS-OF-COOLANT ACCIDENT (LOCA) BECAUSE OF
CONSTRUCTION AND PROTECTIVE COATING DEFICIENCIES
AND FOREIGN MATERIAL IN CONTAINMENT

This enclosure provides TVA's response to the requested information in NRC Generic Letter 98-04 for BFN Unit 1.

NRC Required Information:

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 10 CFR Part 50, Appendix B, as well as information regarding any applicable standards, plant-specific procedures, or other guidance used for:

- (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.*

TVA Response:

TVA has implemented controls for the procurement, application, and maintenance of Service Level 1 protective coatings used inside the primary containment in a manner that is consistent with the licensing basis and regulatory requirements applicable to BFN. The requirements of 10 CFR Part 50, Appendix B, are implemented through specification of appropriate technical and quality requirements for the Service Level 1 coatings program which includes ongoing maintenance activities.

For BFN, Service Level 1 coatings are subject to the requirements of Regulatory Guide (RG) 1.54 - 1973, American National Standard Institute (ANSI) N101.2 - 1972, and ANSI N101.4 - 1972. Adequate assurance that the applicable requirements for the procurement, application, inspection, and maintenance are implemented is provided by procedures and programmatic controls approved under the TVA Nuclear Quality Assurance (QA) Program.

The following information addresses NRC's request for information "regarding any applicable standards, plant-specific procedures, or other guidance used for: (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."

- (a) Service Level 1 coatings used for new applications or repair/replacement activities are procured from vendors with QA programs meeting the applicable requirements of 10 CFR Part 50, Appendix B. The applicable technical and quality requirements the vendor is required to meet are specified by TVA's procurement program. Acceptance activities (e.g., receipt inspection, materials identification and control, vendor audits, etc.) are conducted in accordance with procedures consistent with ANSI N45.2 requirements. This specification of required technical and quality requirements imposed on vendors, combined with TVA's QA Program acceptance activities, provides adequate assurance the coatings received meet the requirements of the procurement documents.

- (b) The qualification testing for Service Level 1 coatings used for new applications or repair/replacement activities inside containment meets the applicable requirements contained in the standards and regulatory commitments referenced above, e.g., Regulatory Guides and ANSI standards. Any deviations in qualification testing, e.g., exceeding the acceptance criteria for blister size as defined in ANSI N101.2, are evaluated for impact on ECCS strainer blockage.
- (c) The surface preparation, application, and inspection during installation of Service Level 1 coatings used for new applications or repair/replacement activities inside containment meets the applicable portions of the standards and regulatory commitments referenced above. Where the requirements of the standards and regulatory commitments did not address the repair/replacement activities, the repair activities are performed in a manner consistent with the general industry-accepted practices for coatings repair/replacement and in accordance with TVA procedures. These practices are described in various American Society for Testing Materials standards and in coating practice guidelines by industry organizations issued subsequent to those to which TVA has a regulatory commitment.

TVA periodically conducts condition assessments of Service Level 1 coatings inside containment. These assessments are conducted as part of TVA General Engineering Specification G-55, "Technical and Programmatic Requirements for the Protective Coating Program for TVA Nuclear Plants," and in conjunction with BFN's site specific procedures. TVA's Service Level 1 protective coating program requires the performance of visual inspections every refueling outage. These inspections include the inside surface of the containment shell and the exposed coated components and surfaces inside the primary containment.

As localized areas of degraded coatings are identified, they are evaluated and dispositioned. These areas are subsequently scheduled for repair or replacement as necessary. The periodic condition assessments, and the resulting repair/replacement activities, ensure that the amount of Service Level 1 coatings which may be susceptible to detachment from the substrate during a LOCA event is minimized.

Actions to be taken prior to restart are described in item (2) below.

NRC Required Information:

- (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 SSCs during a postulated design basis LOCA, 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.*

TVA Response:

As discussed in the Browns Ferry Nuclear Performance Plan (Reference 1), TVA's Containment Coatings Program includes an inspection to determine the areas and amount of unqualified coating. As documented in TVA's letter to the NRC dated December 13, 2002 regarding the regulatory framework for the restart of BFN Unit 1 (Reference 2), TVA is implementing the Unit 1 Containment Coatings Program in accordance with the Units 2 and 3 precedents.

As part of that program, TVA has established a limit on the total quantity of unqualified coatings allowed within the BFN Unit 1 containment. That limit was used as input to the design and evaluation of the new, larger capacity Emergency Core Cooling System suction strainers being installed as committed in TVA's response to NRC Bulletin 96-03 for BFN (Reference 3).

Under its Containment Coatings Program, unqualified coatings are identified and tracked in an "uncontrolled coatings log." The total quantity of unqualified coatings are evaluated to ensure that the amount remains bounded by the allowable fraction of unqualified coating established as part of design and evaluation of suction strainer debris loading analysis.

TVA is currently conducting its coating inspections of BFN Unit 1 containment. Should the results of those inspections require it, TVA will reduce the quantity of unqualified coatings to within

the allowable fraction prior to Unit 1 Restart in accordance with References 1 and 2.

NRC Required Information:

- (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.*

TVA Response:

As part of evaluation of the new design for the larger capacity Emergency Core Cooling System (ECCS) suction strainers being installed as committed in TVA's response to NRC Bulletin 96-03 (Reference 3), TVA has established a limit for unqualified coatings of 157 ft² for BFN Unit 1. This limit is consistent with that established for BFN Units 2 and 3, and is the amount included in the ECCS suction strainer debris loading evaluation assumed available for transport to the ECCS suction strainers. Conservatisms have been applied in the overall design and analysis of the new suction strainers, including development of the debris loadings. These conservatisms are discussed in reference 3.

As stated above, TVA is performing containment inspections to ensure that the 157 ft² of unqualified coatings assumed in the ECCS suction strainer sizing calculations are valid. In accordance with References 1 and 2, TVA will, if necessary, reduce the quantity of unqualified coatings to within the allowable fraction prior to Unit 1 Restart.

NRC Required Information:

- (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,*

TVA Response:

TVA has not employed commercial-grade dedication for Service Level 1 coatings used inside primary containment at BFN Unit 1.

NRC Required Information:

- (ii) *For plants without the above licensing-basis requirements, information shall be provided to demonstrate compliance with the requirements of 10CFR50.46b(5), "Long-term Cooling" and the functional capability of the safety-related CSS as set forth in your licensing basis. If a licensee can demonstrate this compliance without quantifying the amount of unqualified coatings, this is acceptable.*

TVA Response:

Not applicable.

REFERENCES:

1. TVA letter, S.A. White to NRC, "Browns Ferry Nuclear Plant (BFN) - Nuclear Performance Plan, Revision 2," dated October 24, 1988.
2. TVA letter, T.E. Abney to NRC, "Browns Ferry Nuclear Plant (BFN) - Unit 1 - Regulatory Framework for the Restart of Unit 1," dated December 13, 2002.
3. TVA letter, T. E. Abney to NRC, "Browns Ferry Nuclear Plant (BFN) - NRC Bulletin 96-03, Potential Plugging of Emergency Core Cooling Suction (ECCS) Strainers by Debris in Boiling-Water Reactors (TAC NOS. M96135, M96136, M96137)," dated July 25, 1997.