

July 26, 2006

Mr. Karl E. Singer  
Chief Nuclear Officer and  
Executive Vice President  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
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SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNIT 1 - REVIEW OF LICENSEE  
RESPONSE TO NRC BULLETIN 93-02, "DEBRIS PLUGGING OF  
EMERGENCY CORE COOLING SUCTION STRAINERS" (TAC NO. MC3393)

Dear Mr. Singer:

By letter dated May 6, 2004 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML041280583), Tennessee Valley Authority (TVA) provided an updated response to Nuclear Regulatory Commission (NRC) Bulletin 93-02, "Debris Plugging of Emergency Core Cooling Suction Strainers" for Browns Ferry Nuclear Plant (BFN), Unit 1.

BFN Unit 1 has been in an extended outage since 1985. By letter dated May 23, 1993, TVA committed to perform the requested actions of Bulletin 93-02 prior to restarting BFN Unit 1. 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 Bulletin 93-02 for BFN Unit 1. Our evaluation is attached.

We conclude that TVA has satisfied the recommendations of Bulletin 93-02 to inspect the Browns Ferry Unit 1 primary containment and remove temporary fibrous material, and has also accounted for permanent fibrous material in the design of the upgraded Emergency Core Cooling System suction strainers installed in response to NRC Bulletin 96-03.

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 BY THE OFFICE OF NUCLEAR REACTOR REGULATION

UPDATED BULLETIN 93-02 RESPONSE

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-259

1.0 INTRODUCTION

By letter dated February 21, 2006 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML0605206520), the Tennessee Valley Authority (TVA, the licensee) provided an updated response to U.S. Nuclear Regulatory Commission (NRC) Bulletin 93-02, "Debris Plugging of Emergency Core Cooling Suction Strainers," for Browns Ferry Nuclear Plant (BFN), Unit 1.

On May 11, 1993, the NRC issued NRC Bulletin 93-02. This bulletin requested that licensees, immediately upon receiving this bulletin, take the following actions:

Identify fibrous air filters or other temporary sources of fibrous material, not designed to withstand a loss-of-coolant accident (LOCA), which are installed or stored in your primary containment. Take any immediate compensatory measures which may be required to assure the functional capability of the emergency core cooling system (ECCS). Take prompt action to remove any such material. Because of the low probability of a LOCA event, the staff considers removal of this material at the next shutdown, or within 120 days, whichever comes first, to be sufficiently prompt. If the facility is currently in a shutdown, you are requested to remove such material prior to restart.

The requested actions were prompted by the clogging of ECCS suction strainers at the Perry Nuclear Plant, a BWR/6 nuclear steam supply system with a Mark III containment. The material that clogged the ECCS suction strainers consisted of glass fibers from temporary drywell cooling filters that had been inadvertently dropped into the suppression pool.

By letter dated May 23, 1993 (Nuclear Documents System [NUDOCS] Accession Number 9305110015), the licensee stated that Browns Ferry Unit 1 was in an extended outage. The licensee committed to the following prior to Unit 1 restart:

1. Unit 1 will be evaluated for permanent fibrous material (note that Bulletin 93-02 did not specifically address permanent fibrous material).
2. Unit 1 will be inspected and temporary fibrous material will be removed prior to startup.
3. A report confirming completion of the above listed activities (commitments 1 and 2) will be provided (to the NRC) prior to restart.

Enclosure

The NRC issued NRC Bulletin 93-02 Supplement 1 on February 18, 1994. This bulletin requested all holders of operating licenses or construction permits for boiling-water reactors to take appropriate actions to ensure the reliability of the ECCS in view of the information discussed in the bulletin regarding the vulnerability of the ECCS suction strainers to clogging.

## 2.0 REGULATORY EVALUATION

Title 10 of the Federal Code of Regulations (CFR) Section 50.46(b)(5) requires that adequate ECCS flow be provided to maintain the core temperature at an acceptably low value and to remove decay heat for the extended period of time required by the long-lived radioactivity remaining in the core following a design basis accident. In order to ensure that adequate flow is provided, the buildup of debris on the ECCS suction strainers must remain within the design basis of these strainers. NRC Bulletin 93-02 and NRC Bulletin 93-02 Supplement 1 were issued by the NRC to help ensure that this design basis is satisfied.

## 3.0 TECHNICAL EVALUATION

By letter dated February 21, 2006, TVA provided an updated response to NRC Bulletin 93-02. The letter stated that TVA has completed its evaluation of permanent fibrous material in the BFN Unit 1 containment and considers the commitment (item 1 above) closed.

The licensee stated that the only fibrous materials permanently installed in the drywell are insulation materials located in drywell penetrations. TVA determined that, at restart, twelve BFN Unit 1 containment penetrations will have permanently installed insulation consisting of asbestos, calcium silicate and fiberglass. This insulation will be located in the penetrations between the pipe and the penetration sleeve.

NRC Bulletin 96-03 (NUDOCS 9605020119) requested that licensees implement appropriate procedural measures and plant modifications to minimize the potential for clogging of ECCS suppression pool suction strainers. The licensee responded by letter dated July 25, 1997 (NUDOCS 9708050342), and committed to install large passive suction strainers in the suppression pools of all three BFN units. The licensee stated that fibrous debris, including the permanently installed insulation in the piping penetrations, had been accounted for in determining the debris loading on the BFN Unit 2 and Unit 3 ECCS suction strainers. The letter did not specifically state that Unit 1 strainers will be treated in the same way, only that "appropriate modifications will be implemented on Unit 1 prior to restart." In the licensee's February 21, 2006, letter, the licensee stated that TVA has installed new, high capacity passive strainers on Unit 1, which are of the same design as on Units 2 and 3. Therefore, the licensee has acceptably accounted for permanent fibrous material in Unit 1.

The licensee's February 21, 2006, letter also provided the status of compliance with the recommendations of NRC Bulletin 93-02. The licensee states that,

Also in accordance with the Units 2 and 3 precedent, TVA has revised its Unit 1 General Operating Instruction on Drywell Closeout to ensure temporary fibrous air filters or other temporary sources of fibrous material are removed.

The NRC staff considers this an acceptable resolution of the licensee's commitments to items (2) and (3) above to satisfy Bulletin 93-02.

The licensee previously responded to Bulletin 93-02 Supplement 1 for all three BFN units and notified the NRC of the completion of its commitments by letters dated April 18, 1994 (NUDOCS 9404260335), July 29, 1994 (NUDOCS 9408100119), and December 1, 1994 (NUDOCS 941208139) and the NRC found the licensee's resolution of the issues addressed in Bulletin 93-02 Supplement 1 to be acceptable, as stated in the NRC's letter to the licensee dated July 19, 1994 (NUDOCS 9407250211).

#### 4.0 CONCLUSION

The licensee has acceptably complied with the recommendations of NRC Bulletin 93-02. The NRC has previously concurred with the licensee's compliance with the recommendations of Supplement 1 to Bulletin 93-02.

Principal Contributor: Richard M. Lobel

Date: July 26, 2006