

November 3, 2004

10 CFR 54

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Stop: OWFN P1-35  
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 - HEATING, VENTILATION, AND COOLING (HVAC) SYSTEMS SECTIONS 2.3.2 AND 2.3.3 - REQUEST FOR ADDITIONAL INFORMATION (RAI) (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 license renewal application, the NRC staff, by letter dated October 8, 2004, identified areas where additional information is needed to complete its review.

The specific areas requiring a request for additional information (RAIs) are related to the aging management of Sections 2.3.2 and 2.3.3 of the License Renewal Application. Drafted forms of these RAIs were discussed with the TVA Staff in a telephone conference call on September 22, 2004.

U.S. Nuclear Regulatory Commission  
Page 2  
November 3, 2004

The enclosure to this letter contains the specific NRC requests for additional information and the corresponding TVA response.

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 3rd day of November, 2004.

Sincerely,

**Original signed by:**

T. E. Abney  
Manager of Licensing  
and Industry Affairs

Enclosure:  
cc: See page 3

U.S. Nuclear Regulatory Commission  
Page 3  
November 3, 2004

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

Kahtan N. Jabbour, Senior 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

U.S. Nuclear Regulatory Commission  
Page 4  
November 3, 2004

cc (Continue):

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

U.S. Nuclear Regulatory Commission  
Page 5  
November 3, 2004

GLS:BAB

Enclosure

cc (Enclosure):

A. S. Bhatnagar, LP 6-C  
K. A. Brune, LP 4F-C  
J. C. Fornicola, LP 6A-C  
D. F. Helms, LP 6A-C  
F. C. Mashburn, BR 4X-C  
R. G. Jones, NAB 1A-BFN  
K. L. Krueger, POB 2C-BFN  
R. F. Marks, Jr., PAB 1A-BFN  
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 Sections 2.3.2 and 2.3.3 HVAC RAI TVA.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),  
RELATED TO HEATING VENTILATION AND COOLING (HVAC) SYSTEMS  
SECTION 2.3.2 AND 2.3.3

---

(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),  
RELATED TO HEATING VENTILATION AND COOLING (HVAC) SYSTEMS  
SECTION 2.3.2 AND 2.3.3**

---

By letter dated December 31, 2003, the Tennessee Valley Authority (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 license renewal application, the NRC staff, by letter dated October 8, 2004, identified areas where additional information is needed to complete its review.

The specific area requiring a request for additional information (RAIs) are related to the aging management of Sections 2.3.2 and 2.3.3 of the License Renewal Application. Drafted forms of these RAIs were discussed with the TVA Staff in a telephone conference call on September 22, 2004.

Listed below are the specific NRC requests for additional information and the corresponding TVA responses.

**Containment System: Reactor Building Ventilation Subsystem**

**NRC RAI 2.3.2.1-1**

For Browns Ferry Units 1, 2, and 3 Containment System (Reactor Building Ventilation System), described in license renewal application (LRA) Section 2.3.2.1 and on LRA Drawings 1-47E865-1-LR, 1-47E865-3-LR, 2-47E2865-12-LR, 2-47E610-64-1-LR, 3-47E865-12-LR, and 3-47E610-64-1-LR, LRA Table 2.3.2.1, "Containment System" and LRA Table 3.2.2.1, "Containment System-Summary of Aging Management Evaluation" do not contain all the components of the reactor building ventilation system as highlighted on the drawing. For example, while the tables list bolting, ductwork, fittings, etc., they do not list housings for air cooling units, dampers and damper housings, cooling coil housings, nor valve bodies, just to name a few. Clarify whether these components and all other applicable components of the system, are within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If these components are in the scope of license renewal, update the LRA by providing the applicable information in the appropriate LRA tables. If these

components are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

For BFN Units 1, 2, and 3 LRA, none of the air intake or exhaust structures except for LRA Section 2.3.3.8, "Ventilation System," include intake and exhaust screens within the scope of license renewal. Clarify whether screens for air intake and exhaust structures, for those systems described in LRA Section 2.3.2.1 are in the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If screens for intake and exhaust structures are in the scope of license renewal, update the LRA by providing the applicable information in the appropriate tables. If screens for intake and exhaust structures are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

#### **TVA Response to RAI 2.3.2.1-1**

Refer to LRA Section 2.3.5 for notes related to components included in the component types listed in LRA Tables. The housings for cooling units and dampers are included in component type "ductwork" in LRA Table 2.3.2.1. The cooling coil housings are included in component type "heat exchangers" in LRA Table 2.3.2.1. Valve bodies are included in component type "valves" in LRA Table 2.3.2.1. The Reactor Building Ventilation subsystem contains an intake plenum that contains louvers with screens and these components perform no License Renewal function; therefore, these components are not in scope.

#### **Standby Gas Treatment System**

##### **NRC RAI 2.3.2.2-1**

For Browns Ferry Units 1, 2, and 3 Standby Gas Treatment System, described in LRA Section 2.3.2.2 and on LRA Drawing 0-47E865-11-LR, LRA Table 3.2.2.2, "Standby Gas Treatment System" and LRA Table 2.3.2.2, "Standby Gas Treatment System-Summary of Aging Management Evaluation" do not contain all the components of the system as highlighted on the drawing. For example, while the tables list bolting, ductwork, fittings, etc., they do not list fan housings, filter housing, damper housing, nor valve bodies, just to name a few. Clarify whether these components and all other applicable components of the system, including duct sealants, wall sealants, pressure boundary sealants, etc., are within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If these components are in the scope of license renewal, update the LRA by providing the applicable information in the appropriate LRA tables. If these components

are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

Also, provide clarification for the following LRA Drawing 0-47E865-11-LR that shows an interface (incoming arrow) at location H-3 indicating that incoming flow is from 1-47E865-1 at location F8, while interface drawing 1-47E865-1 shows Detail 1F1 at location F-8 with incoming flow from 0-47E865-1, H-2.

For BFN Units 1, 2, and 3 LRA, none of the air intake or exhaust structures except for LRA Section 2.3.3.8, "Ventilation System," include intake and exhaust screens within the scope of license renewal. Clarify whether screens for air intake and exhaust structures, for those systems described in LRA Section 2.3.2.2 are in the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If screens for intake and exhaust structures are in the scope of license renewal, update the LRA by providing the applicable information in the appropriate tables. If screens for intake and exhaust structures are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

#### **TVA Response to RAI 2.3.2.2-1**

Refer to LRA Section 2.3.5 for notes related to components included in the component types listed in LRA Tables. The housings for fans, dampers, and filters are included in the component type "ductwork" in LRA Table 2.3.2.2. Sealants associated with ductwork for this system are included in component type "ductwork" in Table 2.3.2.2. The flow path of the ductwork provides the pressure boundary for the Standby Gas Treatment System and the Building is not providing a pressure boundary. There are no wall sealants or pressure boundary sealants that meet the requirements of 10 CFR 54.4(a) for the Standby Gas Treatment Building.

The incoming arrow on drawing 0-47E865-11-LR at coordinate H3 is correct, but the incoming arrow from 0-47E865-11 at coordinate F8 on drawing 1-47E865-1-LR is incorrect and is being revised to show the arrow going in the opposite direction.

The Standby Gas Treatment System (065) does not contain air intake/exhaust structures with screens. The Standby Gas Treatment System (065) exhausts to the Reinforced Concrete Chimney (plant stack) which is addressed in LRA Section 2.4.6.1.

#### **Containment Inerting System**

### **NRC RAI 2.3.2.6-1**

The containment inerting system is described in LRA Section 2.3.2.6 and depicted on LRA Drawings 1-47E860-1-LR, 2-47E860-1-LR, and 3-47E860-1-LR, respectively, for BFN Units 1, 2 and 3. However, the system components including piping, valves and equipments between (1) FCV76-17 and PCV 67-14 including downstream bypass line after BYV-76-542, and (2) between CKV-76-653 and CKV-76-659 are not shown within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If these components are in the scope of license renewal, update the LRA by providing the applicable information in the appropriate LRA Tables 2.3.2.6 and 3.2.2.6. If these components are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

### **TVA Response to RAI 2.3.2.6-1**

- (1) The components between primary containment isolation valve FCV-76-17 and secondary containment isolation valve PCV-76-14 are not in scope. Since they are not safety related the components are not in scope for 10 CFR 54.4(a)(1). They are not in scope for 10 CFR 54.4(a)(3) since they are not required for any of the regulated events. Also, since these components are not liquid filled they do not meet the criteria of 10 CFR 54.4(a)(2).
  
- (2) The components between primary containment isolation valve CKV-76-653 and secondary containment isolation valve CKV-76-659 are not in scope. Since they are not safety related the components are not in scope for 10 CFR 54.4(a)(1). They are not in scope for 10 CFR 54.4(a)(3) since they are not required for any of the regulated events. Also, since these components are not liquid filled they do not meet the criteria of 10 CFR 54.4(a)(2).

### **Ventilation System: Radioactive Waste Building and Diesel Generator Ventilation Systems**

#### **NRC RAI 2.3.3.8-1**

For Browns Ferry Units 1, 2, and 3 Ventilation System, described in LRA Section 2.3.3.8 and on LRA Drawings 3-47E865-8-LR, 0-47E865-6-LR and 0-47E865-8-LR, LRA Table 2.3.3.8, "Ventilation System" and LRA Table 3.3.2.8, "Ventilation System-Summary of Aging Management Evaluation" do not contain all the components of the system, as highlighted on the drawings. For example, while the tables list bolting, ductwork, fittings, etc., they do

not list damper housings including fire damper housings, fan housings, air intake or exhaust structures including screens, nor supply and exhaust grills just to name a few. Clarify whether these components and all other applicable components of the system are within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If these components are in the scope of license renewal, update the LRA by providing the applicable information in the appropriate LRA tables. If these components are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

#### **TVA Response to RAI 2.3.3.8-1**

Refer to LRA Section 2.3.5 for notes related to components included in the component types listed in LRA Tables. The damper housings and fan housings are included in component type "ductwork" in LRA Table 2.3.3.8. Fire damper housings are included in component type "fire dampers" in LRA Table 2.3.3.8. The screens associated with the exhaust plenum in the Unit 1& 2 diesel generator building and the Unit 3 diesel generator building are included in component type "ductwork" in LRA Table 2.3.3.8. The intake/exhaust plenums associated with the diesel generator buildings are considered part of the structure and are contained in LRA Table 2.4.3.1 and LRA Table 3.5.2.5. Grilles have no 10 CFR 54.4(a)1, 10 CFR 54.4(a)2, or 10 CFR 54.4(a)3 functions for License Renewal and are not included in the Tables.

#### **Heating, Ventilation, and Air Conditioning System (HVAC)**

##### **NRC RAI 2.3.3.9-1**

For Browns Ferry Units 1, 2 and 3 HVAC System, described in LRA Section 2.3.3.9 and on LRA Drawings 0-47E865-2-LR, 0-47E865-4-LR, 0-47E865-15-LR, 0-47E866-3-LR, 1-47E1865-4-LR, 2-47E2865-4-LR, 3-47E865-4-LR, and 3-47E3865-4-LR, 3-47E865-8-LR, LRA Table 2.3.3.9, "Heating, Ventilation, and Air Conditioning System" and LRA Table 2.3.3.9, "Heating, Ventilation, and Air Conditioning System-Summary of Aging Management Evaluation" do not contain all the components of the system as highlighted on the drawings. For example, while the tables list bolting, ductwork, fire dampers, fittings, flexible connectors, etc., they do not list fan housings, filter housings, cooling coil housings, damper housings including fire damper housings, metal lath screens, nor valve bodies, supply and return grills just to name a few. Clarify whether these components and all other applicable components of the system, including duct sealants, wall sealants, pressure boundary sealants, etc., are within the

scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If these components are in the scope of license renewal, update the LRA by providing the applicable information in the appropriate LRA tables. If these components are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

For BFN Units 1, 2, and 3 LRA, none of the air intake or exhaust structures except for LRA Section 2.3.3.8, "Ventilation System," include intake and exhaust screens within the scope of license renewal. Clarify whether screens for air intake and exhaust structures, for those systems described in LRA Section 2.3.3.9, are in the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If screens for intake and exhaust structures are in the scope of license renewal, update the LRA by providing the applicable information in the appropriate tables. If screens for intake and exhaust structures are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

#### **TVA Response to RAI 2.3.3.9-1**

Refer to LRA Section 2.3.5 for notes related to components included in the component types listed in LRA Tables. The following components (fan housing, filter housing, cooling coil housings, and damper housings) are included in component type "ductwork" in LRA Table 2.3.3.9. Fire damper housings are included in component type "fire dampers" in LRA Table 2.3.3.9. The metal lath screens shown on drawings 0-47E865-8-LR and 3-47E865-8-LR are included in component type "ductwork" in LRA Table 2.3.3.8. Valve bodies are included in component type "valves" in LRA Table 2.3.3.9. Supply and return grilles have no 10 CFR 54.4(a)1, 10 CFR 54.4(a)2, or 10 CFR 54.4(a)3 functions for License Renewal and are not included in the Tables. Pressure boundary sealants associated with ductwork for this system are included in component type "ductwork" in LRA Tables 2.3.3.9 and 3.3.2.9. Structural sealants (such as those required to maintain the control room envelope or secondary containment) are contained in Section 3.5.2.1.2 and in component type "Compression Joints and Seals" and in component type "Caulking and Sealants" in Table 3.5.2.2. The intake plenums and associated ductwork supplying the plenums shown on the drawings listed below were inadvertently omitted from the scope of License Renewal. The supply ductwork contains screens. The associated License Renewal drawings (0-47E865-4-LR drawing coordinates H3 and H6, 2-47E2865-4-LR drawing coordinate A4,

and 3-47E865-4-LR drawing coordinate B3) will be revised to show the subject components within the scope of License Renewal. The screens and plenums will be included in the component type "ductwork."

Table 3.3.2.9 should have included outside Air (external) in Row 18 as shown below.

Ductwork	DP, PB, SS	Elastomers	Inside Air (external) Outside Air (external)	None	None	VII.I.1-b	None	F, 2
----------	------------	------------	---	------	------	-----------	------	------

Table 3.3.2.9 should have included a row for stainless steel bolting with an outside air environment as shown below.

Bolting	MC, SS	Stainless Steel	Outside Air (external)	None	None	V.E.2-a	None	F, 2
---------	--------	-----------------	------------------------	------	------	---------	------	------

**Turbine Building HVAC System**

**NRC RAI 2.3.3.9-2**

Final Safety Analysis Report (FSAR) Section 10.12.5.2, "Turbine building," is included as part of the HVAC systems but not included in the LRA. Provide justification for the exclusion of turbine building ventilation system from the scope of the license renewal in accordance with 10 CFR 54.4, and subject to an AMR in accordance with 10 CFR 54.21.

**TVA Response to RAI 2.3.3.9-2**

UFSAR section 10.12.5 does not credit the Turbine Building HVAC system for performing a safety function, performing a function required for a regulated event, or performing a supporting system for a safety related function. The Turbine Building HVAC System has no 10 CFR 54.4(a)1, 10 CFR 54.4(a)2, or 10 CFR 54.4(a)3 functions for License Renewal. The discussion in Section 10.12.5.2 which states that the Turbine Building is heated, cooled, and ventilated during normal operation is for meeting the Power Generation Objective and not the Safety Objective or Safety Design Basis of the Heating, Ventilating, and Air-Conditioning Systems.