

August 23, 2004

Mr. Karl W. Singer  
Chief Nuclear Officer and  
Executive Vice President  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: 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)

Dear Mr. Singer:

By letter dated December 31, 2003, Tennessee Valley Authority (TVA) submitted an application pursuant to 10 CFR Part 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2 and 3, for review by the U.S. Nuclear Regulatory Commission (NRC). The NRC staff is reviewing the information contained in the license renewal application (LRA) and has identified areas where additional information is needed to complete the review. Those areas are stated in the enclosed requests for additional information (RAIs), specifically from Sections 2.3, 3.3, 4.4, B.2.0, and Appendix F of the fire protection system, related to the Scoping and Screening: Mechanical Systems, Aging Management of Auxiliary Systems, and Aging Management Programs respectively.

Based on discussions with Mr. Gary Adkins of your staff, a mutually agreeable date for your response to the RAIs is within 30 days of the date of this letter. If you have any questions regarding this letter or if circumstances result in your need to revise the response date, please contact me at (301) 415-1594 or by e-mail at [yks@nrc.gov](mailto:yks@nrc.gov)

Sincerely,

**/RA/**

Yaira K. Diaz Sanabria, Project Manager  
License Renewal Section A  
License Renewal and Environmental Impacts Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket Nos.: 50-259, 50-260 and 50-296

Enclosure: As stated

cc w/encl: See next page

August 23, 2004

Mr. Karl W. Singer  
Chief Nuclear Officer and  
Executive Vice President  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: 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)

Dear Mr. Singer:

By letter dated December 31, 2003, Tennessee Valley Authority (TVA) submitted an application pursuant to 10 CFR Part 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2 and 3, for review by the U.S. Nuclear Regulatory Commission (NRC). The NRC staff is reviewing the information contained in the license renewal application (LRA) and has identified areas where additional information is needed to complete the review. Those areas are stated in the enclosed requests for additional information (RAIs), specifically from Sections 2.3, 3.3, 4.4, B.2.0, and Appendix F of the fire protection system, related to the Scoping and Screening: Mechanical Systems, Aging Management of Auxiliary Systems, and Aging Management Programs respectively.

Based on discussions with Mr. Gary Adkins of your staff, a mutually agreeable date for your response to the RAIs is within 30 days of the date of this letter. If you have any questions regarding this letter or if circumstances result in your need to revise the response date, please contact me at (301) 415-1594 or by e-mail at [yks@nrc.gov](mailto:yks@nrc.gov)

Sincerely,

**/RA/**

Yaira K. Diaz Sanabria, Project Manager  
License Renewal Section A  
License Renewal and Environmental Impacts Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket Nos.: 50-259, 50-260 and 50-296

Enclosure: As stated  
cc w/encl: See next page

**Adams Accession no.: ML042360762**

**DISTRIBUTION:** See next page

\*Input provided by memo

Document Name: C:\ORPCheckout\FileNET\ML042360762.wpd

OFFICE	PM:RLEP	LA:RLEP	SC:SPLB*	SC:RLEP
NAME	Y. Diaz-Sanabria	Y. Edmonds	S. Weerakkody	S. Lee
DATE	8/23/04	8/23/04	7/13/04	8/23/04

OFFICIAL RECORD COPY

DISTRIBUTION: Ltr. to Mr. Karl W. Singer, Dated: August 23, 2004

Adams Accession No: **ML042360762**

**HARD COPY**

RLEP RF

Yoira Diaz-Sanabria (PM)

**E-MAIL:**

RidsNrrDrip

RidsNrrDe

G. Bagchi

K. Manoly

W. Bateman

J. Calvo

R. Jenkins

P. Shemanski

J. Fair

RidsNrrDssa

RidsNrrDipm

D. Thatcher

R. Pettis

G. Galletti

C. Li

M. Itzkowitz (RidsOgcMailCenter)

R. Weisman

M. Mayfield

A. Murphy

S. Smith (srs3)

S. Duraiswamy

Y. L. (Renee) Li

RLEP Staff

-----

K. Jabbour

C. Julian (RII)

S. Cahill (RII)

A. Hodgdon

C. Carpenter

D. Coe

E. Kleeh

A. Howe

**REQUEST FOR ADDITIONAL INFORMATION (RAI) RELATED TO  
FIRE PROTECTION SYSTEM SECTIONS 2.3, 3.3, 4.4, B.2.0 AND APPENDIX F  
BROWNS FERRY NUCLEAR PLANT LICENSE RENEWAL APPLICATION  
FIRE PROTECTION ENGINEERING AND SPECIAL PROJECTS**

**Section 2.3 Scoping and Screening Results: Mechanical Systems**

**Section 2.3.3.6 High Pressure Fire Protection System**

**RAI 2.3.3.6-1**

The system description of the high pressure fire protection system in Section 2.3.3.6 includes fixed water spray systems. Such systems typically utilize water spray nozzles. LRA Table 2.3.3.6 does not include water spray nozzles as a component subject to an AMR. Indicate whether the fixed water spray systems use spray nozzles other than the sprinkler heads. If so, the nozzles, which have an intended to support the system function, are passive and long lived and should be subject to an AMR.

**RAI 2.3.3.6-2**

The system description of the high pressure fire protection system in Section 2.3.3.6 includes detection and alarm devices that automatically initiate the system or prompt manual fire fighting. These devices are not identified. Identify what these devices are and where they are included in the AMR.

**RAI 2.3.3.6-3**

License renewal drawing 1-47E850-1-LR shows the boundary of the high pressure fire protection water system is the service building wall. The boundary shown is not at an isolated pressure boundary (e.g., a valve or blank flange). Justify why the service building portions of the system are not in scope.

**RAI 2.3.3.6-4**

Drawing 3-47E850-5-LR identifies a water curtain around the equipment hatch at Elevation 565'. Table 9.3.11.B in Volume 1 of the Fire Protection Report lists water curtains for the RHR Pump Room equipment hatches at Elevation 541'. The license renewal drawings do not show anything on Elevation 541'. Clarify that the water curtain protection for the RHR Pump Room equipment hatches is in scope, and identify where they are located on the license renewal drawings.

**Section 2.3.3.12 CO<sub>2</sub> System**

**RAI 2.3.3.12-1**

The CO<sub>2</sub> system addressed in this section typically requires discharge nozzles to achieve the proper flow rate. The system description and LRA Table 2.3.3.12 do not include any reference

to discharge nozzles. Indicate whether this system includes discharge nozzles. If so, the nozzles, which have an intended function of flow control, are passive and long lived and should be subject to an ARM.

#### **RAI 2.3.3.12-2**

The system description of the CO<sub>2</sub> System in LRA Section 2.3.3.12 includes detection and alarm devices that automatically initiate the system or prompt manual fire fighting. These devices are not identified. Identify what these devices are and where they are included in the AMR.

### **Section 3.3 Aging Management of Auxiliary Systems (Tables 3.2.2.1, 3.3.2.6, 3.3.2.12, 3.5.2.5, 3.5.2.10, and 3.5.2.12)**

#### **RAI 3.3-1**

LRA Table 3.5.2.2, Reactor Building - "Summary of Aging Management Review, Lists Coating" (ALBI CLAD-161) as part of the fire barrier. This fire resistive coating for structural steel lists only for the Reactor Building in the table. It is unclear from the Fire Hazard Analysis (FHA) if this is the only building with structural steel protection. Procedure 0-SI-4.11.G.1.a, Visual Inspection of Fire Rated Barriers, refers to Albi-Clad coating on structural steel beams on Elevation 593' of the Control Building. Identify all in-scope structures which contain fire resistive coatings on structural steel. Design standard G-74, Fire Proofing of Structural Steel, Section 2.1.2, Safety-Related Nuclear Structures refers to Pyrocrete 241, Mandoseal P-50 or other approved material. Table 3.5.2.2 in the LRA refers to Albi-Clad 161. Verify which material(s) are applied. Acceptance criteria in procedure 0-SI-4.11.G.1.a, Visual Inspection of Fire Rated Barriers, is an unprotected area greater than one square foot. The fire resistance rating of the material or assembly is determined by the thickness. A reduction in thickness from mechanical or other means would reduce the fire resistance and prevent the steel from performing its intended fire protection function. Provide the technical basis for the "> one square foot" criteria for unacceptability.

#### **RAI 3.3-2**

LRA Table 3.5.2.2, Reactor Building - "Summary of Aging Management Review," identifies ceramic fiber as having no aging effects and therefore requiring no AMP. Describe how these materials are used and provide the technical basis for the conclusion of no aging effects.

#### **RAI 3.3-3**

LRA Table 3.5.2.12 identifies Thermolag as a fire barrier and referred to LRA Appendix B, Section B.2.1.23. Cable wraps are not specifically addressed in Section B.2.1.23. Is this the only area of the plant where cable wrap fire barriers are used? Electrical raceway fire barriers are referenced in plant operating experience as experiencing "minor degradation". Identify all areas where cable wraps are provided, and verify that these barriers are included in the AMP.

Section B.2.0      Aging Management Programs  
Section B.2.1.23   Fire Protection Program  
Section B.2.1.24   Fire Water System Program

### **RAI B.2.0-1**

Appendix B, Section B.2.1.23 "Fire Protection Program," does not address what is included in the fire pumps and does not reference the electric fire pumps. The boundary drawings show the three electric and one diesel fire water pumps as in scope. Verify that the electric fire pumps are included in the AMR and AMP. The smaller electric service water pumps are used for pressure maintenance, but are not shown in scope. Justify why these pressure maintenance devices are not in scope.

### **RAI B.2.0-2**

The AMP references "periodic visual inspections" as an exception to the GALL, in Section B.2.1.23. Section 9.4.11.G of the Fire Protection Report (FPR) discussed semi-annual inspection of fire doors including a check of closers and latching mechanisms. Describe the specific exceptions to the GALL the AMP for fire doors. The GALL recommends verification of door clearances to assure the door can perform in a fire and remain latched. Explain how a visual inspection can verify the closer and latching mechanism. Verify that the frequency of these surveillances is consistent with the FPR.

## **Appendix F - Integration of Browns Ferry Unit 1 Restart and License Renewal Activities**

### **Section F.3 Fire Protection**

#### **RAI F.3-1**

Appendix F to LRA states that, "Whenever text annotated with a bold border box appears in the LRA symbolizing a licensing or design basis that is only applicable to Units 2 and 3, a link is provided to the appropriate Appendix F section. Systems/Structures/Components Impacted – The impacted systems, structures, or components are identified with links to the appropriate Chapter 2 sections and the appropriate Chapter 3 sections."

Since there is no text annotated with a bold border box that appears in either of the LRA Section 2.3.3.12, CO<sub>2</sub> System, "LRA Section 3.3.2.1.6, "High Pressure Fire Protection System" and "LRA Section 3.3.2.1.12 CO<sub>2</sub> System" it symbolizes that the pertinent licensing or design bases equally applicable to Units 1, 2 and 3 fire protection system.

Verify that the licensing or design bases of fire protection systems listed in LRA Sections 2.3.3.12, 3.3.2.1.6, and 3.3.2.1.12 are equally applicable to Units 1, 2, and 3 without any exceptions.

Provide justification in detail, if any deviations noted, and revise corresponding LRA tables to identify these impacted systems, structures, or components that are within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to an AMR in accordance with 10 CFR 54.21(a)(1).

## **Review of Fire Protection Report (FPR)**

### **RAI 4.4.1-1**

Section 4.4.1.a of the FPR addresses a separate water supply system, including tank and pumps, which does not appear in the LRA or boundary drawings. Verify whether these system components are in scope and provide the justification if they are not.

### **RAI 4.4.5-1**

Section 4.4.5 of the FPR states that "Flammastic" was applied to cables that did not meet IEEE-383 flame tests requirements. Inspection Testing and Maintenance (ITM) of this is not referenced in the FPR. No reference is made to it in the LRA, either under the Fire Protection Program, Section B.2.1.23, or in the electrical or structural programs. This still appears to be a license condition. Identify where these coating are addressed in the LRA scoping, screening and AMR sections.

Tennessee Valley Authority

**BROWNS FERRY NUCLEAR PLANT**

cc:

Mr. Ashok S. Bhatnagar, Senior Vice President  
Nuclear Operations  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. Mark J. Burzynski, Manager  
Nuclear Licensing  
Tennessee Valley Authority  
4X Blue Ridge  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. James E. Maddox, Vice President  
Engineering & Technical Services  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. Timothy E. Abney, Manager  
Licensing and Industry Affairs  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Decatur, AL 35609

Mr. Michael D. Skaggs  
Site Vice President  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Decatur, AL 35609

Mr. Bobby L. Holbrook  
Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
Browns Ferry Nuclear Plant  
10833 Shaw Road  
Athens, AL 35611-6970

General Counsel  
Tennessee Valley Authority  
ET 11A  
400 West Summit Hill Drive  
Knoxville, TN 37902

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

Mr. John C. Fornicola, Manager  
Nuclear Assurance and Licensing  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

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

Mr. Kurt L. Krueger, Plant Manager  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Decatur, AL 35609

Mr. Fred Emerson  
Nuclear Energy Institute  
1776 I St., NW, Suite 400  
Washington, DC 20006-2708

Mr. Jon R. Rupert, Vice President  
Browns Ferry Unit 1 Restart  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Decatur, AL 35609

Gary M. Adkins  
Manager, Browns Ferry License Renewal  
Project  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. Robert G. Jones  
Browns Ferry Unit 1 Plant Restart Manager  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Decatur, AL 35609