

January 18, 2005

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 - ELECTRICAL AND INSTRUMENT AND CONTROL (I&C) SECTIONS 2.5 AND 3.6 - RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION (RAI) FOR NRC FOLLOW UP QUESTIONS (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 e-mail dated December 15, 2004, identified areas where additional information is needed to complete its review. Also, TVA is providing additional clarification to NRC RAI 2.5-2.

The specific areas requiring a request for additional information (RAI) are follow-up questions relating to the Electrical and I&C Sections 2.5 and 3.6 of the License Renewal Application (LRA).

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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 18<sup>th</sup> day of January, 2005.

Sincerely,

Original signed by:

T. E. Abney  
Manager of Licensing  
and Industry Affairs

Enclosure:  
cc: See page 3

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Enclosure

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(Via NRC Electronic Distribution)

Enclosure

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cc: continued page 4

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GLS:BAB

Enclosure

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s://Licensing/Lic/BFN LR Electrical and I&C Section 2.5 and 3.6 follow-up RAIs

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 ELECTRICAL AND INSTRUMENT AND CONTROL (I&C),  
SECTIONS 2.5 AND 3.6 FOR NRC FOLLOW UP QUESTIONS

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(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 ELECTRICAL AND INSTRUMENT AND CONTROL (I&C) ,  
SECTIONS 2.5 AND 3.6 FOR NRC FOLLOW UP QUESTIONS**

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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 license renewal application, the NRC staff, by e-mail dated December 15, 2004, identified areas where additional information is needed to complete its review.

The specific areas requiring a request for additional information (RAI) are follow-up questions relating to the Electrical and I&C Sections 2.5 and 3.6 of the License Renewal Application (LRA). Also, TVA is providing additional clarification to NRC RAI 2.5-2.

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

**SECTION 3.6**

**NRC follow up to RAI 3.6-3**

Element 2 of AMP Frequency of inspection for water collection in cable manholes and conduit should be yearly. Please explain why every ten years is sufficient.

**TVA response to NRC follow up to RAI 3.6-3**

Element 2 of AMP Inspection for water collection for in-scope cable manholes and conduit will be adjusted to be performed annually.

**NRC follow up to RAI 3.6-5 (a)**

Polymeric materials of fuse holders should be included in Cable and connection inspection program (B.2.1.1). Please clarify.

**TVA response to NRC follow up to RAI 3.6-5 (a)**

The polymeric materials of fuse holders are included in the Accessible Non-Environmental Qualification Cable and Connections Inspection Program. Please refer to LRA Section B.2.1.1, Accessible Non-Environmental Qualification Cables and Connections Inspection Program, which states, "Connections include connectors, splices, electrical penetration assembly pigtails and sealants, terminal blocks, and fuse blocks." TVA refers to fuse blocks throughout the LRA, which is the same terminology as fuse holders used within the industry.

**NRC follow up to RAI 3.6-6**

NUREG 1801 E1 is applicable if most cables and connections installed in adverse localized environments are accessible. Please clarify.

**TVA response to NRC follow up to RAI 3.6-6**

Based on data collected from the Unit 3 Cable Database, greater than 50% of cables in the Unit 3 Turbine Building and Drywell are located in tray and considered accessible. These percentages of accessible cables are representative of Units 1 and 2. Based on this data, TVA considers NUREG 1801 E1 an applicable program to manage Non-EQ Cables and Connections.

**NRC follow up to RAI 3.6-7**

...connections are routinely surveyed using infrared scan for hot spots. Please provide frequency, name of the program, and who controls this program?

**TVA response to NRC follow up to RAI 3.6-7**

TVA's Transmission Power Supply (TPS) group controls the program. The specific document that requires that the infrared scans be performed is the TPS Routine Test Schedule. The TPS Routine Test Schedule states that 500kV and 161kV switchyard connections are surveyed after a modification and routinely every 6 months.

## **SECTION 2.5**

### **NRC follow up to RAI 2.5-2**

In RAI 2.5-2 response stated that Safe Shutdown Analysis does not list any safety-related intended function for Source Range, Intermediate Range Nuclear Instrumentation, Rod Block monitors (RBMs) and Traversing Incore Probe System (TIP). Therefore, these circuits are screened out and are not subject to an AMR.

Nuclear Instrumentation circuits can not be screened out since these circuits provide trip signals to prevent fuel damage. Section 2.3.3.32 of the LRA stated that "The Neutron Monitoring System detects conditions that could lead to local fuel damage and provides signals that can be used to prevent such damage." Additionally, in LRA Section 2.3.3.33 stated that TIP is in scope of License Renewal. Please clarify.

### **TVA response to NRC follow up to RAI 2.5-2**

The Browns Ferry Neutron Monitoring System consists of the following Subsystems:

- Source Range Monitor Subsystem (SRM)
- Intermediate Range Monitor Subsystem (IRM)
- Local Power Range Monitor Subsystem (LPRM)
- Average Power Range Monitor Subsystem (APRM)
- Oscillation Power Range Monitor Subsystem (OPRM), which is a subsystem of the APRM subsystem
- Rod Block Monitor Subsystem (RBM)
- Traversing In-Core Probe Subsystem (TIP)

The Browns Ferry Safe Shutdown Analysis provides the following information concerning the requirements of Neutron Monitoring Subsystems.

The SRM, IRM, and RBM circuits perform no intended function as specified by 10 CFR 54.4 that require them to be included in the scope of License Renewal. The IRMs will generate scram signals during startup conditions for abnormal operational transients (AOT) events, not Design Basis Accidents (DBAs). This function is not classified as "Safety Related" since functions mitigating DBAs are safety-related, not functions mitigating AOTs. Therefore, cables associated with the SRMs, IRMs, and RBMs were screened out and not subject to an AMR.

The APRM and OPRM circuits are Safety-Related and provide trip signals to the Reactor Protection System. The LPRMs provide the input signals to the APRM and OPRM subsystems. Therefore, LPRM cables are in scope for License Renewal and subject to an AMR. The Browns Ferry Safe Shutdown Analysis states that the safety-related functions of the TIP Subsystem are:

1. Provide primary containment isolation and integrity. The Safe Shutdown Analysis also states that an "Active isolation function is not required."
2. Provide reactor coolant pressure boundary which is a passive function only.

As noted above, the TIP subsystem performs its safety-related functions without active components. Therefore, cables associated with the TIP subsystem were screened out and not subject to an AMR.

In summary, the only Neutron Monitoring System cables in scope for License Renewal are those associated with Local Power Range Monitors.

#### **NRC follow up to RAI 2.5-2**

RAI 2.5-2 response stated that cables routed to off-gas Treatment Building transformer A & B were screened out and not subject to an AMR since they do not perform an intended function for license renewal as specified by 10 CFR 54.4. LRA Section 2.3.3.19 stated that Off-Gas System is in the scope of 10 CFR 54. Hence these cables can not be screened out. Please provide clarification.

#### **TVA response to NRC follow up to RAI 2.5-2**

All medium-voltage cables were initially scoped in for License Renewal as an electrical commodity. However, medium-voltage cables routed to Off-Gas Treatment Building Transformers A and B were then screened out based on the following evaluation.

The safety-related functions of the Off-Gas System which require the system to be in scope for License Renewal are:

1. Provide flow path integrity for the release of the filtered Standby Gas Treatment System (65) gases to the stack.

2. Provide automatic closure of back-draft prevention dampers to prevent back flow and potential ground level release of radiation.

These safety-related functions are performed solely with mechanical components requiring no electrical power. Therefore, medium-voltage cables routed to Off-Gas Treatment Building Transformers A and B are screened out and not subject to an AMR.

#### **TVA additional clarification to NRC RAI 2.5-2**

The following is additional clarification to TVA's original RAI 2.5-2 response, "Cables routed to Cooling Tower equipment."

Cooling Tower equipment includes the following medium-voltage cables powered from Cooling Tower Switchgear. Sections of these cables may be located in underground conduits.

The Construction, North, and South Loop Lines receive their power from Cooling Tower Switchgear. These Loop Lines provide power to various non-essential buildings such as administration buildings, modification and maintenance shops, and storage buildings. These building do not contain any equipment that performs an intended function required for license renewal as specified by 10 CFR 54.4. The medium voltage cables that supply power to Cooling Tower equipment, Construction, North, and South Loop Lines, and all equipment fed from these Loop Lines are screened out and not subject to an AMR.

The following information completes TVA's response to RAI 2.5-2, "...medium-voltage cables located in underground conduit duct banks..."

Medium voltage cables located in underground conduits which provide power to 500kV Switchyard Distribution Cabinets 1-1, 1-2, 2-1, and 2-2 located in the switchyard were screened out and not subject to an AMR. These Distribution Cabinets provide power to the Air Blast Power Circuit Breakers (PCBs) and Motor Operated Disconnects (MODs) located in the 500kV switchyard. In the event that medium voltage power is not available, the PCBs can be operated utilizing 250Vdc control circuits and the reserve air tank volume. The MODs can be operated manually. Therefore, medium voltage cables to these 500kV Switchyard Distribution Cabinets are not required to operate the PCBs and MODs during recovery from a Station Blackout (SBO) event. The cables associated with the 250Vdc control circuits are in scope and subject to an AMR.

Medium voltage cables located in underground conduits which provide power to security equipment were screened out and not subject to an AMR. The security equipment does not perform an intended function required for license renewal as specified by 10 CFR 54.4.