



FirstEnergy Nuclear Operating Company

Beaver Valley Power Station
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October 3, 2008
L-08-309

10 CFR 54

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:

Beaver Valley Power Station, Unit Nos. 1 and 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
Supplement to Reply to 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) and License Renewal Application Amendment No. 28

Reference 1 provided the FirstEnergy Nuclear Operating Company (FENOC) License Renewal Application (LRA) for the Beaver Valley Power Station (BVPS). Reference 2 requested additional information from FENOC regarding Section 2.4.22 of the BVPS LRA. Reference 3 provided the FENOC reply to Reference 2. Reference 4 provided supplemental information to the request for additional information (RAI) in Reference 2. During a conference call between FENOC and the U.S. Nuclear Regulatory Commission (NRC) on September 2, 2008, related to the FENOC reply in Reference 4, the NRC staff asked for supplemental information regarding NRC RAI 2.4.22-5. The Attachment to this letter provides that supplemental information.

During review of related RAIs, FENOC identified unrelated but necessary revisions to the BVPS LRA to provide clarification and consistency. The Enclosure to this letter provides Amendment No. 28 to the BVPS LRA.

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Clifford I. Custer, Fleet License Renewal Project Manager, at 724-682-7139.

A108
NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 3, 2008.

Sincerely,



Peter P. Sena III

References:

1. FENOC Letter L-07-113, "License Renewal Application," August 27, 2007.
2. NRC Letter, "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)," June 4, 2008
3. FENOC Letter L-08-211, "Reply to 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), License Renewal Application Amendment No. 18, and Revised License Renewal Boundary Drawing," July 24, 2008.
4. FENOC Letter L-08-269, "Supplement to Reply to 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) and License Renewal Application Amendment No. 22," August 22, 2008.

Attachment:

Second Supplement to Reply to Request for Additional Information Regarding Beaver Valley Power Station, Units 1 and 2, License Renewal Application, Section 2.4.22

Enclosure:

Amendment No. 28 to the BVPS License Renewal Application

cc: Mr. K. L. Howard, NRC DLR Project Manager
Mr. S. J. Collins, NRC Region I Administrator

cc: w/o Attachment or Enclosure
Mr. B. E. Holian, NRC DLR Director
Mr. D. L. Werkheiser, NRC Senior Resident Inspector
Ms. N. S. Morgan, NRC DORL Project Manager

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Mr. D. J. Allard, PA BRP/DEP Director
Mr. L. E. Ryan, PA BRP/DEP

ATTACHMENT
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Second Supplement to Reply to Request for Additional Information Regarding
Beaver Valley Power Station, Units 1 and 2,
License Renewal Application,
Section 2.4.22
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Section 2.4.22

Supplemental Information for Follow-up Question on RAI 2.4.22-5 (Item 13)
(Requested During Conference Call on September 2, 2008)

The Unit 1 and Unit 2 Water Relief Systems (for flood) each consist of open standpipes that extend into a nominal 4 inch thick porous concrete layer that exists beneath each unit's containment structure (included as part of the foundation for structural monitoring). The standpipes are considered "instrument pits" for the relief systems, since each contains level alarms to indicate to the control rooms if water is filling the standpipes. Since the normal water table is approximately 10 feet or more below the containment mat's founding elevation (680'-11"), an alarm would be produced in the event of a flood and unexpected leakage through the waterproof membrane that encloses the containment structure to elevation 730'-0" (Probable Maximum Flood level).

The Updated Final Safety Analysis Report (UFSAR) for each unit states that the water relief system acts "as a supplementary safety factor" to prevent build-up of water pressure behind the steel containment liner during a flood if the membrane fails. This is a condition that is unlikely to occur, since the porous layer is separated from the liner by the ten (10) feet thick concrete foundation mat. The mat contains multiple (7) keyways in each of its vertical joints. The standpipe/pit openings are outside of the containment wall, and separated from the liner by 54 inches of wall concrete. Seepage through the poured in-place concrete wall-mat joint during the relatively short duration of a flood is improbable. Furthermore, the level alarms being lower in the standpipes, would result in the identification of any water rising in the standpipes before it reached the wall base at the top of the mat (690'-11"). Pumps would then be used to remove the water.

The primary difference between the Unit 1 and Unit 2 Water Relief Systems is the configuration of the access to the standpipes that comprise the instrument pits. Each unit has two instrumented pits that extend from the top surface of the containment's base mat (690'-11") to the center of the porous concrete layer that exists beneath the mat. The pits are located entirely outside of the containments' 4'-6" thick, cylindrical wall, on the circumferential apron formed by the larger diameter base mat. The pits consist of a vertical length of 22 inch diameter pipe connected to a length of 6 inch diameter pipe that together extend through the 10 feet thick base mat to the center of the porous concrete layer. The 22 inch pipe is open at the top of the containment mat.

At Unit 1, access to each standpipe/pit is by way of a three-sided concrete shaft that abuts the containment walls outer surface; extending from the top of the mat (690'-11") vertically to nine (9) inches above grade (735'-9"). The apron upon which the bottom of the shaft sits is 42 inches wide. The shafts' above ground access openings are exposed to weather, and are covered by a removable concrete slab with flashing to reduce water intrusion.

At Unit 2, access to the standpipe openings is by way of adjoining, reinforced concrete walled rooms that abut the containment wall's outer surface. The rooms sit on a base slab apron that at this location is 105 inches wide. Access shafts exit through the rooms' ceilings and extend upward through soil and through the foundation slab of the Safeguards Building (718'-6"). The shaft upper opening is within the Safeguard Building's interior space and not exposed to weather.

As noted, both containment structures rest on a rubber membrane that is continuous and glued to the slab's perimeter, to the apron at 690'-11", and to the exterior containment wall surface up to an elevation of 730'-0". The membrane extends out around the access shafts at Unit 1, while it encircles the shafts at Unit 2. This means that the top five feet of the shaft at Unit 1 is in direct contact with soil (730'-0" to 735'-0"). For the upper five (5) feet, the Unit 1 shaft has compressible material between it and the containment's exterior surface.

At Unit 2, the membrane encircles the shaft until it enters the bottom of the Safeguards Building slab at elevation 714'-6".

At Unit 1, water has entered the instrument pits after prolonged or heavy rains, which causes the level alarm to activate in the control room. Operators then have the water removed using portable submersible pumps. It was concluded at the time of water accumulation that rain entered the shaft cover directly or through soil and then the shaft-containment interface joint, and accumulated in the pit at the shaft's bottom. An accumulation causes the alarm to activate. No slurry has been reported during water removal. Unit 2 has not experienced water intrusion.

The waterproof membranes that enclose the exterior of both containments below elevation 730'-0", are in-scope for license renewal, but have no aging effects due to their environments. The Electric Power Research Institute (EPRI) Structural Tools assigns aging of such elastomers to ultraviolet light, ionizing radiation, ozone, or extreme thermal conditions; none of which exists for the waterproof membranes at either unit. Therefore, there are no aging effects for the water proof membranes at either unit.

Consequently, it is concluded that Unit 2 will not experience normal wetting of its porous layer in the future, and that the calcium aluminate cement will not experience potential degradation. Unit 1 has a porous layer that uses conventional Portland cement, which will not degrade due to the wetting that occurs due to rainwater intrusion.

In conclusion, the lack of water in the instrument pits at Unit 2 assures that water is not affecting the liner. Flood water would be indicated in the control room as anticipated if the membrane failed. No aging effects exist for the membrane that would cause a membrane failure to occur during the period of extended operation. Unit 1 has rainwater accumulate intermittently; however, level alarms result in this water being identified and pumped out. Consequently, water is prevented from affecting the liner by its identification and removal while in the standpipes below the level of the top of the containment mat (and containment floor liner). Neither the Unit 1 porous layer nor membrane has aging mechanisms that would result in their failure during the period of extended operation.

**Supplemental Information for Follow-up Question on RAI 2.4.22-5 (Item 14)
Related to the Scoping of Containment Instrument Pit Monitoring Components
(Requested During Conference Call on September 2, 2008)**

The instrumentation (level alarms) in the emergency water relief pits is active equipment and not subject to aging management. The cables associated with the instruments are in-scope and are to be managed by the Beaver Valley Power Station License Renewal Application, Section B.2.11, Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements," program. There is no mechanical equipment associated with the subject instrument pits since accumulated water is removed using portable submersible pumps.

ENCLOSURE

Beaver Valley Power Station (BVPS), Unit Nos. 1 and 2

Letter L-08-309

**Amendment No. 28 to the
BVPS License Renewal Application**

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**License Renewal Application
Sections Affected**

2.4.7

2.4.26

The Enclosure identifies the correction by Affected License Renewal Application (LRA) Section, LRA Page No., and Affected Paragraph and Sentence. The count for the affected paragraph, sentence, bullet, etc. starts at the beginning of the affected Section or at the top of the affected page, as appropriate. Below each section the reason for the change is identified, and the sentence affected is printed in *italics* with deleted text ~~lined-out~~ and added text underlined.

<u>Affected LRA Section</u>	<u>LRA Page No.</u>	<u>Affected Paragraph and Sentence</u>
2.4.7	Page 2.4-18	Unit 2 Structure Intended Function, 10 CFR 54.4(a)(1)

During review of RAIs 2.4.15-01 and 2.4.33-01, FENOC noted that the LRA, Section 2.4.7, "Control Building (Unit 2 only)," structure description of the Unit 2 Control Building described a shielding function for the control room area that was not specifically identified as an intended function of the structure. The intended function listed below is added to the 10 CFR 54.4(a)(1) Intended Function subsection. This change does not result in any changes to component-level functions or Aging Management Review results.

- Ensure control room personnel exposure is limited to 5 REM for the duration of postulated accidents.

<u>Affected LRA Section</u>	<u>LRA Page No.</u>	<u>Affected Paragraph and Sentence</u>
2.4.26	Page 2.4-82	Unit 1 and Unit 2 Structure Intended Function, 10 CFR 54.4(a)(1)

During review of RAIs 2.4.15-01 and 2.4.33-01, FENOC noted that the LRA, Section 2.4.26, "Service Building," did not specifically indentify the shielding function for the control room area as an intended function of the structure. The intended function listed below is added to the 10 CFR 54.4(a)(1) Intended Function subsection. This change does not result in any changes to component-level functions or Aging Management Review results.

- Ensure control room personnel exposure is limited to 5 REM for the duration of postulated accidents.