



FirstEnergy Nuclear Operating Company

Beaver Valley Power Station  
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November 5, 2008  
L-08-332

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  
Supplemental 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. 30

The Reference provided the FirstEnergy Nuclear Operating Company (FENOC) License Renewal Application (LRA) for the Beaver Valley Power Station (BVPS). During a conference call held between FENOC and the Nuclear Regulatory Commission (NRC) on October 8, 2008, the NRC requested supplemental information related to LRA Section 4.6.1.1. This letter provides the requested supplemental information and Amendment No. 30 to the LRA.

The Attachment provides the FENOC reply to the NRC request for supplemental information. The Enclosure provides Amendment No. 30 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.

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 5, 2008.

Sincerely,

Kevin L. Ostrowski

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WR

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Reference:

FENOC Letter L-07-113, "License Renewal Application," August 27, 2007.

Attachment:

Supplemental Information Regarding Beaver Valley Power Station, Units 1 and 2,  
License Renewal Application, Section 4.6.1.1

Enclosure:

Amendment No. 30 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  
Mr. D. J. Allard, PA BRP/DEP Director  
Mr. L. E. Ryan, PA BRP/DEP

ATTACHMENT  
L-08-332

Supplemental Information Regarding  
Beaver Valley Power Station, Units 1 and 2,  
License Renewal Application,  
Section 4.6.1.1  
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**Section 4.6.1.1**

**During a conference call held on October 8, 2008 between FENOC and the NRC, it was agreed that clarification or corrections would be provided to address the following:**

- a) Expected stresses resulting from the 60-year anticipated operating basis earthquake were determined to be bounded by those due to the analyzed design basis earthquake (DBE) cycles.**
- b) 10 CFR 54.21(c)(1)(ii) was used to disposition the Unit 1 Containment Liner Fatigue TLAA.**
- c) DBE design cycles are not provided in Table 5.2-13 of the Unit 1 UFSAR.**

RESPONSE

- a) Expected stresses resulting from the 60-year anticipated operating basis earthquake were determined to be bounded by those due to the analyzed design basis earthquake (DBE) cycles.**

These design loads include 1000 cycles of pressure variation due to normal operations (startup and shutdown), 4000 cycles of temperature variation due to normal operations (startup and shutdown), and 20 cycles of design basis earthquake (DBE). The fatigue analysis determined the stress due to the combination of thermal, normal operating and DBE loadings. That combination was then considered as 4000 cycles of a fluctuation from the operating condition (including DBE) to the zero stress state in determining the cumulative usage factor (CUF). The 60-year anticipated occurrences of 150 pressure cycles, 600 temperature cycles and 150 operating basis earthquake (OBE) cycles are bounded by the 4000 analyzed cycles.

The LRA is amended to provide the above clarification.

- b) 10 CFR 54.21(c)(1)(ii) was used to disposition the Unit 1 Containment Liner Fatigue TLAA.**

The fatigue analysis determined the stress due to the combination of thermal, normal operating and DBE loadings. That combination was then considered as

4000 cycles of a fluctuation from the operating condition (including DBE) to the zero stress state in determining the CUF. The 60-year anticipated occurrences of 150 pressure cycles, 600 temperature cycles and 150 OBE cycles are bounded by the 4000 analyzed cycles. Therefore, no revision to the Unit 1 containment liner stress analysis was required.

The LRA is amended to change the TLAA disposition from 10 CFR 54.21(c)(1)(ii) to 10 CFR 54.21(c)(1)(i).

**c) DBE design cycles are not provided in Table 5.2-13 of the Unit 1 UFSAR.**

The Unit 1 containment liner stress analysis determines a fatigue usage factor based on specific design cyclic loads in accordance with paragraph N-415.2 of the 1968 Edition of ASME Section III. These design loads include 1000 cycles of pressure variation due to normal operations (startup and shutdown), 4000 cycles of temperature variation due to normal operations (startup and shutdown), and 20 cycles of DBE. As provided in Table 5.2-13 of the Unit 1 UFSAR, the stress allowables are established in accordance with ASME III paragraph N-415.1 or N-415.2.

In addition, the design loads of 1000 cycles of pressure variation due to normal operations (startup and shutdown), 4000 cycles of temperature variation due to normal operations (startup and shutdown), and 20 cycles of DBE are included in Appendix A, "Updated Final Safety Analysis Report Supplement," of the LRA.

No LRA change is required.

See the Enclosure to this letter for the revisions to the BVPS LRA.

**ENCLOSURE**

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

**Letter L-08-332**

**Amendment No. 30 to the  
BVPS License Renewal Application**

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**License Renewal Application  
Sections Affected**

Section 4.6.1.1

Section A.2.5.1

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>
Section 4.6.1.1	Page 4.6-1	Entire section

During a conference call held on October 8, 2008 between FirstEnergy Nuclear Operating Company (FENOC) and the U.S. Nuclear Regulatory Commission (NRC), it was agreed that clarification or corrections would be provided to Section 4.6.1.1 of the License Renewal Application (LRA) for BVPS. Section 4.6.1.1 is replaced in its entirety to read as follows:

The Unit 1 containment liner stress analysis determines a fatigue usage factor based on specific design cyclic loads in accordance with paragraph N-415.2 of the 1968 Edition of ASME Section III. These design loads include 1000 cycles of pressure variation due to normal operations (startup and shutdown), 4000 cycles of temperature variation due to normal operations (startup and shutdown), and 20 cycles of design basis earthquake (DBE). The fatigue analysis determined the stress due to the combination of thermal, normal operating and DBE loadings. That combination was then considered as 4000 cycles of a fluctuation from the operating condition (including DBE) to the zero stress state in determining the cumulative usage factor (CUF). The CUF was determined to be significantly less than 1.0.

The anticipated occurrences of these cycles are described in Table 5.2-13 of the Unit 1 UFSAR as follows:

- 150 cycles of loading due to the differential pressure between operating and atmospheric pressure are assumed on the basis of 2.5 refueling cycles per year on a 60-year span;
- 600 cycles of loading due to thermal expansion resulting when the liner is exposed to the differential temperature between operating and seasonal refueling temperatures are assumed on the basis of 10 such variations per year on a 60 year span;
- 150 cycles of operating basis earthquake (OBE) is an assumed number of cycles of this type of earthquake for a 60 year span.

As shown above the 60-year anticipated occurrences of pressure cycles, temperature cycles and OBE cycles are bounded by the 4000 analyzed cycles. Therefore, the Unit 1 Containment liner fatigue TLAA has been dispositioned in accordance with 10 CFR 54.21(c)(1)(i).

~~The Unit 1 Containment liner stress analysis determines a fatigue usage factor based on specific design cyclic loads in accordance with paragraph N-415.2 of the 1968 Edition of ASME Section III. These design loads include 1000 cycles of pressure variation due to normal operations (startup and shutdown), 4000 cycles of temperature variation due to normal operations (startup and shutdown), and 20 cycles of design basis earthquake. The usage factor for the liner was determined to be significantly less than 1.0. The anticipated occurrences of these cycles are described in Table 5.2-13 of the Unit 1 UFSAR as follows:~~

- ~~• 150 cycles of loading due to the differential pressure between operating and atmospheric pressure are anticipated on the basis of 2.5 refueling cycles per year on a 60-year span;~~
- ~~• 600 cycles of loading due to thermal expansion resulting when the liner is exposed to the differential temperature between operating and seasonal refueling temperatures are anticipated on the basis of 10 such variations per year on a 60-year span; and,~~
- ~~• 150 cycles of operating basis earthquake, which is an assumed number of cycles of this type of earthquake for a 60-year span.~~

~~As shown above, the design cycles of the Unit 1 Containment liner bound the anticipated pressure and temperature cycles expected through the period of extended operation. The expected stresses resulting from the 60-year anticipated operating basis earthquake cycles were determined to be bounded by those due to the analyzed design basis earthquake cycles. Therefore, the Unit 1 Containment liner fatigue TLAAs have been dispositioned in accordance with 10 CFR 54.21(c)(1)(ii).~~

<u>Affected LRA Section</u>	<u>LRA Page No.</u>	<u>Affected Paragraph and Sentence</u>
Section A.2.5.1	Page A.2-12	Entire section

During a conference call held on October 8, 2008 between FENOC and the NRC, it was agreed that clarification or corrections would be provided to Section 4.6.1.1 of the LRA for BVPS. Associated Section A.2.5.1 is replaced in its entirety to read as follows:

The Unit 1 containment liner stress analysis determines a fatigue usage factor based on specific design cyclic loads in accordance with paragraph N-415.2 of the 1968 Edition of ASME Section III. These design loads include 1000 cycles of pressure variation due to normal operations (startup and shutdown), 4000 cycles of temperature variation due to normal operations (startup and shutdown), and 20 cycles of design basis earthquake (DBE). The fatigue analysis determined the stress due to the combination of thermal, normal operating and DBE loadings. That combination was then considered as 4000 cycles of a fluctuation from the operating condition (including DBE) to the zero stress state in determining the cumulative usage factor (CUF). The CUF was determined to be significantly less than 1.0.

The anticipated occurrences of these cycles are described in Table 5.2-13 of the Unit 1 UFSAR as follows:

- 150 cycles of loading due to the differential pressure between operating and atmospheric pressure are assumed on the basis of 2.5 refueling cycles per year on a 60-year span;
- 600 cycles of loading due to thermal expansion resulting when the liner is exposed to the differential temperature between operating and seasonal refueling temperatures are assumed on the basis of 10 such variations per year on a 60 year span;
- 150 cycles of operating basis earthquake (OBE) is an assumed number of cycles of this type of earthquake for a 60 year span.

As shown above the 60-year anticipated occurrences of pressure cycles, temperature cycles and OBE cycles are bounded by the 4000 analyzed cycles. Therefore, the Unit 1 Containment liner fatigue TLAA has been dispositioned in accordance with 10 CFR 54.21(c)(1)(i).

~~The Unit 1 Containment liner stress analysis determines a fatigue usage factor based on specific design cyclic loads in accordance with paragraph N-415.2 of the 1968 Edition of ASME Section III. These design loads include 1000 cycles of pressure variation due to normal operations (startup and shutdown), 4000 cycles of temperature variation due to normal operations (startup and shutdown), and 20 cycles of design basis earthquake. The usage factor for the liner was determined to be significantly less than 1.0. The anticipated occurrences of these cycles are described in Table 5.2-13 of the Unit 1 UFSAR as follows:~~

- ~~• 150 cycles of loading due to the differential pressure between operating and atmospheric pressure are anticipated on the basis of 2.5 refueling cycles per year on a 60-year span;~~
- ~~• 600 cycles of loading due to thermal expansion resulting when the liner is exposed to the differential temperature between operating and seasonal refueling temperatures are anticipated on the basis of 10 such variations per year on a 60-year span; and,~~
- ~~• 150 cycles of operating basis earthquake, which is an assumed number of cycles of this type of earthquake for a 60-year span.~~

~~As shown above, the design cycles of the Unit 1 Containment liner bound the anticipated pressure and temperature cycles expected through the period of extended operation. The expected stresses resulting from the 60-year anticipated operating basis earthquake cycles were determined to be bounded by those due to the analyzed design basis earthquake cycles. Therefore, the Unit 1 Containment liner fatigue TLAA has been dispositioned in accordance with 10 CFR 54.21(c)(1)(ii).~~