



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

JUL 29 1994

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 93-02,
SUPPLEMENT 1 - DEBRIS PLUGGING OF EMERGENCY CORE COOLING
SYSTEM (ECCS) SUCTION STRAINERS - COMMITMENT COMPLETION
[TAC NOS. M89277, M89278, AND M89279]

This letter notifies NRC that the commitments contained in
TVA's April 18, 1994 response to the subject bulletin have
been completed. These commitments and the actions taken to
implement these commitments are detailed in the enclosure to
this letter. This letter also certifies that the information
contained in the April 18, 1994, letter was correct.

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There are no commitments contained in this letter. If you have any questions, please telephone me at (205) 729-2636.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Pedro Salas', with a large, sweeping flourish extending to the left.

Pedro Salas
Manager of Site Licensing

Subscribed and sworn to before me
on this 29th day of July 1994.

Barbara A. Blanton

Notary Public

My Commission Expires 10-30-94.

Enclosure

cc: see page 3

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cc (Enclosure):

Mr. Mark S. Lesser, Section Chief
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

NRC Resident Inspector
Browns Ferry Nuclear Plant
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Athens, Alabama 35611

Mr. J. F. Williams, Project Manager
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One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

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

COMPLETION OF TVA COMMITMENTS MADE IN RESPONSE TO
NRC BULLETIN 93-02, SUPPLEMENT 1
DEBRIS PLUGGING OF EMERGENCY CORE COOLING SUCTION STRAINERS

I. BACKGROUND

On May 11, 1993, NRC issued Bulletin 93-02 (Reference 1), which notified licensees of a previously unrecognized contributor to the potential loss of net positive suction head (NPSH) for the Emergency Core Cooling Systems (ECCS) during the recirculation phase of a loss of coolant accident (LOCA). The filtering of corrosion products, dust, fibrous thermal insulation, debris, and other temporary material may cause an unexpectedly rapid loss of net positive suction head for the ECCS pumps when they are needed to perform their intended function. Licensees were requested to identify fibrous air filters or other temporary sources of fibrous material, not designed to withstand a LOCA, which are installed or stored within the primary containment and take prompt action to remove any such material.

TVA responded to Bulletin 93-02 on May 23, 1993 (Reference 2). Each Browns Ferry unit is a Boiling Water Reactor (BWR) 4 with a Mark I containment. TVA performed a walkdown of the Unit 2 drywell (primary containment) and confirmed that there are no temporary or permanently installed fibrous air filters or other sources of fibrous material not designed to withstand a LOCA. BFN Units 1 and 3 are shutdown for extended outages. TVA previously committed to evaluate these units for permanent fibrous material. These units will be inspected and temporary fibrous material will be removed prior to their respective startup.

On February 18, 1994, NRC issued Supplement 1 to Bulletin 93-02 (Reference 3). The staff's ongoing review of this issue suggests that the previous method of estimating the fragmentation of insulation materials may not be representative of the large break LOCA scenario and that the extent of debris generation due to a jet from a

postulated pipe break may have been underestimated. In addition, small particles, in combination with debris fibers, have been found to significantly increase the pressure drop across strainers.

TVA responded to Supplement 1 to Bulletin 93-02 on April 18, 1994 (Reference 4). TVA concluded, based on the currently available information, that debris induced clogging of the BFN suppression pool strainers is less than the amount which would adversely affect ECCS pump performance in a post-LOCA condition. TVA's commitments to augment the operator's required reading program, conduct classroom and/or simulator training, revise appendices in the BFN Emergency Operating Instructions (EOIs), and change the applicable design control procedure were considered defense in depth against potential debris blockage of the ECCS strainers. TVA's commitments were to be completed prior to June 30, 1994. In addition, TVA committed to provide NRC with notification of completion of these commitments by August 1, 1994.

On May 20, 1994, TVA provided the background and evaluation of unqualified coating that was subsequently determined to be on the main steam relief valve T-quenchers, which are located inside the suppression chamber (Reference 5). Debris induced clogging of the BFN suppression chamber strainers was expected to be less than the amount which would adversely affect ECCS pump performance in a post-LOCA condition. However, TVA committed to remove the unqualified coating from the T-quenchers inside the Unit 2 suppression chamber prior to restart from the next refueling outage. TVA also committed to remove the unqualified coating from the T-quenchers inside the Units 1 and 3 suppression chamber prior to restart of these units. These commitments are being tracked separately from the Bulletin 93-02, Supplement 1 commitments.

On July 19, 1994, (Reference 6), NRC informed TVA that its response to the Bulletin was adequate to assure continued ECCS suction capability.

II. BULLETIN 93-02, SUPPLEMENT 1 COMMITMENTS AND IMPLEMENTATION

Commitment 1 -

Information Notices 88-28, 90-07, 92-71, 93-34, Supplement 1 to 93-34, Bulletin 93-02, and Supplement 1 to Bulletin 93-02 will be reviewed and the information

relevant to the potential for suppression pool strainer clogging at BFN will be included in the operator's required reading program.

Implementation -

Information Notices 88-28, 90-07, 92-71, 93-34, Supplement 1 to 93-34, Bulletin 93-02 and TVA's response, and Supplement 1 to Bulletin 93-02 and TVA's response were included in the operator's required reading program.

Commitment 2 -

Classroom and/or simulator training will be conducted to familiarize the operators with the recognition of ECCS strainer blockage and the mitigating actions allowed by the BFN EOIs.

Implementation -

Classroom training was conducted to familiarize the operators with the symptoms of ECCS strainer blockage and the mitigating actions allowed by the revised BFN EOIs. In addition, simulator demonstration training was observed by the operators in order to demonstrate control room indication of ECCS strainer debris plugging.

Commitment 3 -

TVA will revise the applicable appendices of the BFN EOIs to include caution statements and actions for monitoring net positive suction head (NPSH). The operators will be trained on these procedure changes prior to the revised procedures becoming effective.

Implementation -

The following EOI appendices were revised to include a caution statement:

Appendix 6B, Injection Subsystems Lineup RHR System I
LPCI Mode,

Appendix 6C, Injection Subsystems Lineup RHR System II
LPCI Mode,

Appendix 6D, Injection Subsystems Lineup Core Spray
System I, and

Appendix 6E, Injection Subsystems Lineup Core Spray System II.

The caution statement warns the operators that: "Continuous operation with inadequate NPSH may result in pump damage or pump inoperability." The Operators are then instructed to monitor NPSH using an attachment to that appendix. The attachment for each appendix contains a NPSH limit curve, showing pump flow versus suppression pool temperature for various suppression pool pressures. In addition, the attachment also lists additional indications of inadequate NPSH.

The operators were trained on these procedure changes as part of their periodic requalification training. The revised procedures were then issued.

Commitment 4 -

TVA will change the design control procedure to require the evaluation of fibrous material being introduced into the drywell.

Implementation -

Site Standard Practice (SSP)-9.3, Plant Modifications and Design Change Control, was revised to require the proposed addition of fibrous material in a drywell be coordinated with the Lead Mechanical Engineer in accordance with Browns Ferry Engineering Procedure (BFEP) Project Instruction (PI) 89-06. BFEP PI 89-06, Design Change Control, was revised to require the technical evaluation of fibrous material being introduced into the drywell that could become dislodged during a LOCA or other events and contribute to ECCS strainer blockage.

TVA committed to complete the above commitments prior to June 30, 1994. The implementation of these commitments was completed prior to June 30, 1994.

Commitment 5 -

TVA will submit a report confirming the completion of these actions within 30 days of their completion.

Implementation -

This submittal fulfills the commitment.

III. REFERENCES

1. NRC letter to All Holders of Operating Licenses or Construction Permits for Nuclear Power Reactors, dated May 11, 1993, NRC Bulletin No. 93-02: Debris Plugging of Emergency Core Cooling Suction Strainers
2. TVA letter to NRC, dated May 23, 1993, NRC Bulletin No. 93-02, "Debris Plugging of Emergency Core Cooling Suction Strainers"
3. NRC letter to All Holders of Operating Licenses or Construction Permits for Boiling-Water and Pressurized-Water Reactors, dated February 18, 1994, NRC Bulletin No. 93-02 Supplement 1: Debris Plugging of Emergency Core Cooling Suction Strainers
4. TVA letter to NRC, dated April 18, 1994, NRC Bulletin 93-02, Supplement 1 - Debris Plugging of Emergency Core Cooling System (ECCS) Suction Strainers
5. TVA letter to NRC, dated May 20, 1994, Evaluation of T-Quencher Coating Inside the Suppression Chamber
6. NRC letter to TVA, dated July 19, 1994, Response to NRC Bulletin 93-02, Supplement 1, "Debris Plugging of Emergency Core Cooling Suction Strainers"

LICENSING TRANSMITTAL TO NRC SUMMARY AND CONCURRENCE SHEET

A concurrence signature reflects that the signatory has assured that the submittal is appropriate and consistent with TVA Policy, applicable commitments are approved for implementation, and supporting documentation for submittal completeness and accuracy has been prepared.

DATE _____

DATE DUE NRC 8/01/94 "C"SUBMITTAL PREPARED BY (1) S. M. Kane

Name

Signature

SUBJECT: NRC Bulletin 93-02, Supplement 1 - Debris Plugging of
Emergency Core Cooling System (ECCS) Suction Strainers -
Commitment Completion

INDEPENDENT REVIEW (2)

DATE _____

Does this submittal contain Corrective Action/Commitment? Yes X No

CONCURRENCE (3)

NAME	ORGANIZATION	SIGNATURE	DATE
H. E. Crisler	Mech./Nuc. Eng		
C. T. Dexter	Training		
R. W. Huston	NLRA Manager		
J. E. McCarthy	Reg. Licensing Mgr.		
R. J. Moll	Ops. Manager		
E. Preston	Plant Manager		
J. R. Rupert	Engineering Mgr.		
Pedro Salas	Mgr. of Site Licensing		
T. D. Shriver	NA & L Mgr.		