



Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609

NOVEMBER 15, 1995

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) - NRC BULLETIN NO. 95-02,  
UNEXPECTED CLOGGING OF A RESIDUAL HEAT REMOVAL (RHR) PUMP  
STRAINER WHILE OPERATING IN SUPPRESSION POOL COOLING MODE  
[TAC M93876, M93877, M93878]**

This letter provides TVA's response to the subject bulletin issued October 17, 1995. The bulletin requested that TVA take the actions necessary to ensure the operability of the Emergency Core Cooling System (ECCS) pumps that take normal and post accident suction from the suppression pool. Also, the bulletin requires TVA to review it's Foreign Material Exclusion Program and determine if present controls are adequate to prevent foreign materials from entering the suppression pool.

BFN Unit 1 is shutdown and in an extended outage. Appropriate actions, based upon the results of Units 2 and 3 testing and inspections, will be performed for Unit 1 prior to restart.

BFN Unit 2 is currently in cycle 8 operation and scheduled to enter a refueling outage on March 22, 1996. During the last refueling outage, the ECCS suction strainers and suppression pool were inspected and cleaned. Based upon the operability evaluation performed, additional strainer inspection will not be performed until the scheduled refueling outage.

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U.S. Nuclear Regulatory Commission

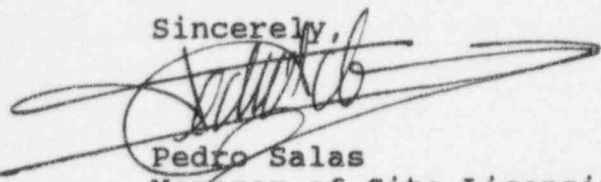
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BFN is in the final stages of the Unit 3 Cycle 6 outage in which TVA is recovering the unit after approximately 10 years of inactivity. In preparation for restart of Unit 3, TVA has performed a visual inspection of the Unit 3 ECCS pump strainers and suppression pool. Prior to restart, the ECCS suction strainers and suppression pool will be cleaned and ECCS pump operability tests will be performed.

Enclosure 1 provides the detailed replies to the requested actions in the bulletin. Enclosure 2 is a summary of the commitments contained in this letter. If you have any question please contact Pedro Salas at (205) 729-2636.

Sincerely,



Pedro Salas  
Manager of Site Licensing

Subscribed and sworn to before me  
on this 15th day of November 1995.

Barbara A. Blanton  
Notary Public

My Commission Expires                      My Commission Expires 10/06/98

Enclosures

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Enclosures

cc (Enclosures):

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## ENCLOSURE 1

### TENNESSEE VALLEY AUTHORITY BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3

#### NRC BULLETIN 95-02, UNEXPECTED CLOGGING OF A RESIDUAL HEAT REMOVAL (RHR) PUMP STRAINER WHILE OPERATING IN SUPPRESSION POOL COOLING MODE

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The purpose of this enclosure is to provide TVA's reply to the requested actions in NRC Bulletin 95-02. The bulletin requests that TVA ensure the operability of all pumps that take suction from the suppression pool when performing their safety function. Additionally, the bulletin requires that TVA establish a suppression pool cleaning program and review its Foreign Material Exclusion (FME) program to determine if adequate controls are present to prevent foreign materials from entering the suppression pool.

BFN Unit 1 is shutdown in an extended outage with no established restart date. Accordingly, the enclosure will focus on activities necessary to ensure the operability of Units 2 and 3 Emergency Core Cooling System (ECCS) pumps. As such, any programs established by TVA to ensure ECCS pump operability Units 2 and 3 will apply to Unit 1 when returned to service.

#### Specific Actions Requested and TVA's Response

To ensure that unacceptable buildup of debris that could clog strainers does not occur during normal operation, the following actions shall be taken:

#### NRC Request 1

Verify the operability of all pumps which draw suction from the suppression pool when performing their safety function (e.g., ECCS, containment spray, etc.), based on an evaluation of the suppression pool and suction strainer cleanliness conditions. This evaluation should be based on the pool and strainer conditions during the last inspection or cleaning and an assessment of the potential for the introduction of debris or other materials that could clog the strainers since the pool was last cleaned.

## TVA Reply

### Unit 2

The Unit 2 suppression pool and ECCS strainers were inspected and cleaned during Unit 2 Cycle 7 outage that occurred in October 1994. During this inspection, TVA identified debris consisting of fragments of paper towels and tape on the ECCS strainers. As a result of the inspection findings, TVA performed a complete cleaning of the suppression pool, removing any debris and build up of sludge that had accumulated from previous operating cycles.

The controls provided by the FME program prevent foreign material from entering ECCS piping and migrating into the suppression pool. Therefore, based on the condition of the suppression pool and the safeguards provided by the FME program, TVA concludes that the ECCS systems that take suction from the suppression pool can perform their safety function.

### Unit 3

For approximately ten years BFN Unit 3 has been shutdown and defueled. The Unit 3 ECCS systems have not been operated during that time. BFN is currently in the final stages of the recovery of Unit 3. As part of the recovery effort, TVA drained, cleaned and re-coated the suppression chamber surfaces. The suppression pool was refilled with water from the condensate storage tanks in April 1995.

After filling the suppression pool and operating the Core Spray (CS) system pumps, foreign material consisting mainly of parts of a filter bag was found in the suppression pool. After the material was recovered, TVA operated the CS and Residual Heat Removal (RHR) system pumps taking suction through the suppression pool strainers and discharging back to the suppression pool. Subsequent inspection identified more of the same debris on the ECCS strainers.

Based on the results of this inspection, TVA will clean the ECCS suction strainers and suppression pool and perform ECCS pump operability tests prior to restart.



## NRC Request 2

The Operability evaluation in requested action 1 above should be confirmed through appropriate test(s) and strainer inspection(s) within 120 days of this bulletin.

## TVA Reply

### Unit 2

During the ongoing operating cycle BFN has logged in excess of 178 hours of operation of the Residual Heat Removal (RHR) and CS pumps taking suction through the ECCS suction strainers. TVA has not experienced any strainer clogging problems during operation of these systems. At the end of the current operating cycle, TVA will use divers to visually inspect the suppression pool, including the ECCS ring header strainers, for fibrous material.

The above inspection and testing will insure that the ECCS strainers are free from foreign material and, therefore, the ECCS pumps taking suction through the strainers are capable of performing their safety function.

BFN Unit 2 is currently scheduled to enter cycle 8 refueling outage on March 22, 1996. This is 157 days from the date of the Bulletin. Based upon the operability evaluation, additional strainer inspections will not be performed until the scheduled refueling outage.

TVA believes that operation for 37 additional days is justified for the following reasons. The suppression pool was cleaned and inspected prior to entering cycle 8 operation. TVA performs operability testing of the ECCS systems through the technical specification surveillance program. Also, TVA's FME Program prevents foreign material from entering the suppression pool from the associated ECCS piping that interfaces with the suppression pool.

### Unit 3

Following cleaning of the ECCS suction strainers and suppression pool, the ECCS pumps will be operated taking suction through the strainers so as to collect any fibrous material if it is present. The strainers will then be visually inspected by divers for foreign materials. Using the results of the inspection, TVA will confirm the cleanliness of the suppression pool prior to restart.

### NRC Request 3

Schedule a suppression pool cleaning. The schedule for cleaning the pool should be consistent with the operability evaluation in requested action 1 above. In addition, a program for periodic cleaning of the suppression pool, criteria for determining the appropriate cleaning frequency, and criteria for evaluating the adequacy of the pool cleanliness.

### TVA Reply

TVA will develop a program for suppression pool cleaning. Plant specific and industry information will be used to develop the criteria needed to establish suppression pool cleaning frequency and generate procedures needed for pool cleaning. In addition to the program, TVA will visually inspect the ECCS pump suction strainers during each refueling outage.

### NRC Request 4

Review FME procedures and their implementation to determine whether adequate control of materials in the drywell, suppression pool, and systems that interface with the suppression pool exist. This review should determine if comprehensive FME controls have been established to prevent materials that could potentially impact ECCS operation from being introduced into the suppression pool, and whether workers are sufficiently aware of their responsibilities regarding FME. Any identified weaknesses should be corrected. In addition, the effectiveness of the FME controls since the last time the suppression pool was cleaned and the ECCS strainers inspected, and the impact that any weakness noted may have on the operability of ECCS should be assessed.

### TVA Reply

Because of recent NRC concerns surrounding BFN's FME Program, TVA is performing a comprehensive review of the program. TVA plans to revise Site Standard Practice (SSP) 12.8, Foreign Material Exclusion, to incorporate guidance provided by the recommendations of INPO Significant Operating Experience Report 95-1, Reducing Events Resulting From Foreign Material Intrusion. In addition, TVA plans to revise the portions of the General Employee Training Program that deal with FME<sup>1</sup>.

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<sup>1</sup>The revisions to SSP-12.8 and General Employee Training are not regulatory commitments.

The Unit 2 suppression pool was inspected and verified free from foreign material immediately prior to closure of containment for Unit 2 Cycle 8 operation.

**NRA Request 5**

Consider additional measures such as suppression pool water sampling and trending of pump suction pressure to detect clogging of Emergency Core Cooling System suction strainers.

**TVA Reply**

TVA will continue to participate in the General Electric Boiling Water Reactor Owners Group activities to identify measures that should be considered for implementation at BFN<sup>2</sup>.

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<sup>2</sup> This action is not a regulatory commitment.



ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3

NRC BULLETIN 95-02,  
UNEXPECTED CLOGGING OF A RESIDUAL HEAT REMOVAL (RHR)  
PUMP STRAINER WHILE OPERATING  
IN SUPPRESSION POOL COOLING MODE  
LIST OF COMMITMENTS

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1. TVA will clean the Unit 3 suppression pool and perform confirmatory inspection and test. TVA expects to complete this prior to the Unit 3 cycle 7 operation.
2. TVA will use divers to visually inspect the Unit 2 suppression pool including the ECCS ring header strainers for fibrous material. TVA expects to complete this prior to the restart from Unit 2 cycle 8 outage.
3. A program for suppression pool cleaning will be developed. TVA expects to complete this prior to the restart from Unit 2 cycle 9 refueling outage.
4. TVA will perform a visual inspection of the ECCS pump suction strainers during each refueling outage.
5. Programs established to ensure operability of Units 2 and 3 will be applied to Unit 1 when it is returned to service.
6. TVA will issue a letter detailing the results of requested action 3 for Unit 3, 10 days after the results are finalized.
7. TVA will issue a letter detailing the results of requested action 3 for Unit 2, 10 days after results are finalized.
8. TVA will issue a letter detailing the results of requested action 3 for Unit 1, 10 days after results are finalized.