

May 8, 2008

Mr. Peter P. Sena III  
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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE  
BEAVER VALLEY POWER STATION, UNITS 1 AND 2, LICENSE RENEWAL  
APPLICATION (TAC NOS. MD6593 AND MD6594)

Dear Mr. Sena:

By letter dated August 27, 2007, FirstEnergy Nuclear Operating Company submitted an application pursuant to 10 CFR Part 54, to renew the operating licenses for Beaver Valley Power Station, Units 1 and 2, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Mr. Clifford I. Custer of your staff, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-2989 or by e-mail at [Kent.Howard@nrc.gov](mailto:Kent.Howard@nrc.gov).

Sincerely,

**/RA/**

Kent L. Howard, Sr., Project Manager  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure:  
As stated

cc w/encl: See next page

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BEAVER VALLEY POWER STATION, UNITS 1 AND 2  
LICENSE RENEWAL APPLICATION  
REQUEST FOR ADDITIONAL INFORMATION (RAI)

**RAI 2.2-3**

In license renewal application (LRA) Table 2.2-5, Structures Not Within Scope of License Renewal, the applicant identifies those structures that are not within the scope of license renewal (LR) in accordance with 10 CFR 54.4. In this table, the applicant identifies that the North Pipe Trench is not within the scope of LR. However, LR drawing, License Renewal Structures, identifies that the North Pipe Trench is adjacent to the Valve Pit structure, which is within the scope of LR. In LRA Section 2.4.32, the applicant describes the Unit 2 Valve Pit as a safety-related, seismic Category I structure that houses safety-related equipment in a reinforced concrete, subsurface structure. There was no mention of preventative measures (e.g., shake space) that would separate the Valve Pit structure from the nonsafety-related adjacent North Pipe Trench.

- a) Verify that there are appropriate measures to prevent interaction between the North Pipe Trench and the Valve Pit structure, or include the North Pipe Trench in scope for LR.
- b) Verify whether there is any piping between the North Pipe Trench and the Valve Pit structure that should be included in scope for LR.

**Section 2.3.3.22 Post-Accident Sample System**

**RAI-2.3.3.22-1 (Unit 1)**

In LRA Section 2.3.3.22, the applicant states that the Unit 1 post-accident sample system contains components with a nonsafety-related function in accordance with 10 CFR 54.4(a)(2) and contains components relied upon to demonstrate compliance with the environmental qualification regulation in accordance with 10 CFR 54.4(a)(3). On LR drawing 1-14C-1, the applicant highlights components of the post-accident sample system as being within the scope of LR. In this LRA section, the applicant states that the post-accident sample system is no longer credited by the current licensing basis (CLB) for its sampling function. In contrast, in Unit 1 updated final safety analysis report (UFSAR) Sections 11.3.3.3.27, 11.3.3.3.28, and 11.3.3.3.29, the applicant describes the operation and functions of the post-accident sample subsystems, which include the sampling function.

Justify the exclusion of the post-accident sample system sampling function from the Unit 1 CLB and from the scope of LR.

ENCLOSURE

### **Section 2.3.3.25 Radiation Monitoring System**

#### **RAI 2.3.3.25-1 (Unit 2)**

On LR drawing 2-43-18, the applicant shows the following detectors: 2HVS-RQ-109B, 2HVS-RQI-109C, 2HVS-RQ-101A, and 2HVS-RQ-101B. The drawing indicates that these detectors are in shielded enclosures. In Unit 2, UFSAR Section 11.5.2.3.2, the applicant states that an adequate amount of shielding is provided around each detector to reduce the background radiation to a level that will not interfere with detector sensitivity. Only the shielding for detector 2HVS-RQ-101A is highlighted, indicating that it is within the scope of LR and subject to aging management.

In LRA Table 2.0-1, the applicant identifies that the intended function of radiation shielding (SHD) is to reduce neutron or gamma radiation fluence. In LRA Table 2.3.3-25, Radiation Monitoring System Components Subject to Aging Management Review (AMR), the applicant only identifies the component type "radiation monitor" with intended functions of leakage boundary (spatial) and pressure boundary.

Justify the exclusion of the shielded enclosures for radiation detectors 2HVS-RQ-109B, 2HVS-RQ-109C, and 2HVS-RQ-101B from the scope of LR with an intended function of SHD.

### **Section 2.3.3.26 Reactor Plant Sample System**

#### **RAI-2.3.3.26-1 (Unit 1)**

On LR drawing 1-14A-1 at location G-6 for the sampling system, the applicant highlights radiation monitor RM ISS-100 as being within the scope of LR for 10 CFR 54.4(a)(2) for spatial concerns, (e.g., leakage, spray, pipe whip).

In LRA Table 2.3.3-26, the applicant identifies the component types that are subject to an AMR for the reactor plant sample system; however, the applicant does not identify "radiation monitor" as a component type. Radiation monitors should be included within the scope of LR and subject to an AMR for 10 CFR 54.4(a)(2) spatial concerns because they have an intended function of leakage boundary (spatial).

Justify the exclusion of the radiation monitor as a component type requiring an AMR with an intended function of leakage boundary (spatial) from LRA Tables 2.3.3-26 and 3.3.2-26.

### **Section 2.3.3.27 Reactor Plant Vents and Drains System**

#### **RAI 2.3.3.27-1 (Unit 2)**

On LR drawing 2-09-3, at various locations identified below, the applicant does not highlight ten tanks (shown as sumps) that house the sump pumps. The sump identification numbers and their drawing locations are as follows:

<u>Component</u>	<u>Location</u>
North Safeguards Area - 2DAS-TK201	B-1/2
Fuel Building - 2DAS-TK202	E/F-4/5
Northeast Auxiliary Building - 2DAS-TK203A	B-6/7
Southeast Auxiliary Building - 2DAS-TK203B	C-8-10
West Auxiliary Building - 2DAS-TK203C	E-9/10
North West Auxiliary Building - 2DAS-TK203D	G-6/7
Tunnel 2DAS-TK206	D-4/5
Decontamination Building 2DAS-TK207	E/F-1/2
South Safeguards Area 2DAS-TK208	D-1/2
Gaseous Waste Storage Vault 2DAS-TK221	E/F-3

In LRA Table 2.3.3-27, the applicant identifies the component type “tank” as subject to an AMR with an intended function of leakage boundary (spatial). Justify the exclusion of the above tanks (sumps) from the scope of LR.

### **Section 2.3.3.29 Security Diesel Generator System (Common)**

#### **RAI 2.3.3.29-1 (Common)**

In LRA Section 2.3.3.29, the applicant states that the security diesel generator system’s intended function is to provide power to station blackout and safe shutdown outdoor security perimeter lighting used for outdoor access/egress paths for Unit 1 and Unit 2. Therefore, the security diesel generator system is included within the scope of LR. On LR drawing 1-45F-1 for the security diesel generator system, the applicant highlights the security diesel generator fuel oil tank, NHS-TK-1, and the security diesel generator fuel oil day tank, NHS-TK-2, as being within the scope of LR for performing an intended function as defined in 10 CFR 54.4(a)(3). However, the applicant does not highlight the fuel oil tank fill line, vent line and flame arrestor; and the day tank vent line, at locations D4, D5, and C6, respectively. The vent lines and the flame arrestor support proper functioning of the fuel oil tanks and operation of the security diesel generator. The security diesel generator operability is necessary in order to meet its intended function for station blackout and fire protection.

Justify the exclusion of the above mentioned components from the scope of LR.

### **Section 2.3.3.30 Service Water System**

#### **RAI 2.3.3.30-1 (Unit 2)**

On LR drawing 2-30-1 for the service water pumps 2SWS-P21A, P21B, and P21C, and on LR drawing 2-30-1A for the standby service water pumps 2SWE-P21A and P21B, the applicant highlights the motors, the pumps, a ¾-inch line to a pump seal, and a 1-inch pipe entering and leaving the motors. The applicant highlights the components for performing an intended function as defined in 10 CFR 54.4(a)(1), (a)(2), or (a)(3). In LRA Table 2.3.3-30, the applicant includes the component type “pump casing” and “piping” as subject to an AMR. However, in LRA Table 2.3.3-30, the applicant does not include the component type motor housing or other

highlighted component types (e.g., heat exchanger and pump seal cooler). These components supply cooling water to the service water pump motors/seals and should be within the scope of LR with an intended function of “leakage boundary (spatial).”

Justify the exclusion of “motor housing” and other applicable component types serviced by this cooling water from LRA Table 2.3.3-30 as subject to an AMR.

### **Section 2.3.3.31 Solid Waste Disposal System**

#### **RAI 2.3.3.31-1 (Unit 1)**

On LR drawing 1-18-1, the applicant includes the note “functional locations tagged as boundary per TER 13287.”

In order to complete its review, the staff requests that the applicant describe and summarize TER 13287 with respect to its relationship to LR boundary drawings and LR scoping in accordance with 10 CFR 54.4.

### **Section 2.3.3.32 Supplementary Leak Collection and Release System**

#### **RAI 2.3.3.32-1 (Unit 2)**

On LR drawing 2-16-2, the applicant highlights the following flow elements: 2HVS-FE-22 (E-8), 2HVS-FE-27 (B-4), 2HVS-FE-26 (C-4), 2HVS-FE-25 (E-4), and 2HVS-FE-24 (F-4). However, in LRA Table 2.3.3-32, the applicant does not list component types such as “orifice,” which would include flow elements that are subject to an AMR.

Justify the exclusion of the component type “orifice” in LRA Table 2.3.3-32, from the scope of LR and subject to an AMR.

### **Section 2.3.4.1 Auxiliary Feedwater System**

#### **RAI 2.3.4.1-1 (Unit 1)**

On LR drawing 1-24-2, the applicant does not highlight the following components as within the scope of LR and subject to an AMR: piping and valve body up to valve 351 for PI 1FW-155 (location E-7); piping and valve body up to valve 364 for PI 1FW-156B (location F-5); piping and valve body up to valve 628 (location E-6). These components are in the same flow paths as other components, that are highlighted as within scope and perform a similar function to those listed in LRA Table 2.3.4-1 (i.e., bolting, piping, tubing, and valve body) that are subject to an AMR with an intended function of pressure boundary.

Justify the exclusion of these components from the scope of LR with an intended function of pressure boundary.

### **RAI 2.3.4.1-2 (Unit 1)**

In LRA Section 2.3.4.1, the applicant states that a separate dedicated auxiliary feedwater (AFW) pump FW-P-4 provides an alternate shutdown subsystem to the normal AFW system in the event of a fire in the AFW pump area. On license LR 1-24-3, the applicant highlights the flow path from turbine plant demineralized water tank WT-TK-11 to where the 4-inch dedicated AFW pump line ties into the 26-inch main feedwater line at location D-9 as within the scope of LR. On drawing 1-24-3, the applicant does not highlight components upstream of the piping connection at location D-9 (e.g., main feedwater piping, feedwater pump check valves, and first point feedwater heaters).

In order for the dedicated Unit 1 AFW system to meet its intended function of providing water to the steam generators in the event of a fire, that disables the primary AFW system pumps, the flow path must be capable of delivering the water to the steam. If there is a rupture of main feedwater piping between the main feedwater check valves (FW-001 and FW-002) and the piping junction of the four-inch dedicated AFW pump line, flow cannot be delivered to the steam generators. Hence, in the event of a failure of this piping the system intended function in accordance with 10 CFR 54.4(a)(3) for fire protection will not be met. Additionally, on Figure 4-4 of the Beaver Valley Power Station, Unit 1, Appendix R Report, the applicant shows the feedwater system Appendix R safe shutdown flow path. On Figure 4-4, the main feedwater pump check valves (FW-001 and FW-002) are shown as providing isolation for the dedicated AFW pump flow path to the steam generators.

Justify the exclusion of the main feedwater piping and components between the dedicated AFW pump pipe line to main feedwater line connection up to and including the main feedwater pump check valves (FW-001 and FW-002) from the scope of LR.

### **Section 2.3.4.6 Main Feedwater System**

#### **RAI 2.3.4.6-1 (Unit 2)**

On LR drawing 2-24-2A, the applicant shows the main feedwater regulating valves and bypass valves highlighted in blue, indicating that these valves are within scope of LR in accordance with 10 CFR 54.4(a)(2). In LRA Section 2.3.4.6, the applicant states that feedwater isolation valves, control valves, and control valve bypass valves will automatically close on receipt of a feedwater isolation signal to isolate main feedwater flow to the steam generators. In UFSAR, Section 15, the applicant states that the main feedwater control and bypass valves are required to close, following a main steam line break. In LRA Section 2.0, the applicant states, "The BVPS license renewal review methods are consistent with the approach recommended in Nuclear Energy Institute document NEI 95-10, *Industry Guidelines for Implementing the Requirements of 10 CFR 54 - The License Renewal Rule*, Revision 6." In accordance with NEI 95-10, these valves provide an isolation function and perform a safety-related function; therefore, these valves should be included within the scope of LR in accordance with 10 CFR 54.4(a)(1).

Include the main feedwater regulating valves and bypass valves within the scope for LR in accordance with 10 CFR 54.4(a)(1) or justify their exclusion. Evaluate attached piping and supports, along with surrounding components, for inclusion in scope in accordance with 10 CFR 54.4(a)(2).

### **RAI 2.3.4.6-2 (Unit 1)**

On license LR 1-24-1, the applicant shows the main feedwater regulating valves and bypass valves highlighted in red, which corresponds to components that are credited by the CLB for performing an intended function as defined in 10CFR 54.4 (a)(1), (a)(2), or (a)(3). This flow path is coincidental with an (a)(3) flow path.

Verify these valves are in scope for 10 CFR 54.4(a)(1).

### **Section 2.3.4.7 Main Steam System**

#### **RAI 2.3.4.7-1 (Unit 1)**

On LR drawing 1-21-1, at locations F-9, D-9, and B-9, the applicant highlights the 32-inch main steam headers in the Service Building up to an equivalent anchor location that appears to be short of the Service Building/Turbine Building boundary. In LRA Section 2.4.26, the applicant states that the Unit 1 Service Building is included within the scope of LR for 10 CFR 54.4(a)(1). In LRA Section 2.1.1.2.3, the applicant states that fluid-retaining, such as water, steam, oil or hydraulic liquids, for nonsafety-related systems and components that are located inside safety-related structures are included within the scope of LR for potential spatial interaction under criterion 10 CFR 54.4(a)(2). Since the Unit 1 Service Building is safety-related, the whole length of the 32-inch main steam headers in the Service Building should be within the scope of LR and subject to an AMR for potential spatial interaction under criterion 10 CFR 54.4(a)(2).

Verify that the whole 32-inch main steam piping is highlighted in the Service Building and included within the scope of LR, or justify its exclusion from the scope of LR and subject to an AMR.

### **Section 2.3.4.9 Steam Generator Blowdown System**

#### **RAI 2.3.4.9-1 (Unit 1)**

In LRA Section 2.3.4.9, the applicant states that an intended function of the steam generator blowdown system is that it contains components relied upon in the safety analyses or plant evaluations to demonstrate compliance with environmental qualification (EQ) regulations. In the Unit 1 UFSAR Section 10.3.8.3, the applicant identifies the following feature, "Reducing orifices (RO-BD-109A, B, and C) limit the energy release in those areas without ambient monitors so the environmental qualification envelope in those areas with vital equipment is maintained."

In LRA Table 2.3.4-9, the applicant identifies the component type "orifice" as being subject to an AMR with an intended function of leakage boundary (spatial). However, on LR drawing 1-25-1, at locations A-6 and B-6, these orifices are not highlighted as being included within the scope of LR for performing a function as defined in 10 CFR 54.4(a)(3), which would include the above identified function.

Justify the exclusion of these orifices from the scope of LR.

Letter to P. Sena from K. Howard, dated May 8, 2008

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