

June 24, 2011
L-11-188

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
Reply to Request for Additional Information for the Review of the Davis-Besse Nuclear Power Station, Batch 4 (TAC No. ME4640), and License Renewal Application Amendment No. 11

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 May 19, 2011 (ADAMS Accession No. ML11132A203), the Nuclear Regulatory Commission (NRC) requested additional information to complete its review of the License Renewal Application (LRA).

By letter dated April 15, 2011 (ADAMS Accession No. ML11110A088), FENOC responded to several previous RAIs, including RAI 2.3.3.11-01 and RAI 2.3.3.12-01. By letter dated June 3, 2011 (FENOC Letter No. L-11-166), FENOC responded to several previous RAIs, including RAI 3.1.70-1. During a conference call with the NRC staff on June 15, 2011, FENOC agreed to provide clarifying information to the above-mentioned three RAIs.

The Attachment provides the FENOC reply to the NRC request for additional information. The NRC request is shown in bold text followed by the FENOC response. The Enclosure provides Amendment No. 11 to the DBNPS 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.

AI45
NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 24, 2011.

Sincerely,



Kendall W. Byrd
Director, Site Performance Improvement

Attachment:

Reply to Request for Additional Information for the Review of the Davis-Besse Nuclear Power Station – Batch 4, License Renewal Application Sections 2.3.3, 3.1, 3.2.2.2.6, B.1.4 and B.2.4

Enclosure:

Amendment No. 11 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

Reply to Request for Additional Information for the Review of the
Davis-Besse Nuclear Power Station, Unit No. 1, License Renewal Application,
Sections 2.3.3, 3.1, 3.2.2.2.6, B.1.4 and B.2.4
Page 1 of 10

Section B.1.4

Question RAI B.1.4-1

Background:

Pursuant to Title 10 of the Code of Federal Regulation (CFR) 54.21(a)(3), a license renewal applicant is required to demonstrate that the effects of aging on structures and components subject to an aging management review (AMR) are adequately managed so that their intended functions will be maintained consistent with the current licensing basis for the period of extended operation. Section 3.0.1 of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2 (SRP-LR), defines an AMR as the identification of the materials, environments, aging effects, and aging management programs (AMPs) credited for managing the aging effects. In turn, SRP-LR Section A.1.2.3 defines an acceptable AMP as consisting of ten elements. Element 10, "operating experience," in part, is described in SRP-LR Section A.1.2.3.10, paragraph 1, as follows:

Consideration of future plant-specific and industry operating experience relating to aging management programs should be discussed. Reviews of operating experience by the applicant in the future may identify areas where aging management programs should be enhanced or new programs developed. An applicant should commit to a *future review of plant-specific and industry operating experience to confirm the effectiveness of its aging management programs or indicate a need to develop new aging management programs* (emphasis added). This information should provide objective evidence to support the conclusion that the effects of aging will be managed adequately so that the structure and component intended function(s) will be maintained during the period of extended operation.

In addition, 10 CFR 54.21(d) requires the application to contain a final safety analysis report (FSAR) supplement. This supplement must contain a summary description of the programs and activities for managing the effects of aging and the evaluation of time-limited aging analyses for the period of extended operation.

Based on its review of the Davis-Besse Nuclear Power Station, Unit 1, license renewal application (LRA), the staff determined that Section B.1.4 provides a general description of how the applicant gathered and considered operating

experience in preparing its LRA, and Sections B.2.1 through B.2.40 summarize the specific operating experience considered for each AMP.

Issue:

Although LRA Sections B.1.4 and B.2.1 through B.2.40 describe how the applicant incorporated operating experience into its AMPs, they do not fully describe how the applicant will use future operating experience to ensure that the AMPs will remain effective for managing the aging effects during the period of extended operation. The main focus of these LRA sections is on how the applicant evaluated operating experience available at the time the application was prepared to justify the adequacy of its proposed AMPs. Some of the program descriptions, particularly those for new programs, contain statements indicating that future plant-specific and industry operating experience will be used to adjust the programs as appropriate. However, for the majority of AMPs, it is not clear whether the applicant currently has or intends to implement actions to monitor operating experience on an ongoing basis and use it to ensure the continued effectiveness of the AMPs. The LRA also does not state whether new AMPs will be developed, as necessary. Further, the majority of the AMP descriptions do not provide the staff reasonable assurance that ongoing operating experience reviews will continue to inform AMP updates for license renewal.

Request:

Describe the programmatic activities that will be used to continually identify aging issues, evaluate them, and, as necessary, enhance the AMPs or develop new AMPs for license renewal. In this description, address the following:

- Describe the sources of plant-specific and industry operating experience that are monitored on an ongoing basis to identify potential aging issues. Indicate whether these plant-specific sources require monitoring: corrective action program, system health reports, licensee event reports (LERs), and the results of inspections performed under the AMPs. Similarly, indicate whether these industry sources require monitoring: vendor recommendations, revisions to industry standards on which the AMPs are based, LERs from other plants, NRC Bulletins, Generic Letters, Regulatory Issue Summaries, Information Notices, Regulatory Guides, License Renewal Interim Staff Guidance, and revisions to NUREG-1801, "Generic Aging Lessons Learned (GALL) Report." Describe the criteria used to classify a particular piece of information as aging related and outline the training provided to plant personnel so that they can adequately make such classifications.**
- Describe how the identified aging issues are further evaluated to determine their potential impact on the plant aging management activities. Indicate whether the affected structures and components and their materials,**

environments, aging effects, aging mechanisms, and AMPs are identified and documented consistent with the methods used to prepare the LRA. Describe how the results of AMP inspections are considered to adjust the frequency of future inspections, establish new inspections, and ensure an adequate depth and breadth of component, material, environment, and aging effect combinations. Describe the records of these evaluations and indicate whether they are maintained in an auditable and retrievable form.

- **Describe the process and criteria used to ensure that the identified enhancements are implemented in a timely manner.**
- **Describe the administrative controls over these programmatic activities.**

Provide a summary description of these activities for the FSAR supplement required by 10 CFR 54.21(d). If enhancements for license renewal are necessary, also provide the updates for the FSAR supplement.

If such an operating experience program is determined to be unnecessary, provide a detailed explanation of the bases for this determination.

RESPONSE RAI B.1.4-1

FENOC currently has a procedurally controlled operating experience review process as required by NUREG-0737 item I.C.5. This process provides for the systematic identification and transfer of lessons learned from site and industry experience into fleet and station processes to prevent events and enhance the safety and reliability of FENOC operations. The process also shares lessons learned with other utilities to promote industry-wide safety and reliability. FENOC procedures for review of operating experience list a variety of sources and documents which are reviewed for operating experience, including Institute of Nuclear Power Operations (INPO) event reports and operating experience, NRC Information Notices, Regulatory Information Summaries, Regulatory changes and other information contained in the INPO daily operating experience download. Additionally, the Corrective Action Program is used to document the review and disposition of 10 CFR Part 21 reports, NRC Bulletins, Generic Letters and other correspondence which warrant specific action. Procedural direction also governs review of vendor reports and updates to vendor technical data.

The operating experience review process addresses conditions that might warrant a change to plant equipment or processes, without limiting the specific types of degradation or conditions to be considered. The process directs that operating experience be screened to determine whether further evaluation is required based on susceptibility to the condition, and to identify and assign appropriate reviewers. Reviewers evaluate the condition to determine whether, and what, actions may be needed to prevent similar events from occurring. Evaluations of operating experience are prioritized with due dates procedurally specified based on the potential significance

of the issue. Operating experience that potentially represents a condition adverse to quality is entered into the Corrective Action Program.

FENOC Program Managers and site program owners are utilized to ensure industry participation and awareness of program related operating experience. Periodic self-assessments are performed utilizing outside expertise where possible. FENOC Program Managers perform periodic benchmarking from a fleet perspective.

The operating experience review process is part of the current licensing basis. The current licensing basis will be maintained during the period of extended operation, which includes ongoing review and incorporation of operating experience.

FENOC considers the review of operating experience to be an element of all aging management programs, rather than a separate program. As such, no summary description of the process is needed in the USAR supplement. However, FENOC amends LRA Section B.1.4 to include the following text: "Existing FENOC processes require reviews of relevant site and industry operating experience and periodic benchmarking to ensure program enhancements are identified and implemented. Such ongoing reviews identify potential needs for aging management program revisions to ensure their effectiveness throughout the period of extended operation."

Additionally, FENOC provides a new license renewal future commitment to ensure that the current station operating experience review process includes future reviews of plant-specific and industry operating experience to confirm the effectiveness of the License Renewal aging management programs, to determine the need for programs to be enhanced, or indicate a need to develop new aging management programs.

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

Section B.2.4

Question RAI B.2.4-4

Background:

GALL AMP XI.M18, "Bolting Integrity," recommends preventive actions and inspections for managing the loss of preload aging effect for bolting within the scope of license renewal.

The applicant stated in LRA Tables 3.2.2-1, 3.2.2-3, 3.2.2-4, 3.3.2-5, 3.3.2-7, 3.3.2-8, 3.3.2-11, 3.3.2-14, 3.3.2-16, 3.3.2-18, 3.3.2-23, 3.3.2-24, 3.3.2-25, 3.3.2-26, 3.3.2-31, 3.4.2-1 that stainless steel bolts exposed to air with steam or water leakage (external) are being managed for loss of material and cracking by the Bolting

Integrity Program, but did not identify loss of preload as an applicable aging effect.

LRA AMP B.2.4, "Bolting Integrity Program," is stated to be an existing Davis-Besse program that is consistent with the GALL AMP XI.M18, "Bolting Integrity," with exceptions related to referenced guidelines and leakage detection, but no exceptions related to loss of preload are included.

Issue:

The LRA appears to provide contradictory information in regard to its consideration of loss of preload as an applicable aging effect for stainless steel bolts exposed to air with steam or water leakage (external). In addition, the LRA does not provide sufficient information to justify why loss of preload is not an applicable aging effect for stainless steel bolts exposed to air with steam or water leakage (external).

Request:

Clarify whether the stainless steel bolts exposed to air with steam or water leakage (external) are being managed for loss of preload. If this aging effect is being managed, provide additional information on how it will be managed during the period of extended operation. If loss of preload is not being managed for these components, provide justification for not managing this aging effect. In addition, if loss of preload is not being managed for these components, the staff would consider this to be an Exception to the recommendations of GALL AMP XI.M18 requiring an appropriate justification as to why loss of preload would not be of concern.

RESPONSE RAI B.2.4-4

Stainless steel bolts exposed to air are being managed for loss of preload by the Bolting Integrity Program. The presence of steam or water leakage in the air environment does not alter the need to manage for loss of preload, nor the program that will manage bolting integrity. LRA Tables 3.2.2-1, 3.2.2-3, 3.2.2-4, 3.3.2-5, 3.3.2-7, 3.3.2-8, 3.3.2-11, 3.3.2-14, 3.3.2-16, 3.3.2-18, 3.3.2-23, 3.3.2-24, 3.3.2-25, 3.3.2-26, 3.3.2-31, 3.4.2-1 each have rows for stainless steel bolts exposed to air that identify loss of preload as an applicable aging effect.

The Bolting Integrity Program includes periodic inspection of bolted closures and connections for indications of degradation such as leakage, loss of material due to corrosion, loss of preload, and cracking due to stress corrosion cracking. It also includes preventive measures to preclude or minimize loss of preload and cracking.

Section 3.2.2.2.6

Question RAI 3.2.2.2.6-2

Background:

SRP-LR, Rev. 2, Table 3.2-1, ID 4 and 7 state that stainless steel is susceptible to loss of material due to pitting and crevice corrosion, and cracking due to stress-corrosion cracking (SCC). In addition, SRP-LR, Rev. 2, Sections 3.2.2.2.3.2 and 3.2.2.2.6 state that stainless steel materials that are exposed to outdoor environments may be subjected to an environment containing sufficient halides (primarily chlorides) that would induce these aging effects such as, but not limited to, those within approximately 5 miles of a saltwater coastline, those within ½ mile of a highway which is treated with salt in the wintertime, those areas in which the soil contains more than trace chlorides, those plants having cooling towers where the water is treated with chlorine or chlorine compounds, and those areas subject to chloride contamination from other agricultural or industrial sources.

The LRA states in Tables 3.2.2-4 and 3.2.2-5 that stainless steel bolting exposed to air-outdoor (external) will be susceptible to loss of preload, but does not identify loss of material due to pitting and crevice corrosion, or cracking due to see as applicable aging effects.

Issue:

The staff notes that one or more of the environmental conditions could exist which would lead to stainless steel bolting being susceptible to loss of material due to pitting and crevice corrosion, and cracking due to see. However, the LRA does not identify loss of material due to pitting and crevice corrosion, or cracking due to SCC as applicable aging effects.

Request:

Provide additional information on why atmospheric chloride induced loss of material due to pitting and crevice corrosion, and cracking due to SCC are not considered to be applicable aging effects for stainless steel components exposed to outdoor-air. If it is determined that they are applicable aging affects, then provide additional information on how they will be managed.

RESPONSE RAI 3.2.2.2.6-2

The conditions described in the RAI exist such that for the stainless steel bolting, the air-outdoor environment may result in the aging effects of chloride induced loss of material due to pitting and crevice corrosion, and cracking due to SCC. Therefore, the

LRA is amended to credit the Bolting Integrity Program to manage loss of material and cracking of stainless steel bolting subject to an outdoor air environment. For components other than bolting, see the FENOC response to RAI B.2.2-2 contained in FENOC letter dated May 24, 2011 (ADAMS Accession No. ML11151A090).

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

Section 2.3.3

Question RAI 2.3.3.11-01

In LRA Section 2.1 the applicant states that its screening process was used to identify the passive, long-lived structures and components in the scope of license renewal and subject to an AMR. The staff confirms inclusion of all components subject to an AMR by reviewing component types within the license renewal boundary.

License renewal drawing LR-M010C Rev. 0, location K-11, shows a fluid level gage component that provides a pressure boundary function. This component type was not included in LRA Table 2.3.3-11, "Demineralized Water Storage System Components Subject to Aging Management Review."

The staff requests the applicant to justify the exclusion of the fluid level gage component type from LRA Table 2.3.3-11.

RESPONSE RAI 2.3.3.11-01

By letter dated April 15, 2011 (ADAMS Accession No. ML11110A088), FENOC provided the initial response to this RAI. The fluid level gage component type is added to LRA Table 2.3.3-11 and subject to aging management review. The initial response is superseded by this new response because the initial response was based on a misinterpretation of 10 CFR 54.21(a)(1)(i). The fluid level gage DB-LG3686 depicted on LR-M10C is in a line that serves a structural integrity function and is within the scope of license renewal as indicated by the highlighting. This level gage is a sight glass which acts as a pressure boundary to perform its structural integrity function. Unlike other instruments, this instrument has no moving parts; therefore it is not exempt from aging management review (AMR) as allowed by 10 CFR 54.21(a)(1)(i) for other water level indicators. Therefore the LRA is amended to include the level gage in LRA Table 2.3.3-11 and document the AMR of the level gage.

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

Question RAI 2.3.3.12-01

In LRA Section 2.1, the applicant states that its screening process was used to identify the passive, long-lived structures and components in the scope of license renewal and subject to an AMR. The staff confirms inclusion of all components subject to an AMR by reviewing component types within the license renewal boundary.

Drawings LR-OS041A1, location G-3, and LR-OS041A2, locations G-21, show sight glass components as in scope for license renewal. At locations G-7 and G-25 on the same drawings, flow glass components are shown as in scope for license renewal. The sight glass and flow glass components perform a pressure boundary function but were not included in LRA Table 2.3.3-12, "Emergency Diesel Generator System Components Subject to Aging Management Review."

The staff requests the applicant to justify the exclusion of the sight glass and flow glass components from LRA Table 2.3.3-12.

RESPONSE RAI 2.3.3.12-01

By letter dated April 15, 2011 (ADAMS Accession No. ML11110A088), FENOC provided the initial response to this RAI. The flow glass (flow gage) and sight glass (level gage) component types are added to LRA Table 2.3.3-12 and are subject to aging management review. The initial response is superseded by this new response because the initial response was based on a misinterpretation of 10 CFR 54.21(a)(1)(i). The sight glasses associated with DB-T121-1 and -2, and flow glasses DB-FG94A and DB-FG94B on Drawings LR OS041A1 and LR-OS041A2 are within the scope of license renewal as indicated by the highlighting. These level gages and flow gages are sight glasses which have a pressure boundary function. Unlike other instruments these instruments have no moving parts; therefore they are not exempt from aging management review (AMR) as allowed by 10 CFR 54.21(a)(1)(i) for other level and flow indicators. Therefore the LRA is amended to include the level and flow gages in LRA Table 3.2.3-12 and to document the AMR of the level and flow gages.

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

Section 3.1

Question RAI 3.1.1.70-1

GALL Report Rev. 1, item IV.C2-1 addresses Class 1 piping, fitting and branch connections less than nominal pipe size (NPS) 4, which are exposed to reactor coolant and subject to cracking due to stress corrosion cracking (SCC) and thermal and mechanical loading. It also recommends the ASME Section XI Inservice Inspection Subsections, IWB, IWC and IWD Program, Water Chemistry Program, and One-time Inspection of ASME Code Class 1 Small-bore Piping Program to manage the aging effect.

LRA Table 3.1.2-3, in Row Nos. 230 to 232 and 237 to 239, indicates that valve bodies less than 4 inches, made of cast austenitic stainless steel (CASS) and stainless steel respectively, are subject to cracking due to flaw growth, SCC and intergranular attack (IGA) in a borated reactor coolant environment. LRA Table 3.1.2-3 also indicates that the applicant will use the Inservice Inspection Program, pressure water reactor (PWR) Water Chemistry Program, and Small Bore Class 1 Piping Inspection Program to manage the aging effect. The LRA table further indicates that the valve bodies less than 4 inches are related to LRA Table 1 item 3.1.1-70 and consistent with GALL Report Rev. 1, item IV.C2-1.

LRA Section B.2.37 states that the Small Bore Class 1 Piping Inspection Program will detect and characterize cracking of small bore ASME Code Class 1 piping less than 4 inches NPS, which includes pipe, fitting, and branch connections.

LRA Section B.2.37 indicates that the scope of the Small Bore Class 1 Piping Inspection Program includes small-bore pipe, fitting and branch connections; however it does not discuss valve bodies. The staff noted that scope of components for the applicant's Small Bore Class 1 Piping Inspection Program does not include valve bodies and conflicts with the aging management review result to manage cracking in the CASS and stainless steel valve bodies less than 4 inches.

Clarify why the Small Bore Class 1 Piping Inspection Program is credited to manage cracking due to flaw growth, SCC and IGA of the stainless steel and CASS valve bodies less than 4 inches, when this program only includes small-bore pipe, fitting and branch connections. In addition, clarify how this program will manage this aging effect specific to stainless steel and CASS valve bodies less than 4 inches.

RESPONSE RAI 3.1.1.70-1

By letter dated June 3, 2011 (FENOC Letter No. L-11-166), FENOC provided the initial response to this RAI. A conference call with the NRC was conducted on June 15, 2011

that addressed the response to RAI 3.1.1.70-1. FENOC agreed to revise the response to show that small bore valves are not included in the small bore piping program.

The scope of the Small Bore Class 1 Piping Inspection Program, LRA Section B.2.37, includes pipe, fittings, and branch connections, and all full and partial penetration (socket) welds and does not include valve bodies. This conflicts with the aging management review results shown in LRA Table 3.1.2-3 that credit the Small Bore Class 1 Piping Inspection Program to manage cracking in CASS and stainless steel valve bodies less than 4 inches, stainless steel orifices less than 4 inches, stainless steel tubing and the stainless steel pressurizer relief nozzle safe end. Therefore, a correction is required to the LRA.

LRA Table 3.1.2-3 is revised to show that the Small Bore Class 1 Piping Inspection Program will not be credited for managing cracking of small bore valves, orifices, tubing or the pressurizer relief nozzle safe end. For these components, the aging effect of cracking due to flaw growth or stress corrosion cracking/intergranular attack will be managed by the Inservice Inspection Program and the PWR Water Chemistry Program.

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-11-188

Amendment No. 11 to the DBNPS License Renewal Application

Page 1 of 14

License Renewal Application Sections Affected

Table 2.3.3-11

Table 2.3.3-12

Table 3.1.2-3

Table 3.2.2-4

Table 3.2.2-5

3.3.2.1.11

3.3.2.1.12

Table 3.3.1

Table 3.3.2-11

Table 3.3.2-12

Table A-1

B.1.4

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.

Affected LRA Section **LRA Page No.** **Affected Paragraph and Sentence**

Table 2.3.3-11 **Page 2.3-80** **New Row**

The level gage for the Lab. demineralized water storage tank was determined to be subject to aging management review (AMR). The component type "Level Gage", however, is not addressed in LRA Table 2.3.3-11, "Demineralized Water Storage System Components Subject to Aging Management Review." In response to RAI 2.3.3.11-01, a new row for a "Level Gage" component type with an intended function of "Structural integrity" is added to LRA Table 2.3.3-11, as follows:

Component Type	Intended Function (as defined in Table 2.0-1)
<u>Level Gage</u>	<u>Structural integrity</u>

Affected LRA Section **LRA Page No.** **Affected Paragraph and Sentence**

Table 2.3.3-12 **Page 2.3-86** **New Rows**

The level gages associated with tanks DB-T121-1 and -2, and flow gages DB-FG94A and DB-FG94B were determined to be subject to aging management review (AMR). The component types "Level Gage" and "Flow Gage"; however, are not addressed in LRA Table 2.3.3-12, "Emergency Diesel Generators System Components Subject to Aging Management Review." In response to RAI 2.3.3.12-01, new rows for "Level Gage" and "Flow Gage" component types with the intended function of "Pressure boundary" are added to LRA Table 2.3.3-12, as follows:

Component Type	Intended Function (as defined in Table 2.0-1)
<u>Flow Gage</u>	<u>Pressure boundary</u>
<u>Level Gage</u>	<u>Pressure boundary</u>

Affected LRA Section LRA Page No. Affected Paragraph and Sentence

Table 3.1.2-3 Page 3.1-122 Various Rows

In response to RAI 3.1.1.70-1, Rows 42, 49, 126, 217, 232 and 239 of Table 3.1.2-3 are revised as follows:

Table 3.1.2-3 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
42	<i>Orifice < 4 inches <u>Not used</u></i>	<i>Pressure boundary</i>	<i>Stainless Steel</i>	<i>Borated reactor coolant (Internal)</i>	<i>Cracking-Flaw Growth, SCC/IGA</i>	<i>Small Bore Class 1 Piping Inspection</i>	<i>IV.C2-1</i>	<i>3.1.1-70</i>	<i>A 0102</i>
49	<i>Orifice < 4 inches <u>Not used</u></i>	<i>Throttling</i>	<i>Stainless Steel</i>	<i>Borated reactor coolant (Internal)</i>	<i>Cracking-Flaw Growth, SCC/IGA</i>	<i>Small Bore Class 1 Piping Inspection</i>	<i>IV.C2-1</i>	<i>3.1.1-70</i>	<i>A 0102</i>
126	<i>Pressurizer Relief Nozzle Safe End <u>Not used</u></i>	<i>Pressure boundary</i>	<i>Stainless Steel</i>	<i>Borated reactor coolant (Internal)</i>	<i>Cracking-Flaw Growth, SCC/IGA</i>	<i>Small Bore Class 1 Piping Inspection</i>	<i>IV.C2-1</i>	<i>3.1.1-70</i>	<i>G 0102</i>
217	<i>Tubing <u>Not used</u></i>	<i>Pressure boundary</i>	<i>Stainless Steel</i>	<i>Borated reactor coolant (Internal)</i>	<i>Cracking-Flaw Growth, SCC/IGA</i>	<i>Small Bore Class 1 Piping Inspection</i>	<i>IV.C2-1</i>	<i>3.1.1-70</i>	<i>G 0102</i>

Table 3.1.2-3 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
232	Valve Body < 4 inches Not used	<i>Pressure boundary</i>	<i>Cast Austenitic Stainless Steel</i>	<i>Borated reactor coolant (Internal)</i>	<i>Cracking-Flaw Growth, SCC/IGA</i>	<i>Small Bore Class 1 Piping Inspection</i>	<i>IV.C2-1</i>	<i>3.1.1-70</i>	<i>A 0102</i>
239	Valve Body < 4 inches Not used	<i>Pressure boundary</i>	<i>Stainless Steel</i>	<i>Borated reactor coolant (Internal)</i>	<i>Cracking-Flaw Growth, SCC/IGA</i>	<i>Small Bore Class 1 Piping Inspection</i>	<i>IV.C2-1</i>	<i>3.1.1-70</i>	<i>A 0102</i>

Affected LRA Section LRA Page No. Affected Paragraph and Sentence

Table 3.2.2-4 Page 3.2-93 4 New Rows

In response to RAI 3.2.2.2.6-2, to credit the Bolting Integrity Program to manage loss of material and cracking of stainless steel bolting subject to an outdoor air environment, new rows are added to Table 3.2.2-4 as follows:

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
	<u>Bolting</u>	<u>Pressure boundary</u>	<u>Stainless Steel</u>	<u>Air-outdoor (External)</u>	<u>Loss of material</u>	<u>Bolting Integrity</u>	<u>N/A</u>	<u>N/A</u>	<u>F</u>
	<u>Bolting</u>	<u>Structural integrity</u>	<u>Stainless Steel</u>	<u>Air-outdoor (External)</u>	<u>Loss of material</u>	<u>Bolting Integrity</u>	<u>N/A</u>	<u>N/A</u>	<u>F</u>
	<u>Bolting</u>	<u>Pressure boundary</u>	<u>Stainless Steel</u>	<u>Air-outdoor (External)</u>	<u>Cracking</u>	<u>Bolting Integrity</u>	<u>N/A</u>	<u>N/A</u>	<u>F</u>
	<u>Bolting</u>	<u>Structural integrity</u>	<u>Stainless Steel</u>	<u>Air-outdoor (External)</u>	<u>Cracking</u>	<u>Bolting Integrity</u>	<u>N/A</u>	<u>N/A</u>	<u>F</u>

Affected LRA Section LRA Page No. Affected Paragraph and Sentence

Table 3.2.2-5 Page 3.2-116 2 New Rows

In response to RAI 3.2.2.2.6-2, to credit the Bolting Integrity Program to manage loss of material and cracking of stainless steel bolting subject to an outdoor air environment, new rows are added to Table 3.2.2-5 as follows:

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
	<u>Bolting</u>	<u>Pressure boundary</u>	<u>Stainless Steel</u>	<u>Air-outdoor (External)</u>	<u>Loss of material</u>	<u>Bolting Integrity</u>	<u>N/A</u>	<u>N/A</u>	<u>F</u>
	<u>Bolting</u>	<u>Pressure boundary</u>	<u>Stainless Steel</u>	<u>Air-outdoor (External)</u>	<u>Cracking</u>	<u>Bolting Integrity</u>	<u>N/A</u>	<u>N/A</u>	<u>F</u>

<u>Affected LRA Section</u>	<u>LRA Page No.</u>	<u>Affected Paragraph and Sentence</u>
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3.3.2.1.11	Page 3.3-15	“Materials” subsection
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In response to RAI 2.3.3.11-01, the “Materials” subsection of Section 3.3.2.1.11 is revised to read:

Materials

The materials of construction for subject mechanical components of the Demineralized Water Storage System are:

- Glass
- Stainless steel
- Steel

<u>Affected LRA Section</u>	<u>LRA Page No.</u>	<u>Affected Paragraph and Sentence</u>
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3.3.2.1.12	Page 3.3-16	“Materials” subsection
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In response to RAI 2.3.3.12-01, the “Materials” subsection of Section 3.3.2.1.12 is revised to read:

Materials

The materials of construction for subject mechanical components of the Emergency Diesel Generators System are:

- Aluminum
- Copper alloy > 15% Zn
- Glass
- Stainless steel
- Steel

Affected LRA Section LRA Page No. Affected Paragraph and Sentence

Table 3.3.1 Page 3.3-111 Row 3.3.1-93 Discussion column

In response to RAs 2.3.3.11-01 and 2.3.3.12-01, the discussion column of row 3.3.1-93 of LRA Table 3.3.1, "Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801," is revised as follows:

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801					
Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-93	Glass piping elements exposed to air, air – indoor uncontrolled (external), fuel oil, lubricating oil, raw water, treated water, and treated borated water	None	None	NA – No AEM or AMP	Consistent with NUREG-1801. <i><u>No aging effects requiring management are identified for Although there are no glass piping elements that are exposed to <u>air</u>, <u>air-indoor controlled uncontrolled</u> (external), fuel oil, lubricating oil, raw water, treated water, or treated borated water, and subject to aging management review, This this item is also applied to glass filter housing viewports that are exposed to</u></i>

**Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems
 Evaluated in Chapter VII of NUREG-1801**

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
					<p><i>air-indoor uncontrolled (external) <u>and glass piping elements that are exposed to moist air (internal)</u>. No aging effects requiring management are identified.</i></p> <p><i>This <u>In addition, this</u> item is also applied to glass filter housing viewports <u>and glass piping elements</u> that are exposed to air-indoor uncontrolled (internal) where it was determined that the internal environment is the same as the external environment.</i></p>

Affected LRA Section LRA Page No. Affected Paragraph and Sentence

Table 3.3.2-11 Page 3.3-274 New Rows

In response to RAI 2.3.3.11-01, four new rows are added to LRA Table 3.3.2-11, "Aging Management Review Results – Demineralized Water Storage System," as follows:

Table 3.3.2-11 Aging Management Review Results – Demineralized Water Storage System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
	<u>Level Gage</u>	<u>Structural integrity</u>	<u>Glass</u>	<u>Air-indoor uncontrolled (Internal)</u>	<u>None</u>	<u>None</u>	<u>VII.J-8</u>	<u>3.3.1-93</u>	<u>A</u> <u>307</u>
	<u>Level Gage</u>	<u>Structural integrity</u>	<u>Glass</u>	<u>Moist air (Internal)</u>	<u>None</u>	<u>None</u>	<u>VII.J-13</u>	<u>3.3.1-93</u>	<u>A</u> <u>308</u> <u>332</u>
	<u>Level Gage</u>	<u>Structural integrity</u>	<u>Glass</u>	<u>Treated water (Internal)</u>	<u>None</u>	<u>None</u>	<u>VII.J-13</u>	<u>3.3.1-93</u>	<u>A</u>
	<u>Level Gage</u>	<u>Structural integrity</u>	<u>Glass</u>	<u>Air-indoor uncontrolled (External)</u>	<u>None</u>	<u>None</u>	<u>VII.J-8</u>	<u>3.3.1-93</u>	<u>A</u>

Affected LRA Section LRA Page No. Affected Paragraph and Sentence

Table 3.3.2-12 Page 3.3-284 New Rows

In response to RAI 2.3.3.12-01, nine new rows are added to LRA Table 3.3.2-12, "Aging Management Review Results – Emergency Diesel Generators System," as follows:

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
	<u>Flow Gage</u>	<u>Pressure boundary</u>	<u>Glass</u>	<u>Lubricating oil</u>	<u>None</u>	<u>None</u>	<u>VII.J-10</u>	<u>3.3.1-93</u>	<u>A</u>
	<u>Flow Gage</u>	<u>Pressure boundary</u>	<u>Glass</u>	<u>Air-indoor uncontrolled (External)</u>	<u>None</u>	<u>None</u>	<u>VII.J-8</u>	<u>3.3.1-93</u>	<u>A</u>
	<u>Flow Gage</u>	<u>Pressure boundary</u>	<u>Steel</u>	<u>Lubricating oil (Internal)</u>	<u>Loss of material</u>	<u>Lubricating Oil Analysis</u>	<u>VII.H2-20</u>	<u>3.3.1-14</u>	<u>A</u>
	<u>Flow Gage</u>	<u>Pressure boundary</u>	<u>Steel</u>	<u>Lubricating oil (Internal)</u>	<u>Loss of material</u>	<u>One-Time Inspection</u>	<u>VII.H2-20</u>	<u>3.3.1-14</u>	<u>A</u>
	<u>Flow Gage</u>	<u>Pressure boundary</u>	<u>Steel</u>	<u>Air-indoor uncontrolled (External)</u>	<u>Loss of material</u>	<u>External Surfaces Monitoring</u>	<u>VII.I-8</u>	<u>3.3.1-58</u>	<u>A</u>
	<u>Level Gage</u>	<u>Pressure boundary</u>	<u>Glass</u>	<u>Air-indoor uncontrolled (Internal)</u>	<u>None</u>	<u>None</u>	<u>VII.J-8</u>	<u>3.3.1-93</u>	<u>A</u> <u>307</u>

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
	<u>Level Gage</u>	<u>Pressure boundary</u>	<u>Glass</u>	<u>Moist air (Internal)</u>	<u>None</u>	<u>None</u>	<u>VII.J-13</u>	<u>3.3.1-93</u>	<u>A</u> <u>308</u> <u>332</u>
	<u>Level Gage</u>	<u>Pressure boundary</u>	<u>Glass</u>	<u>Treated water (Internal)</u>	<u>None</u>	<u>None</u>	<u>VII.J-13</u>	<u>3.3.1-93</u>	<u>A</u>
	<u>Level Gage</u>	<u>Pressure boundary</u>	<u>Glass</u>	<u>Air-indoor uncontrolled (External)</u>	<u>None</u>	<u>None</u>	<u>VII.J-8</u>	<u>3.3.1-93</u>	<u>A</u>

Affected LRA Section **LRA Page No.** **Affected Paragraph and Sentence**
Table A-1 **Page A-69** **New Commitment No. 43**

In response to RAI B.1.4-1, a new license renewal future commitment is added to LRA Table A-1, "Davis-Besse License Renewal Commitments," to read:

Table A-1				
Davis-Besse License Renewal Commitments				
Item Number	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
<u>43</u>	<u>Ensure that the current station operating experience review process includes future reviews of plant-specific and industry operating experience to confirm the effectiveness of the License Renewal aging management programs, to determine the need for programs to be enhanced, or indicate a need to develop new aging management programs.</u>	<u>Prior to April 22, 2017</u>	<u>FENOC Letter L-11-188</u>	<u>Response to NRC RAI from NRC Letter dated May 19, 2011</u>

<u>Affected LRA Section</u>	<u>LRA Page No.</u>	<u>Affected Paragraph and Sentence</u>
B.1.4	Page B.8	New final paragraph

In response to RAI B.1.4-1, the following new paragraph is appended to the end of Section B.1.4:

Existing FENOC processes require reviews of relevant site and industry operating experience and periodic benchmarking to ensure program enhancements are identified and implemented. Such ongoing reviews identify potential needs for aging management program revisions to ensure their effectiveness throughout the period of extended operation.