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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

January 29, 1997

Mr. Oliver D. Kingsley, Jr.  
President, TVA Nuclear and  
Chief Nuclear Officer  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT UNITS 1, 2, AND 3 - RESPONSE TO  
BULLETIN 96-03 (TAC NOS. M96135, M96136, AND M96137)

Dear Mr. Kingsley:

By letter dated November 4, 1996, Tennessee Valley Authority (TVA), licensee for the Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3, submitted its response to NRC Bulletin (B) 96-03 "Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling-Water Reactors," dated May 6, 1996. In its response, TVA notified the NRC that implementation of the final resolution of B 96-03 for BFN Unit 3 is not achievable on the schedule called for in that bulletin. The staff has reviewed this letter, and has concluded that a deferral of the bulletin's requested actions is acceptable for BFN Unit 3 if the compensatory actions described below are implemented. The staff expects that the B 96-03 requested actions will be completed for BFN Unit 2 during its refueling outage scheduled for the fall of 1997, and for BFN Unit 1 prior to restart.

BACKGROUND

The NRC staff has issued several other generic communications related to boiling water reactor (BWR) emergency core cooling system (ECCS) strainer blockage. Bulletin 93-02 "Debris Plugging of Emergency Core Cooling Suction Strainers," dated May 11, 1993, requested licensees to ensure that there were no sources of fibrous material in containment not capable of withstanding a loss of coolant accident. TVA responded to B 93-02 on May 23, 1993, stating that there were no such sources of fibrous material in containment for BFN Unit 2 and that BFN Units 1 and 3 would be inspected prior to startup. A February 8, 1996 licensee letter to the NRC documented the results of an inspection of BFN Unit 3, stating that "Unit 3 had been inspected and temporary fibrous air filters or other sources of fibrous material have been removed from the drywell." BFN Unit 1 remains shutdown, with no restart schedule established.

B 93-02, Supplement 1 "Debris Plugging of Emergency Core Cooling Suction Strainers," dated February 18, 1994, requested licensees provide training and emergency operating procedures for plant operators and to specify alternative water sources which may be used to mitigate a strainer blockage event. TVA responded to this bulletin on April 18, 1994, describing the planned resolution of the B 93-02, Supplement 1 issues, stating that implementation

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would be completed by June 30, 1994. The staff concluded on July 19, 1994 that TVA's response adequately addressed the requested actions of B 93-02. On July 29, 1994, TVA notified NRC that all commitments related to B 93-02, Supplement 1 had been completed.

B 95-02, "Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode," dated October 17, 1995, requested licensees to take actions necessary to assure operability of the ECCS with respect to suppression pool cleanliness and foreign material exclusion programs. TVA responded to this bulletin by letters dated November 15, 1995 and March 5, 1996. The staff found TVA's response to be acceptable in safety evaluation issued on March 14, 1996.

#### RESPONSE TO BULLETIN 96-03

TVA's November 4, 1996 response to B 96-03 stated that TVA currently performs a visual inspection of the ECCS strainers during refueling outages, including an examination of the suppression pool for sludge and debris that could potentially lead to ECCS strainer clogging. The suppression pool is desludged if the inspection results indicate it is necessary. Prior to restart of BFN Unit 3 from its extended recovery outage in 1995, TVA drained, cleaned and recoated the suppression chamber surfaces. The suppression pool was refilled with condensate water in April 1995.

TVA also stated that it was participating in the BWR Owners Group Suction Strainer Committee, supporting formulation of Utility Resolution Guidelines (URG) which are intended to be used for resolution of strainer issues. TVA requested that the staff accept a delay of implementation of the B 96-03 requested actions to install an improved ECCS strainer for BFN Unit 3. Based on the schedule for URG development and approval at the time of its B 96-03 response, TVA stated the earliest opportunity to evaluate plant-specific conditions and implement any modifications would be the BFN Unit 2 outage in the fall of 1997. TVA committed to submit its planned actions and schedule within 90 days of NRC staff approval of the URG.

For BFN Unit 3, the staff requests that TVA, as a condition for granting the deferral of the actions of B 96-03, to desludge the suppression pool regardless of inspection results to minimize any accumulation of sludge in the pool prior to startup from refueling outages, in order to minimize the potential burden on the existing strainers. Staff calculations show that the speed and severity of strainer blockage is sensitive to the amount of sludge or rust particles in the suppression pool at the initiation of a loss of coolant accident. Therefore, it is prudent, until the licensee installs the larger strainers, to minimize sludge in the suppression pool.

In addition to desludging the suppression pool, the staff requests that TVA, as a condition of the BFN Unit 3 deferral, to take the following additional actions during the upcoming refueling outage:

1. Perform an inspection in the drywell to verify that the insulation is not damaged and is properly installed. Repair or replace any insulation that is damaged or not properly installed.

Mr. Oliver D. Kingsley, Jr.  
Tennessee Valley Authority

**BROWNS FERRY NUCLEAR PLANT**

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Mr. O. D. Kingsley

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2. Perform a thorough drywell and suppression pool inspection, including the vents, downcomers, and ring header, to verify that all foreign material, such as maintenance tools, equipment, construction materials and miscellaneous debris, has been removed.

The staff concludes that these compensatory actions provide confidence of continued safe operation of BFN Unit 3 with the existing strainers when combined with TVA's existing commitments to B 93-02, B 93-02, Supplement 1, and B 95-02.

The staff requests that TVA, as a condition for the approval of the deferral of actions requested by B 96-03 for BFN Unit 3, install and make operational passive suction strainers on or before December 31, 1998. If this schedule is not acceptable, please notify the staff within 90 days of receipt of this letter.

The staff continues to expect that TVA will implement the requested actions of B 96-03 for BFN Unit 2 during the refueling outage scheduled for the fall of 1997, and prior to restart of BFN Unit 1. The staff accepts TVA's commitment to describe its planned actions and schedule within 90 days of approval of the URG.

Please call me at (301)415-1470 if you have any questions regarding this topic.

Sincerely,

Original signed by

Joseph F. Williams, Project Manager  
Project Directorate II-3  
Division of Reactor Projects - I/II  
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Docket Nos. 50-259, 50-260, and 50-296

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