

April 28, 2005

10 CFR 54

U.S. Nuclear Regulatory Commission  
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Washington, D.C. 20555-0001

Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 -  
LICENSE RENEWAL APPLICATION (LRA) - RESPONSE TO NRC REQUEST  
FOR ADDITIONAL INFORMATION CONCERNING THE REACTOR WATER  
CLEANUP SYSTEM (TAC NOS. MC1704, MC1705, AND MC1706)**

By letter dated December 31, 2003, TVA submitted, for NRC review, an application pursuant to 10 CFR 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2, and 3. As part of its review of TVA's LRA, the NRC staff, through a letter dated April 8, 2005 (Reference 1), requested additional information concerning the Reactor Water Cleanup System.

The enclosure to this letter contains the specific NRC request(s) for additional information and the corresponding TVA response(s).

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If you have any questions regarding this information, please contact Ken Brune, Browns Ferry License Renewal Project Manager, at (423) 751-8421.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 28<sup>th</sup> day of April, 2005.

Sincerely,

Original Signed by:

T. E. Abney  
Manager of Licensing  
and Industry Affairs

Enclosure:

cc: See page 3

**REFERENCES**

1. Ram Subbaratnam (NRC) to Karl W. Singer (TVA) letter dated April 8, 2005: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3, LICENSE RENEWAL APPLICATION (TAC NOS. MC1704, MC1705 AND MC1706)

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Enclosure

cc (Enclosure):

State Health Officer  
Alabama Department of Public Health  
RSA Tower - Administration  
Suite 1552  
P.O. Box 303017  
Montgomery, Alabama 36130-3017

Chairman  
Limestone County Commission  
310 West Washington Street  
Athens, Alabama 35611

(Via NRC Electronic Distribution)

Enclosure

cc (Enclosure):

U.S. Nuclear Regulatory Commission  
Region II  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, Georgia 30303-8931

Mr. Stephen J. Cahill, Branch Chief  
U.S. Nuclear Regulatory Commission  
Region II  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, Georgia 30303-8931

NRC Senior Resident Inspector  
Browns Ferry Nuclear Plant  
10833 Shaw Road  
Athens, Alabama 35611-6970

NRC Unit 1 Restart Senior Resident Inspector  
Browns Ferry Nuclear Plant  
10833 Shaw Road  
Athens, Alabama 35611-6970

cc: continued page 4

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cc: (Enclosure)

Margaret Chernoff, Project Manager  
U.S. Nuclear Regulatory Commission  
(MS 08G9)  
One White Flint, North  
11555 Rockville Pike  
Rockville, Maryland 20852-2739

Eva A. Brown, Project Manager  
U.S. Nuclear Regulatory Commission  
(MS 08G9)  
One White Flint, North  
11555 Rockville Pike  
Rockville, Maryland 20852-2739

Yaira K. Diaz-Sanabria, Project Manager  
U.S. Nuclear Regulatory Commission  
(MS 011F1)  
One White Flint, North  
11555 Rockville Pike  
Rockville, Maryland 20852-2739

Ramachandran Subbaratnam, Project Manager  
U.S. Nuclear Regulatory Commission  
(MS 011F1)  
One White Flint, North  
11555 Rockville Pike  
Rockville, Maryland 20852-2739

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TLE:BAB

Enclosure

cc (Enclosure):

- A. S. Bhatnagar, LP 6-C
- K. A. Brune, LP 4F-C
- J. C. Fornicola, LP 6A-C
- R. G. Jones, NAB 1A-BFN
- K. L. Krueger, POB 2C-BFN
- R. F. Marks, Jr., PAB 1A-BFN
- F. C. Mashburn, BR 4X-C
- N. M. Moon, LP 6A-C
- J. R. Rupert, NAB 1F-BFN
- K. W. Singer, LP 6A-C
- M. D. Skaggs, PAB 1E-BFN
- E. J. Vigluicci, ET 11A-K
- NSRB Support, LP 5M-C
- EDMS, WT CA-K

s://Licensing/Lic/BFN LR Reactor Water Cleanup System.doc

ENCLOSURE

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

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION (RAI),  
CONCERNING THE REACTOR WATER CLEANUP SYSTEM

---

(SEE ATTACHED)

**TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3  
LICENSE RENEWAL APPLICATION (LRA) ,**

**RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION (RAI) ,  
CONCERNING THE REACTOR WATER CLEANUP SYSTEM**

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By letter dated December 31, 2003, TVA submitted, for NRC review, an application pursuant to 10 CFR 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2, and 3. As part of its review of TVA's LRA, the NRC staff, through a letter dated April 8, 2005 (Reference 1), requested additional information concerning the Reactor Water Cleanup System. This enclosure contains the specific NRC requests for additional information and the corresponding TVA responses.

**NRC's RAI 2.3.3.21-1**

License renewal drawings 2-47E810-1-LR and 3-47E810-1-LR show thermal tees (location F6) to be within the scope of license renewal and subject to an AMR. Thermal tees are the passive and long-lived components, however thermal tee component type is not listed in LRA Table 2.3.3.21-1 as a component type subject to an AMR, nor is it included in a component type in Section 2.3.5, "Notes Associated with Section 2.3 Tables." Please justify the exclusion of these components from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

**TVA's Response to RAI 2.3.3.21-1**

Thermal tees are included in Table 2.3.3.21 as component type fittings. Thermal tees were not listed in Section 2.3.5 because these components are not assigned UNID's on drawings. Section 2.3.5 was generated to show where UNID's appearing on the License Renewal Drawings were grouped in a component type.

**NRC's RAI 2.3.3.21-2**

License renewal drawings 2-47E810-1-LR and 3-47E810-1-LR show fusible plugs (location D2) to be within the scope of license renewal (in blue color for 54.4(a)(2) component in scope) and subject to an AMR. The "NOTE" on the drawing associated with fusible plugs states that fusible plug (FUPG) is a threaded pipe plug with a low temperature eutectic alloy which is attached to the RWCU pipe upstream of FCV-69-94. Eutectic

material will melt on high temperature, venting the control air line, which closes isolation valve FCV-69-94. Also, another drawing note states that the system shall be qualified for an elevated temperature excursion up to 562° F during an Appendix R event from the non-generative heat exchanger outlet to FCV-69-94.

- a. The fusible plugs are neither listed in LRA Table 2.3.3.21 as a component type subject to an AMR, nor as a subcomponent of the component types listed in Section 2.3.5. Please justify the exclusion of these components from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).
- b. Based on the drawing notes mentioned above, it appears that FCV-69-94 satisfy the criterion in 10 CFR 54.4(a)(3) for an environmental qualification and/or fire protection regulated event. However, the piping and components associated with this valve, including the above mentioned fusible plugs, are shown as being in scope in accordance with the criterion in 10 CFR 54.4(a)(2). Explain why valve FCV-69-94 functions differently from its associated pipeline.

**TVA's Response to RAI 2.3.3.21-2**

- a. The fusible plugs were inadvertently colored blue on drawing but should have been black since they are active components. Additionally, the fusible plugs do not form a pressure boundary function for the Reactor Water Cleanup System. License Renewal drawings 2-47E810-1-LR and 3-47E810-1-LR will be corrected to show FUPG-32-5105 black instead of blue.
- b. The piping and equipment downstream of FCV-69-2 up to and including valve FCV-69-94 will be corrected to show red instead of blue on drawings 2-47E810-1-LR and 3-47E810-1-LR since these components are part of the reactor coolant pressure boundary during an Appendix R event. The tube side of the heat exchangers is considered part of the reactor coolant pressure boundary while the shell side provides the structural support for the tubes. Shell side piping connections will remain blue. Also, System 43 (Sampling and Water Quality) drawing 0-105E3156-1-LR will be corrected to show components required for pressure boundary as red instead of blue on the drawing due to System 43's interface with Reactor Water Cleanup drawings 2-47E810-1-LR and 3-47E810-1-LR.

### **NRC's RAI 2.3.3.21-3**

Browns Ferry Nuclear Plant FSAR, Revision 20, Section 4.9 (page 4.9-2) states that:

Reactor coolant is continuously removed from the reactor coolant recirculation system, cooled in the regenerative and non-regenerative heat exchangers, filtered and demineralized, and returned to the feedwater system through the shell side of the regenerative heat exchanger. The Unit 3 RWCU system has the capability to return the processed fluid to the feedwater system through both reactor feedwater lines A and B. However, Unit 2 RWCU system has only one return line through reactor feedwater line B.

License renewal drawing 3-47E810-1-LR shows (location E7) the reactor water cleanup system return line to the reactor feedwater line B only. Indicate whether feedwater line A is within the scope of license renewal and subject to an AMR, or provide an explanation for its exclusion. (Alternatively, provide a drawing that shows the reactor water cleanup system return to feedwater line A for Unit 3.)

### **TVA's Response to RAI 2.3.3.21-3**

Unit 3 Water Cleanup System's return to Feedwater line A is shown at coordinate G6 on License Renewal drawing 3-47E810-1-LR. Note that this return is through a HPCI line shown on License Renewal drawing 3-47E812-1-LR (location E6) which connects to Feedwater line A shown on License Renewal drawing 3-47E803-1-LR (location G6). The HPCI and Feedwater portions of this return path are within the scope of license renewal.

### **NRC's RAI 2.3.3.21-4**

License renewal drawing 1-47E810-1-LR shows flow indicators, FI 85-75 (location G3) and FI-85-77 (location G1), and flow element, FE-69-13 (location C5), as excluded from the scope of license renewal. These flow indicators and flow element serve a pressure boundary function and are passive and long-lived components. It is noted that similar flow indicators and flow elements on drawings 2-47E810-1-LR and 3-47E810-1-LR are shown as within the scope of license renewal and subject to an AMR. However, flow indicators are neither listed in LRA Table 2.3.3.21 as a component type subject to an AMR, nor as a subcomponent of the component types listed in Section 2.3.5.

- a. Justify the exclusion of the aforementioned flow indicators and flow element in Unit 1 from the scope of license renewal and being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.
- b. Clarify whether flow indicators are included in other component types listed in LRA Table 2.3.3.21, or justify the exclusion of them from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

**TVA's Response to RAI 2.3.3.21-4**

- a. NEI 95-10, Appendix B shows flow indicators as active components. FI 85-75 and FI 85-77 were colored blue in error on License Renewal drawings 2-47E810-1-LR and 3-47E810-1-LR and were corrected to show these components black on the drawings revised for the first annual update. The flow element on License Renewal drawing 1-47E810-1-LR was included as a fitting in our evaluation, but was inadvertently not colored blue on the drawing. Drawing 1-47E810-1-LR was corrected to show FE 69-13 blue instead of black.
- b. Flow indicators are not contained as a component type in Table 2.3.3.21. Flow indicators were excluded from an AMR based on guidance provided in NEI 95-10, Appendix B.

**NRC's RAI 2.3.3.21-5**

License renewal drawing 3-47E810-1-LR shows a 4-inch pipeline to waste collector and surge tank inside the pipe tunnel to radwaste (location B4) as excluded from the scope of license renewal. However, the same pipeline on the license renewal drawing 1-47E810-1-LR (location B6) is shown as being in scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(2). Clarify this apparent discrepancy.

**TVA's Response to RAI 2.3.3.21-5**

This line on License Renewal drawing 1-47E810-1-LR was inadvertently colored blue but should have been black. This was corrected to show black for the first annual update.

## **REFERENCES**

1. Ram Subbaratnam (NRC) to Karl W. Singer (TVA) letter dated April 8, 2005: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3, LICENSE RENEWAL APPLICATION (TAC NOS. MC1704, MC1705 AND MC1706)