



FirstEnergy Nuclear Operating Company

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May 25, 2012
L-12-185

10 CFR 54

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

SUBJECT:

Davis-Besse Nuclear Power Station, Unit No. 1
Docket No. 50-346, License Number NPF-3
Supplemental Reply to Request for Additional Information for the Review of the
Davis-Besse Nuclear Power Station, Unit No. 1, License Renewal Application
(TAC No. ME4640) and License Renewal Application Amendment No. 26

By letter dated August 27, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102450565), FirstEnergy Nuclear Operating Company (FENOC) submitted an application pursuant to Title 10 of the *Code of Federal Regulations*, Part 54 for renewal of Operating License NPF-3 for the Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS). By letter dated August 11, 2011 (ML11216A236), the Nuclear Regulatory Commission (NRC) issued request for additional information (RAI) 4.3.2.3.2-1 – (Supplement), to complete its review of the License Renewal Application (LRA). By letter dated October 7, 2011 (ML11285A064), FENOC responded to the RAI by providing a commitment to perform a fatigue evaluation of selected Class 1 valves and submit an amendment to the LRA.

The actions described in the commitment have been completed. The Attachment provides a supplemental response to NRC RAI 4.3.2.3.2-1 – (Supplement), including a description of the Class 1 valve fatigue evaluations performed and results obtained. The NRC request is shown in bold text followed by the FENOC response.

The Enclosure provides Amendment No. 26 to the DBNPS LRA.

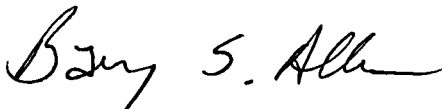
AIUS
NRC

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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 May 25, 2012.

Sincerely,

A handwritten signature in black ink, appearing to read "Barry S. Allen". The signature is fluid and cursive, with the first name "Barry" being more prominent than the last name "Allen".

Barry S. Allen

Attachment:

Supplemental Reply to Request for Additional Information for the Review of the Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS), License Renewal Application, Section 4.3.2

Enclosure:

Amendment No. 26 to the DBNPS License Renewal Application

cc: NRC DLR Project Manager
NRC Region III Administrator

cc: w/o Attachment or Enclosure
NRC DLR Director
NRR DORL Project Manager
NRC Resident Inspector
Utility Radiological Safety Board

Attachment
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Supplemental Reply to Request for Additional Information for the Review of the
Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS), License Renewal Application,
Section 4.3.2
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Section 4.3.2

Question RAI 4.3.2.3.2-1 – (Supplement)

Background:

By letter dated June 22, 2011, the applicant responded to RAI 4.1-1 regarding cumulative usage factor (CUF) or I_t fatigue analyses for Class 1 valves. In its response to RAI 4.1-1, Request 1, Part A, the applicant identified 12 large bore Class 1 valves (i.e., valves with nominal pipe sizes in excess of 4-inches) that should have received CUF or I_t fatigue analyses in accordance with the design codes (i.e., 1971 or more recent Editions of the ASME Code Section III, or the 1968 Edition of the Draft ASME Pump and Valve Code for Nuclear Power Plants). The applicant provided Commitment No. 46 to complete the following, prior to April 22, 2015:

FENOC commits to perform a fatigue evaluation in accordance with the requirements of the ASME Code of record for the Davis-Besse Class 1 valves that are greater than 4 inches nominal pipe size. The applicable valve identification numbers are CF28, CF29, CF30, CF31, DH76, DH77, DH11, DH12, DH1A, DH1B, DH21, and DH23.

LRA Section 4.3.2.3.2, as amended by letter dated June 22, 2011, states that the fatigue analyses for these 12 referenced large bore Class 1 valves are as TLAAs and are dispositioned in accordance with Title 10 of the Code of Federal Regulations 54.21(c)(1)(iii), that the effects of fatigue on Class 1 valves greater than 4 inches diameter nominal pipe size will be managed for the period of extended operation by the Fatigue Monitoring Program. LRA Section 4.3.2.3.2 also states that the issue with the missing CUF or I_t calculations for the 12 referenced large bore Class 1 valves has been entered into the applicant's Corrective Actions Program.

Issue:

The information provided by the applicant in letter of June 22, 2011, did not provide information regarding whether the applicant had any ASME Code, Section III NB-3222.4(d) fatigue waiver assessments (or equivalent waiver assessments permitted by the 1968 Draft ASME Pump and Valve Code) for the 12 large bore Class 1 valves referenced in Commitment No. 46. Therefore, the

staff requests additional information regarding whether fatigue calculations are required for these valves.

The staff is concerned that without the CUF or I_t analyses or an appropriate fatigue waiver or exemption for these 12 large bore Class 1 valves, the staff would not be able to evaluate whether the aging effects will be appropriately managed by the commitment.

Request:

Provide justification for not having the analyses for staff review as part of the LRA, or provide your appropriate fatigue waiver or fatigue exemption bases for not having such analyses.

RESPONSE RAI 4.3.2.3.2-1 - (Supplement)

In response to RAI 4.3.2.3.2-1 – (Supplement) submitted by letter dated October 7, 2011 (ML11285A064), FENOC provided the following commitment:

FENOC will perform a fatigue evaluation in accordance with the requirements of the ASME Code of record for the Davis-Besse Class 1 valves that are greater than 4 inches diameter nominal pipe size. The applicable valve identification numbers are CF28, CF29, CF30, CF31, DH76, DH77, DH11, DH12, DH1A, DH1B, DH21 and DH23. LRA Sections 4.3.2.3.2 and A.2.3.2.13, both titled "Class 1 Valves Fatigue," will be revised to include the results of the fatigue evaluations, and these changes will be submitted as an amendment to the Davis Besse LRA no later than May 31, 2012.

The actions described in the commitment have been completed. This supplemental response to RAI 4.3.2.3.2-1 – (Supplement) addresses the fatigue evaluation results of the Davis-Besse Class 1 valves that are greater than 4 inches diameter nominal pipe size (valve identification numbers CF28, CF29, CF30, CF31, DH76, DH77, DH11, DH12, DH1A, DH1B, DH21 and DH23) and the associated changes to License Renewal Application (LRA) Sections 4.3.2.3.2 and A.2.3.2.13.

Fatigue analyses were prepared for the subject Class 1 valves in accordance with paragraph NB-3550 of ASME Code Section III, 1974 Edition with Addenda through the Summer of 1976, and were reconciled to the valve construction code year. The cumulative usage factors (CUFs) calculated for the subject Class 1 valves are based on nuclear steam supply system design transients and, as shown in the table below, are less than 1.0. The number of occurrences of design transients is tracked by the Fatigue Monitoring Program to ensure that action is taken before the design cycles are reached. Therefore, the effects of fatigue on Class 1 valves greater than 4 inches diameter

nominal pipe size (NPS) will be managed for the period of extended operation by the Fatigue Monitoring Program in accordance with 10 CFR 54.21(c)(1)(iii).

<i>Valve ID</i>	<i>Size (dia. NPS) & Type</i>	<i>Construction Code Year</i>	<i>Description</i>	<i>Maximum CUF</i>
CF28	14 inch swing check	1971 w/Addenda thru Winter 1972	Core Flood – core flood tank discharge line stop check isolation valve	0.02839
CF29				
CF30				
CF31				
DH11	12 inch gate	1968 Draft Pump & Valve	Reactor Coolant System to Decay Heat – containment isolation valve	0.14594
DH12				
DH21	8 inch gate	1971 w/Addenda thru Winter 1972	Reactor Coolant System to Decay Heat – containment isolation valve bypass line isolation valve	0.02732
DH23				
DH76	10 inch piston check	1971 w/Addenda thru Winter 1972	Low Pressure Injection to Reactor Coolant System – stop check isolation valve	0.14099
DH77				
DH1A	10 inch gate	1968 Draft Pump & Valve	Low Pressure Injection – outside containment isolation valve	0.18261
DH1B				

LRA Sections 4.3.2.3.2 and A.2.3.2.13 are revised to include the results of the fatigue evaluations.

See the Enclosure to this letter for the revision to the DBNPS LRA.

Enclosure

Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS)

Letter L-12-185

**Amendment No. 26 to the
DBNPS License Renewal Application**

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**License Renewal Application
Sections Affected**

Section 4.3.2.3.2

Section A.2.3.2.13

The Enclosure identifies the change to the License Renewal Application (LRA) by Affected 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>
4.3.2.3.2	Pages 4.3-16 and 4.3-17	Entire Section

In response to RAI 4.3.2.3.2-1 - (Supplement), LRA Section 4.3.2.3.2, "Class 1 Valves Fatigue," previously revised by FENOC letter dated October 7, 2011 (ML11285A064), is replaced in its entirety, to read as follows:

4.3.2.3.2 Class 1 Valves Fatigue

The ASME Code requires a fatigue evaluation for Class 1 valves greater than 4 inches diameter nominal pipe size or for valves less than or equal to 4 inches in nominal pipe size if specified by the owner's design specification. The Davis-Besse purchasing specifications did not require a fatigue analysis for Class 1 valves less than or equal to 4 inches in nominal pipe size. Therefore, only valves greater than 4 inches diameter nominal pipe size require a fatigue analysis. Piping and instrumentation diagrams (P&IDs) were reviewed to identify Class 1 valves of greater than 4 inches diameter nominal pipe size. There were 12 valves of greater than 4 inches diameter nominal pipe size that were identified as a result of this effort.

Fatigue analyses were prepared for the subject Class 1 valves in accordance with paragraph NB-3550 of ASME Code Section III, 1974 Edition with Addenda through the Summer of 1976 and were reconciled to the valve construction code year.

Since ASME Code fatigue analyses evaluate an explicit number and type of thermal and pressure transients that are postulated to envelope the number of occurrences possible during the design life of the plant, these fatigue analyses are time-limited aging analyses (TLAAs) and therefore, are required to be evaluated in accordance with 10 CFR 54.21(c)(1).

The cumulative usage factors calculated for the subject Class 1 valves are based on nuclear steam supply system design transients and, as shown in the table below, are less than 1.0. The number of occurrences of design transients is tracked by the Fatigue Monitoring Program to ensure that action is taken before the design cycles are reached. Therefore, the effects of fatigue on Class 1 valves greater than 4 inches diameter nominal pipe size (NPS) will be managed for the period of extended operation by the Fatigue Monitoring Program.

Valve ID	Size (dia. NPS) & Type	Construction Code Year	Description	Maximum CUF
CF28	14 inch swing check	1971 w/Addenda thru Winter 1972	Core Flood – core flood tank discharge line stop check isolation valve	0.02839
CF29				
CF30				
CF31				
DH11	12 inch gate	1968 Draft Pump & Valve	Reactor Coolant System to Decay Heat – containment isolation valve	0.14594
DH12				
DH21	8 inch gate	1971 w/Addenda thru Winter 1972	Reactor Coolant System to Decay Heat – containment isolation valve bypass line isolation valve	0.02732
DH23				
DH76	10 inch piston check	1971 w/Addenda thru Winter 1972	Low Pressure Injection to Reactor Coolant System – stop check isolation valve	0.14099
DH77				
DH1A	10 inch gate	1968 Draft Pump & Valve	Low Pressure Injection – outside containment isolation valve	0.18261
DH1B				

Disposition: 10 CFR 54.21(c)(1)(iii) The effects of fatigue on Class 1 valves greater than 4 inches diameter nominal pipe size will be managed for the period of extended operation by the Fatigue Monitoring Program.

<u>Affected LRA Section</u>	<u>LRA Page No.</u>	<u>Affected Paragraph and Sentence</u>
A.2.3.2.13	Page A-41	Entire Section

In response to RAI 4.3.2.3.2-1 - (Supplement), LRA Section A.2.3.2.13, "Class 1 Valves Fatigue," previously revised by FENOC letter dated October 7, 2011 (ML11285A064), is replaced in its entirety, to read as follows:

A.2.3.2.13 Class 1 Valves Fatigue

The ASME Code requires a fatigue evaluation for Class 1 valves greater than 4 inches diameter nominal pipe size or for valves less than or equal to 4 inches in nominal pipe size if specified by the owner's design specification. The Davis-Besse purchasing specifications did not require a fatigue analysis for Class 1 valves less than or equal to 4 inches in nominal pipe size. Therefore, only valves greater than 4 inches diameter nominal pipe size require a fatigue analysis. Piping and instrumentation diagrams (P&IDs) were reviewed to identify Class 1 valves of greater than 4 inches diameter nominal pipe size. There were 12 valves of greater than 4 inches diameter nominal pipe size that were identified as a result of this effort.

Fatigue analyses were prepared for the subject Class 1 valves in accordance with paragraph NB-3550 of ASME Code Section III, 1974 Edition with Addenda through the Summer of 1976 and were reconciled to the valve construction code year.

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The cumulative usage factors calculated for the subject Class 1 valves are based on nuclear steam supply system design transients and, as shown in the table below, are less than 1.0. The number of occurrences of design transients is tracked by the Fatigue Monitoring Program to ensure that action is taken before the design cycles are reached. Therefore, the effects of fatigue on Class 1 valves greater than 4 inches diameter nominal pipe size (NPS) will be managed for the period of extended operation by the Fatigue Monitoring Program in accordance with 10 CFR 54.21(c)(1)(iii).

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