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September 8, 2008
L-08-262

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
License Renewal Application Amendment No. 23 (TAC Nos. MD6593 and MD6594) and Revised License Renewal Boundary Drawings

Reference 1 provided the FirstEnergy Nuclear Operating Company (FENOC) License Renewal Application (LRA) for the Beaver Valley Power Station (BVPS). Reference 2 provided LRA Boundary Drawings. During the U.S. Nuclear Regulatory Commission (NRC) Region I Inspection Procedure IP-71002 License Renewal Inspection held the weeks of June 23 and July 14, 2008, FENOC identified necessary revisions to the BVPS LRA and the LRA Boundary Drawings following questioning by the NRC Inspection Team. Enclosure A provides Amendment No. 23 to the BVPS LRA. Enclosure B provides revised BVPS LRA Boundary Drawings.

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 September 8, 2008.

Sincerely,

Peter P. Sena III

A108
NRR

References:
1. FENOC Letter L-07-113, "License Renewal Application," August 27, 2007.
2. FENOC Letter L-07-118, "License Renewal Application Boundary Drawings," August 27, 2007.

Enclosures:
A. Amendment No. 23 to the BVPS License Renewal Application
B. Revised BVPS License Renewal Application Boundary Drawings

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

cc: w/o Enclosures
Mr. J. E. Richmond, NRC Region I DRS/EB1
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

ENCLOSURE A

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

Letter L-08-262

Amendment No. 23 to the
BVPS License Renewal Application

License Renewal Application
Sections Affected

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Table 3.2.2-1	Table 3.3.2-29
Table 3.3.1	Table 3.3.2-30
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Table 3.3.2-5	Section 3.6.2.1
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Table 3.3.2-16	Table 3.6.2-1
Table 3.3.2-17	Appendix A Table of Contents
Table 3.3.2-18	Section A.1.10
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License Renewal Application
Sections Affected, cont.

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Section B.2.10	Section B.2.32
Section B.2.15	Section B.2.39

The Enclosure identifies the revision 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*.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table 3.2.1	**Page 3.2-24** **Page 3.2-25**	**Item No. 3.2.1-36, Discussion column** **Item No. 3.2.1-39, Discussion column** **Item No. 3.2.1-40, Discussion column**

LRA Table 3.2.1, "Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features," Item Numbers 3.2.1-36, 3.2.1-39 and 3.2.1-40, "Discussion" column, requires revision because the Open-Cycle Cooling Water System Program is revised to include a program exception (see the revision to LRA Section B.2.32 in this Enclosure). LRA Table 3.2.1, Item Numbers 3.2.1-36, 3.2.1-39 and 3.2.1-40, "Discussion" column, is revised to include:

Item Number	Discussion
3.2.1-36, 3.2.1-39 & 3.2.1-40	Consistent with NUREG-1801, *with program exception*.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table 3.2.2-1	**Pages 3.2-36 & 37**	**Row Nos. 30, 36 & 37, Notes column**

LRA Table 3.2.2-1, "Engineered Safety Features Systems – Containment Depressurization System – Summary of Aging Management Evaluation," Row Numbers 30, 36 and 37, require revision to change the "Notes" column because the Open-Cycle Cooling Water System Program is revised to include a program exception (see the revision to LRA Section B.2.32 in this Enclosure). LRA Table 3.2.2-1, Row Numbers 30, 36 and 37, "Notes" column, is revised to read:

Row No.	Aging Management Program	Notes
30, 36 & 37	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table 3.3.1	**Page 3.3-69**	**Item No. 3.3.1-19, Discussion column**
	Page 3.3-87	**Item No. 3.3.1-76, Discussion column**
	Page 3.3-88	**Item No. 3.3.1-77, Discussion column**
	Page 3.3-89	**Item No. 3.3.1-78, Discussion column**
	Page 3.3-90	**Item No. 3.3.1-79, Discussion column**
		Item No. 3.3.1-80, Discussion column
	Page 3.3-91	**Item No. 3.3.1-81, Discussion column**
	Page 3.3-92	**Item No. 3.3.1-82, Discussion column**
	Page 3.3-93	**Item No. 3.3.1-83, Discussion column**

LRA Table 3.3.1, "Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems," Item Numbers 3.3.1-19, and 3.3.1-76 through 3.3.1-83, "Discussion" column, requires revision because the Buried Piping and Tanks Inspection Program (Item Number 3.3.1-19) and the Open-Cycle Cooling Water System Program (Item Numbers 3.3.1-76 through 3.3.1-83) are revised to include program exceptions (see the revision to LRA Sections B.2.8 and B.2.32 in this Enclosure). LRA Table 3.3.1, Item Numbers 3.3.1-19, and 3.3.1-76 through 3.3.1-83, "Discussion" column, is revised to include:

Item Number	Discussion
3.3.1-76, 3.3.1-77, 3.3.1-78, 3.3.1-79, 3.3.1-81, 3.3.1-82, & 3.3.1-83	Consistent with NUREG-1801, *with program exception, and* with additional components and a different AMP for some components.
3.3.1-19 & 3.3.1-80	Consistent with NUREG-1801, *with program exception, and* with additional components.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Tables 3.3.2-XX	**[Listed below]**	**Row Nos. [Listed below], Notes column**

LRA Tables 3.3.2-XX (listed below) titled "Auxiliary Systems – [System Name] – Summary of Aging Management Evaluation," in Section 3.3, "Aging Management of Auxiliary Systems," with the row numbers listed below, require revision to change the "Notes" column because the Buried Piping and Tanks Inspection Program and the Open-Cycle Cooling Water System Program are revised to include a program exception (see the revision to LRA Sections B.2.8 and B.2.32 in this Enclosure). Therefore, the "Notes" column of the affected LRA Tables and rows is revised to read:

Table 3.3.2-1 Pages 3.3-105 & 107

Row No.	Aging Management Program	Notes
35, 36, 41, 49, 50 & 53	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~

Table 3.3.2-2 Pages 3.3-126, 127, 129, 131, & 132

Row No.	Aging Management Program	Notes
56, 59, 67, 68, 79, 80 & 85	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~
52 & 84	Open-Cycle Cooling Water System (B.2.32)	D ~~C~~

Table 3.3.2-5 Pages 3.3-205 through 207

Row No.	Aging Management Program	Notes
68 & 69	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~
61 & 74	Open-Cycle Cooling Water System (B.2.32)	D ~~C~~

Table 3.3.2-14 Pages 3.3-384 & 390

Row No.	Aging Management Program	Notes
47 & 76	Buried Piping and Tanks Inspection (B.2.8)	B ~~A~~
6	Buried Piping and Tanks Inspection (B.2.8)	D ~~C~~

Table 3.3.2-16 Pages 3.3-413, 414 & 416

Row No.	Aging Management Program	Notes
11, 20, 21, 30 & 33	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~
29	Open-Cycle Cooling Water System (B.2.32)	D ~~C~~

Table 3.3.2-17 Page 3.3-433

Row No.	Aging Management Program	Notes
71	Buried Piping and Tanks Inspection (B.2.8)	B ~~A~~

Table 3.3.2-18 Pages 3.3-443, 453, 454, 465 & 469

Row No.	Aging Management Program	Notes
81, 84, 173 & 204	Buried Piping and Tanks Inspection (B.2.8)	B ~~A~~
8	Buried Piping and Tanks Inspection (B.2.8)	D ~~C~~

Table 3.3.2-22 Pages 3.3-521, 523 & 531

Row No.	Aging Management Program	Notes
13, 23 & 60	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~

Table 3.3.2-24 Pages 3.3-549 & 550

Row No.	Aging Management Program	Notes
24 & 31	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~
30 & 34	Open-Cycle Cooling Water System (B.2.32)	D ~~C~~

Table 3.3.2-25 Pages 3.3-576 through 579, and 581 through 587

Row No.	Aging Management Program	Notes
30, 32, 40, 54, 59, 66, 70, 77, 82, 88, 92 & 103	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~
15, 26, 29, 31, 33 & 34	Open-Cycle Cooling Water System (B.2.32)	D ~~C~~

Table 3.3.2-28 Pages 3.3-653 through 657, and 659 through 675

Row No.	Aging Management Program	Notes
48 & 61	Buried Piping and Tanks Inspection (B.2.8)	B ~~A~~
17, 20, 24, 28, 31, 35, 39, 44, 50, 56, 64, 68, 70, 73, 76, 78, 79, 85, 88, 91, 95, 97, 99, 100, 103, 106, 109, 113, 116, 121, 126, 128, 133 & 138	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~
14	Open-Cycle Cooling Water System (B.2.32)	D ~~C~~

Table 3.3.2-29 Pages 3.3-676 & 688

Row No.	Aging Management Program	Notes
92	Buried Piping and Tanks Inspection (B.2.8)	B ~~A~~
3	Buried Piping and Tanks Inspection (B.2.8)	D ~~C~~

Table 3.3.2-30 Pages 3.3-695 through 713

Row No.	Aging Management Program	Notes
61	Buried Piping and Tanks Inspection (B.2.8)	B ~~A~~
16, 19, 24, 26, 31, 35, 39, 42, 46, 49, 56, 64, 66, 69, 71, 74, 77, 78, 80, 84, 86, 89, 90, 92, 95, 99, 102, 107, 112 & 118	Open-Cycle Cooling Water System (B.2.32)	B ~~A~~

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table 3.4.1	**Page 3.4-26**	**Item No. 3.4.1-11, Discussion column**
	Page 3.4-32	**Item No. 3.4.1-31, Discussion column**

LRA Table 3.4.1, "Summary of Aging Management Evaluations in Chapter VIII of NUREG-1801 for Steam and Power Conversion Systems," Item Numbers 3.4.1-11 and 3.4.1-31, "Discussion" column, require revision because the Buried Piping and Tanks Inspection Program (Item Number 3.4.1-11) and the Open-Cycle Cooling Water System Program (Item Number 3.4.1-31) are revised to include program exceptions (see the revision to LRA Sections B.2.8 and B.2.32 in this Enclosure). LRA Table 3.4.1, Item Numbers 3.4.1-11 and 3.4.1-31, "Discussion" column, is revised to include:

Item Number	Discussion
3.4.1-11	Consistent with NUREG-1801, *with program exception, and* with a different program assigned for one component.
3.4.1-31	Consistent with NUREG-1801 for a different component type (valves), *with program exception*.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table 3.4.2-1	**Page 3.4-51**	**Row No. 85, Notes column**
	Page 3.4-61	**Row No. 154, Notes column**

LRA Table 3.4.2-1, "Steam and Power Conversion Systems – Auxiliary Feedwater System – Summary of Aging Management Evaluation," Row Numbers 85 and 154, "Notes" column, require revision because the Buried Piping and Tanks Inspection Program (Row Number 85) and the Open-Cycle Cooling Water System Program (Row Number 154) are revised to include program exceptions (see the revision to LRA Sections B.2.8 and B.2.32 in this Enclosure). LRA Table 3.4.2-1, Row Numbers. 85 and154, "Notes" column, is revised to read:

Row No.	Aging Management Program	Notes
85	Buried Piping and Tanks Inspection (B.2.8)	B ~~A~~
154	Open-Cycle Cooling Water System (B.2.32)	D ~~C~~

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section 3.6.2.1	**Page 3.6-3**	**Aging Management Programs 5th Bullet**

LRA Section 3.6.2.1, "Materials, Environment, Aging Effects Requiring Management and Aging Management Programs," subsection "Aging Management Programs," 5th bullet, requires revision of the title of the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, which is being changed from a program consistent with NUREG-1801, "Generic Aging Lessons Learned (GALL)," Section XI.E3 (same title), to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). LRA Section 3.6.2.1, subsection "Aging Management Programs," 5th bullet, is revised to read:

- *Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements* ~~*Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements*~~ (Section B.2.21)

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table 3.6.1	**Page 3.6-10**	**Item No. 3.6.1-03, Discussion column**

LRA Table 3.6.1, "Summary of Aging Management Evaluations in Chapter VI of NUREG-1801 for Electrical and Instrumentation and Controls Components," Item Number 3.6.1-03, "Discussion" column, requires revision of the title of the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, which is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). FirstEnergy Nuclear Operating Company (FENOC) has confirmed that inaccessible medium-voltage cables within the scope of the new plant-specific program are suitable for operation in a submerged water environment. Therefore, no aging effect requiring management was identified for these cables. LRA Table 3.6.1, Item Number 3.6.1-03, "Discussion" column, is revised to read:

Item Number	Discussion
3.6.1-04	*No aging effect requiring management has been identified. However, these components have been conservatively included in the BVPS plant-specific Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10CFR50.49 Environmental Qualification Requirements (B.2.21) Program. This program includes testing and inspections of medium-voltage cables exposed to significant moisture and voltage.* ~~*Consistent with NUREG-1801.*~~ ~~*BVPS will manage the aging effects with the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.2.21) Program.*~~ ~~*This program includes inspection of medium-voltage cables exposed to significant moisture and voltage, and testing as required.*~~ In Table 3.6.2-1, reduced insulation resistance is considered equivalent to the aging effect listed for this item (breakdown of insulation).

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table 3.6.2-1	**Page 3.6-16**	**Row No. 4**
	Page 3.6-20	**New Plant-specific Note (Note 602)**

LRA Table 3.6.2-1, "Electrical and Instrumentation and Controls Components – Summary of Aging Management Evaluation," Row Number 4 and the "Plant-specific notes", require revision of the title of the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, which is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). FirstEnergy Nuclear Operating Company (FENOC) has confirmed that the all inaccessible medium-voltage cables within the scope of the new plant-specific program are suitable for operation in a submerged water environment. Therefore, no aging effect requiring management was identified for these cables. LRA Table 3.6.1, Row Number 4 and "Plant-specific notes", are revised to read:

Row No.	Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
4	Inaccessible medium-voltage (2kV to 35kV) cables (e.g., installed underground in conduit or direct buried) not subject to 10 CFR 50.49 EQ requirements	CE	Insulation material - various organic polymers	Adverse localized environment caused by exposure to moisture and voltage stress	*None* ~~*Reduced insulation resistance*~~	*Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.2.21)*	VI.A-4 (L-03)	3.6.1-04	*I* *602* ~~*A*~~

Row No.	Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
4, cont.						~~*Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.2.21)*~~			

Plant-specific notes

602. Based on a 2008 engineering evaluation, FENOC confirmed that all inaccessible medium-voltage cables within the scope of the Appendix B, Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program (B.2.21) are suitable for operation in a submerged environment. Therefore, no aging effect requiring management was identified for these cables.

LRA Table 3.6.2-1, Generic Note "E", contains a typographical omission, and is corrected to read:

Generic notes

E. Consistent with NUREG-1801 item for material, environment and aging effect, but a different aging management program is credited or NUREG-180*1* identifies a plant-specific aging management program.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Appendix A	**Page A-ii**	**Table of Contents, Item A.1.21**

LRA Appendix A, "Updated Final Safety Analysis Supplement," Table of Contents item A.1.21, requires revision of the title of the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, which is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). LRA Appendix A, Table of Contents item A.1.21, is revised to read:

A.1.21 *Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements* A.1-9

~~*Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program*.....A.1-9~~

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section A.1.10	**Page A.1-5**	**1st and 2nd Paragraphs**

LRA Section A.1.10, "Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program," requires revision to align this plant-specific program description with guidance provided in an NRC letter dated August 29, 2007, "Proposed License Renewal Interim Staff Guidance LR-ISG-2007-02: Changes To Generic Aging Lesson Learned (GALL) Report Aging Management Program (Amp) XI.E6, "Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements."" Also, the last sentence of the section requires correction to clarify that there is no Unit 1 metal enclosed bus subject to aging management review. LRA Section A.1.10 is revised to read:

A.1.10 Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program

The Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program is a new, plant-specific program that will focus on the metallic parts of the cable connection. This sampling program will be implemented and completed prior to the period of extended operation. A representative sample of electrical cable connection population subject to aging management review will be ~~*inspected or*~~ tested. Electrical connections covered under the EQ program, or connections inspected or tested as part of a preventative maintenance program will be excluded from aging management review. ~~*The program is a plant-specific alternate to NUREG-1801, XI.E6, "Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements."*~~

This sampling program provides a one-time inspection to ~~*verify*~~ *confirm* that the loosening of ~~*bolted*~~ *cable* connections due to thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation is not an aging issue that requires a periodic aging management program. The design of these connections accounts for the stresses associated with ohmic heating, thermal cycling, and dissimilar metal connections. Therefore, these stressors or mechanisms should not be a significant aging issue. However, confirmation of the lack of aging effects will be required. The factors to be considered for sample selection will be ~~*application*~~ *voltage level* (medium and low voltage), circuit loading (high loading), and location (high temperature, high

humidity, vibration, etc.). The technical basis for the sample selection will be documented. Any unacceptable conditions found during the inspection will be evaluated through the Corrective Action Program.

For Unit 2 only, the metallic parts of metal enclosed bus connections are managed by the Metal Enclosed Bus Program (Unit 2 only) [Section B.2.26] as delineated in NUREG-1801, XI.E4, "Metal Enclosed Bus," and are therefore not included within the scope of the program. There is no *in-scope* metal enclosed bus at Unit 1 *that requires aging management*.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section A.1.21	**Page A.1-9**	**Entire Section**

LRA Section A.1.21, "Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program," requires revision of the entire section, because the program is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). LRA Section A.1.21, is replaced in its entirety, and is revised to read:

A.1.21 *Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program*

The Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new plant-specific program that BVPS will implement prior to the period of extended operation.

The inaccessible medium-voltage cables not subject to10 CFR 50.49 environmental qualification requirements and within the scope of this program are suitable for submergence and therefore, no aging effect requiring management was identified for these cables.

The purpose of this aging management program will be to confirm that the aging effects caused by moisture and voltage stress are not occurring so that there is reasonable assurance that the cables will perform their intended function in accordance with the current licensing basis during the period of extended operation. In-scope medium-voltage cables will be tested to provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined prior to the initial test, and is to be a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or other testing that is state-of-the-art at the time the test is performed. Testing will be conducted at least once every ten (10) years, with initial testing completed prior to the period of extended operation. Also, periodic visual inspections will be performed on the accessible portions of cables (i.e., in manholes) for water induced damage. These inspections will be performed at least once every two (2) years, with the first inspection to be completed prior to the period of extended operation.

~~***A.1.21 Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program***~~

~~*The Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program demonstrates that inaccessible, non-EQ medium-voltage cables susceptible to aging effects caused by moisture and voltage stress are adequately managed so that there is reasonable assurance that the cables will perform their intended function in accordance with the current licensing basis during the period of extended operation.*~~

~~*In this aging management program, periodic actions are taken, at least once every two years, to prevent cables from being exposed to significant moisture, such as inspecting for water collection in cable manholes and conduit, and draining water, as needed. In-scope, medium-voltage cables exposed to significant moisture and significant voltage are tested to provide an indication of the condition of the conductor insulation. The specific type of test performed is determined prior to the initial test, and is a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or other testing that is state-of-the-art at the time the test is performed. Testing is conducted at least once every 10 years, with initial testing completed prior to the period of extended operation.*~~

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.4-1	**Page A.4-2**	**Item Number 3**

LRA Table A.4-1, "Unit 1 License Renewal Commitments," Item Number 3, requires revision to ensure that the Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program is evaluated against the final approved version of NRC License Renewal Interim Staff Guidance LR-ISG-2007-02, "Changes To Generic Aging Lesson Learned (GALL) Report Aging Management Program (AMP) XI.E6, "Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements,"" when issued, and that the program is revised as appropriate. Item Number 3 in LRA Table A.4-1 is revised to include:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
3	Implement the Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program as described in LRA Section B.2.10. *Prior to implementation of the program, evaluate the program against the final approved version of NRC License Renewal Interim Staff Guidance LR-ISG-2007-02, "Changes To Generic Aging Lesson Learned (GALL) Report Aging Management Program (AMP) XI.E6, "Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements,"" when issued, and revise the program to be consistent with the NRC Interim Staff Guidance.*	Will be implemented within the 10 years prior to January 29, 2016	LRA	A.1.10 B.2.10

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.4-1	**Page A.4-4 & 5**	**Item Number 10**

LRA Table A.4-1, "Unit 1 License Renewal Commitments," Item Number 10 regarding the Fuel Oil Chemistry Program, requires revision to include a program enhancement to perform periodic ultrasonic testing (UT) thickness measurement of accessible above-ground fuel oil tank bottoms to ensure that significant degradation is not occurring (see the revision to LRA Section B.2.20 in this Enclosure). Item Number 10 in LRA Table A.4-1 is revised to read:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
10	Enhance the Fuel Oil Chemistry Program to: • Revise the implementing procedure for sampling and testing the diesel-driven fire pump fuel oil storage tank (Unit 1 only) to include a test for particulate and accumulated water in addition to the test for sediment and water; ~~*and,*~~ • Generate a new implementing procedure for sampling and testing the security diesel generator fuel oil day tank (Common) for accumulated water, particulate contamination, and sediment / water; *and,*~~.~~ • *Revise implementing procedures to perform UT thickness measurements of accessible above-ground fuel oil tank bottoms at the same frequency as tank cleaning and inspections to ensure that significant degradation is not occurring.*	January 29, 2016	LRA	A.1.20 B.2.20

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.4-1	**Page A.4-5**	**Item Number 11**

LRA Table A.4-1, "Unit 1 License Renewal Commitments," Item Number 11 regarding inaccessible medium voltage cables, requires revision. The program is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). Therefore, the license renewal future commitment needs to be replaced with a commitment to the new plant-specific program. Item Number 11 in LRA Table A.4-1 is revised to read:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
11	Implement the *Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program* ~~*Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program*~~ as described in LRA Section B.2.21.	January 29, 2016	LRA	A.1.21 B.2.21

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.4-1	**Page A.4-5**	**Item Number 14**

LRA Table A.4-1, "Unit 1 License Renewal Commitments," Item Number 14 regarding masonry walls, requires revision to include a new program enhancement to ensure that the results of the program inspections will be incorporated into the inspection report to document the condition of the walls (see the revision to LRA Section B.2.25 in this Enclosure). Item Number 14 in LRA Table A.4-1 is revised to include:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
14	Enhance the Masonry Wall Program to: • Include in program scope additional masonry walls identified as having aging effects requiring management for license renewal~~.~~; *and,* • *Include a requirement in program procedures to incorporate the results of the Masonry Wall Program inspection and document the condition of the walls in the inspection report.*	January 29, 2016	LRA	A.1.25 B.2.25

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.4-1	**Pages A.4-7 – 8**	**Item Number 20**

LRA Table A.4-1, "Unit 1 License Renewal Commitments," Item Number 20 regarding the Structures Monitoring Program, requires revision to include additional program enhancements to address administrative details related to guidance documents, trending, report generation and storage, and acceptance criteria (see the revision to LRA Section B.2.39 in this Enclosure). Item Number 20 in LRA Table A.4-1 is revised to read:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
20	Enhance the Structures Monitoring Program to: • Include in program scope additional structures and structural components identified as having aging effects requiring management for license renewal; • Include inspection guidance in program implementing procedures to detect significant cracking in concrete surrounding the anchors of vibrating equipment; • Include a requirement in program procedures to perform opportunistic inspections of normally inaccessible below-grade concrete when excavation work uncovers a significant depth; • Include a requirement in program procedures to perform periodic sampling of groundwater for pH, chloride concentration, and sulfate concentration; ~~*and,*~~	January 29, 2016	LRA	A.1.39 B.2.39

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
20, cont.	• Include a requirement in program procedures to monitor elastomeric materials used in seals and sealants, including compressible joints and seals, waterproofing membranes, etc., associated with in-scope structures and structural components for cracking and change in material properties; • *Include a requirement in program procedures to perform specific measurements and/or characterizations of structural deficiencies, based on the results of previous inspections and guidance from ACI 349.3R-96, Section 5.1.1, and ACI 201.1 68;* • *Include a requirement in program procedures to document in the program inspection report a comparison of the results of the program inspections with the results of the previous program inspection;* • *Include a requirement in program procedures to file the Structures Monitoring Program inspection reports in the BVPS document control system so that inspection results can be more effectively monitored;* • *Include a requirement in program procedures to apply inspection acceptance criteria based on the results of past inspections and guidance from ACI 349.3R-96, Section 5.1.1, and ACI 201.1-68; and,* • *Include a requirement in program procedures that noted deficiencies will be reported using the Corrective Action Program.*			

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.4-1	**Page A.4-9**	**New Item Number 30**

LRA Table A.4-1, "Unit 1 License Renewal Commitments," requires a new license renewal future commitment to enhance the Open-Cycle Cooling Water System Program by including a Post Accident Sample System heat exchanger in the scope of the program, and by requiring an assessment of the internal condition of buried piping by performance of opportunistic inspections of header piping internals (see the revision to LRA Section B.2.32 in this Enclosure). New Item Number 30 is created, and LRA Table A.4-1 is revised to read:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
30	*Enhance the Open-Cycle Cooling Water System Program to:* • *Include in program scope the Post Accident Sample System heat exchanger (PAS-E-1) credited with a leakage boundary function, and,* • *Assess the internal condition of buried piping by opportunistic inspections of header piping internals during removal of expansion joints and inline valves in the headers. Evaluation of inspection results will be documented and trended.*	*January 29, 2016*	*LRA*	*A.1.32* *B.2.32*

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.5-1	**Page A.5-2**	**Item Number 3**

LRA Table A.5-1, "Unit 2 License Renewal Commitments," Item Number 3, requires revision to ensure that the Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program is evaluated against the final approved version of NRC License Renewal Interim Staff Guidance LR-ISG-2007-02, "Changes To Generic Aging Lesson Learned (GALL) Report Aging Management Program (AMP) XI.E6, "Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements,"" when issued, and that the program is revised as appropriate. Item Number 3 in LRA Table A.5-1 is revised to include:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
3	Implement the Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program as described in LRA Section B.2.10. *Prior to implementation of the program, evaluate the program against the final approved version of NRC License Renewal Interim Staff Guidance LR-ISG-2007-02, "Changes To Generic Aging Lesson Learned (GALL) Report Aging Management Program (AMP) XI.E6, "Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements,"" when issued, and revise the program to be consistent with the NRC Interim Staff Guidance.*	Will be implemented within the 10 years prior to May 27, 2027	LRA	A.1.10 B.2.10

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.5-1	**Page A.5-5**	**Item Number 11**

LRA Table A.5-1, "Unit 2 License Renewal Commitments," Item Number 11 regarding the Fuel Oil Chemistry Program, requires revision to include a program enhancement to perform periodic ultrasonic testing (UT) thickness measurement of accessible above-ground fuel oil tank bottoms to ensure that significant degradation is not occurring (see the revision to LRA Section B.2.20 in this Enclosure). Item Number 11 in LRA Table A.5-1 is revised to read:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
11	Enhance the Fuel Oil Chemistry Program to: • Revise the implementing procedure for sampling and testing the diesel-driven fire pump fuel oil storage tank (Unit 1 only) to include a test for particulate and accumulated water in addition to the test for sediment and water; ~~*and,*~~ • Generate a new implementing procedure for sampling and testing the security diesel generator fuel oil day tank (Common) for accumulated water, particulate contamination, and sediment / water; *and,* • *Revise implementing procedures to perform UT thickness measurements of accessible above-ground fuel oil tank bottoms at the same frequency as tank cleaning and inspections to ensure that significant degradation is not occurring.*	May 27, 2027	LRA	A.1.20 B.2.20

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.5-1	**Page A.5-5**	**Item Number 12**

LRA Table A.5-1, "Unit 2 License Renewal Commitments," Item Number 12 regarding inaccessible medium voltage cables, requires revision. The program is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). Therefore, the license renewal future commitment needs to be replaced with a commitment to the new plant-specific program. Item Number 12 in LRA Table A.5-1 is revised to read:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
12	Implement the *Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program* ~~*Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program*~~ as described in LRA Section B.2.21.	May 27, 2027	LRA	A.1.21 B.2.21

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.5-1	**Page A.5-6**	**Item Number 15**

LRA Table A.5-1, "Unit 2 License Renewal Commitments," Item Number 15 regarding masonry walls, requires revision to include a new program enhancement to ensure that the results of the program inspections will be incorporated into the inspection report to document the condition of the walls (see the revision to LRA Section B.2.25 in this Enclosure). Item Number 15 in LRA Table A.5-1 is revised to include:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
15	Enhance the Masonry Wall Program to: • Include in program scope additional masonry walls identified as having aging effects requiring management for license renewal~~.~~; *and,* • *Include a requirement in program procedures to incorporate the results of the Masonry Wall Program inspection and document the condition of the walls in the inspection report.*	May 27, 2027	LRA	A.1.25 B.2.25

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.5-1	**Pages A.5-7 – 8**	**Item Number 22**

LRA Table A.5-1, "Unit 2 License Renewal Commitments," Item Number 22 regarding the Structures Monitoring Program, requires revision to include additional program enhancements to address administrative details related to guidance documents, trending, report generation and storage, and acceptance criteria (see the revision to LRA Section B.2.39 in this Enclosure). Item Number 22 in LRA Table A.5-1 is revised to read:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
22	Enhance the Structures Monitoring Program to: • Include in program scope additional structures and structural components identified as having aging effects requiring management for license renewal; • Include inspection guidance in program implementing procedures to detect significant cracking in concrete surrounding the anchors of vibrating equipment; • Include a requirement in program procedures to perform opportunistic inspections of normally inaccessible below-grade concrete when excavation work uncovers a significant depth; • Include a requirement in program procedures to perform periodic sampling of groundwater for pH, chloride concentration, and sulfate concentration;~~ and,~~	May 27, 2027	LRA	A.1.39 B.2.39

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
22, cont.	• Include a requirement in program procedures to monitor elastomeric materials used in seals and sealants, including compressible joints and seals, waterproofing membranes, etc., associated with in-scope structures and structural components for cracking and change in material properties; • *Include a requirement in program procedures to perform specific measurements and/or characterizations of structural deficiencies, based on the results of previous inspections and guidance from ACI 349.3R-96, Section 5.1.1, and ACI 201.1 68;* • *Include a requirement in program procedures to document in the program inspection report a comparison of the results of the program inspections with the results of the previous program inspection;* • *Include a requirement in program procedures to file the Structures Monitoring Program inspection reports in the BVPS document control system so that inspection results can be more effectively monitored;* • *Include a requirement in program procedures to apply inspection acceptance criteria based on the results of past inspections and guidance from ACI 349.3R-96, Section 5.1.1, and ACI 201.1-68; and,* • *Include a requirement in program procedures that noted deficiencies will be reported using the Corrective Action Program.*			

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table A.5-1	**Page A.5-10**	**New Item Number 31**

LRA Table A.5-1, "Unit 2 License Renewal Commitments," requires a new license renewal future commitment to enhance the Open-Cycle Cooling Water System Program by requiring an assessment of the internal condition of buried piping by performance of opportunistic inspections of header piping internals (see the revision to LRA Section B.2.32 in this Enclosure). New Item Number 31 is created, and LRA Table A.5-1 is revised to read:

Item No.	Commitment	Implementation Schedule	Source	Related LRA Section No./ Comments
31	*Enhance the Open-Cycle Cooling Water System Program to:* • *Assess the internal condition of buried piping by opportunistic inspections of header piping internals during removal of expansion joints and inline valves in the headers. Evaluations of inspection results will be documented and trended.*	*May 27, 2027*	*LRA*	*A.1.32* *B.2.32*

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Appendix B	**Page B-iv**	**Table of Contents, Item B.2.21**

LRA Appendix B, "Aging Management Programs and Activities," Table of Contents item B.2.21, requires revision of the title of the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, which is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). LRA Appendix B, Table of Contents item B.2.21, is revised to read:

B.2.21 *Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements* B.2-58

~~*Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program*.....B.2-58~~

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table B.1-1	**Page B.1-6**	**8th Row**

LRA Table B.1-1, "BVPS Aging Management Programs," 8th row on page B.1-6, requires revision of the title of the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, which is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). LRA Table B.1-1, 8th row on page B.1-6, is revised to read:

Aging Management Program Title	LRA Section	Status
Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements ~~*Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements*~~	B.2.21	New

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table B.1-2	**Page B.1-12**	**NUREG-1801 Number XI.E3; and, New Row – Plant-Specific Programs**

LRA Table B.1-2, "BVPS Aging Management Program Correlation to NUREG-1801 Aging Management Programs," requires revision because the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). LRA Table B.1-2 is revised to read:

NUREG-1801 Number	NUREG-1801 Program	BVPS Program	LRA Section
XI.E3	Inaccessible Medium-Voltage Cables Not Subject to 10CFR50.49 Environmental Qualification Requirements	*Not credited for aging management. See plant-specific Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program.* ~~*Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements*~~	-- ~~*B.2.21*~~
Plant-Specific Programs			
NA	*Plant-specific Program*	*Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements*	*B.2.21*

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table B.1-3	**Page B.1-13**	**8th Row**

LRA Table B.1-3, "BVPS Aging Management Program Consistency with NUREG-1801 Aging Management Programs," 8th row on Page B.1-13, requires revision because the Buried Piping and Tanks Inspection Program is revised to include an exception to NUREG-1801, Section XI.M20 (same title) (see the revision to LRA Section B.2.8 in this Enclosure). LRA Table B.1-3, 8th row on Page B.1-13, is revised to read:

Program Name	Plant-Specific	NUREG-1801 Comparison		
		Programs Consistent with NUREG-1801	Programs with Enhancement(s)	Programs with Exception(s) to NUREG-1801
Buried Piping and Tanks	--	~~--~~ ~~Yes~~	--	***Yes*** ~~--~~

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table B.1-3	**Page B.1-15**	**2nd Row**

LRA Table B.1-3, "BVPS Aging Management Program Consistency with NUREG-1801 Aging Management Programs," 2nd row on page B.1-15, requires revision because the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is being changed from a program consistent with NUREG-1801 to a plant-specific program (see the revision to LRA Section B.2.21 in this Enclosure). LRA Table B.1-3, 2nd row on page B.1-15, is revised to read:

Program Name	Plant-Specific	NUREG-1801 Comparison		
		Programs Consistent with NUREG-1801	Programs with Enhancement(s)	Programs with Exception(s) to NUREG-1801
Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements ~~*Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements*~~	***Yes*** ~~---~~	-- ~~Yes~~	--	--

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Table B.1-3	**Page B.1-16**	**1st Row**

LRA Table B.1-3, "BVPS Aging Management Program Consistency with NUREG-1801 Aging Management Programs," 1st row on Page B.1-16, requires revision because the Open-Cycle Cooling Water System Program is revised to include an enhancement and an exception to NUREG-1801, Section XI.M20 (same title) (see the revision to LRA Section B.2.32 in this Enclosure). LRA Table B.1-3, 1st row on Page B.1-16, is revised to read:

Program Name	Plant-Specific	NUREG-1801 Comparison		
		Programs Consistent with NUREG-1801	Programs with Enhancement(s)	Programs with Exception(s) to NUREG-1801
Open-Cycle Cooling Water System	--	~~--~~ ~~Yes~~	***Yes*** ~~--~~	***Yes*** ~~--~~

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section B.2.8	**Pages B.2-20 & 21**	**NUREG-1801 Consistency; Exceptions to NUREG-1801; and, Aging Management Program Elements—Preventive Actions, Parameters Monitored / Inspected, and Acceptance Criteria**

LRA Section B.2.8, "Buried Piping and Tanks Inspection," requires revision to incorporate an exception to the NUREG-1801, Section XI.M34 (same title) aging management program. NUREG-1801, Section XI.M34, states that all buried piping is to be wrapped. However, BVPS installed buried stainless steel AL-6XN piping that is not coated or wrapped; the material has excellent corrosion resistance and the manufacturer recommends no coating or wrapping on the piping. Therefore, the Buried Piping and Tanks Inspection Program described in the BVPS LRA should include an exception to the NUREG-1801 program. LRA Section B.2.8, affected subsections as listed, is revised to read:

NUREG-1801 Consistency

The Buried Piping and Tanks Inspection Program is a new program that is consistent with NUREG-1801, Section XI.M34, "Buried Piping and Tanks Inspection," *with exception*.

Exceptions to NUREG-1801

~~*None*~~

Program Element Affected:

- ***Preventive Actions***

  NUREG-1801, Section XI.M34 states that the Buried Piping and Tanks program relies on preventive measures such as coating, wrapping, and periodic inspection. However, some buried piping within the scope of license renewal has been replaced over the years with AL-6XN alloy stainless steel, which is not coated or wrapped. An exception is taken to coating and wrapping buried pipe for AL-6XN alloy material.

AL-6XN Alloy is a "superaustenitic" low-carbon stainless steel containing chromium, nickel, molybdenum, and nitrogen. AL-6XN has been shown to have exceptional chloride corrosion resistance to pitting, crevice and stress corrosion cracking; and, excellent general corrosion resistance to various acid, alkali and salt solutions, both in laboratory tests and industrial use. The recommendation from Allegheny-Ludlum was that it not be coated or wrapped for a buried application, based on its corrosion resistance.

The aging management technique of opportunistic or focused visual inspection, as applicable, will still apply to the AL-6XN stainless steel piping

Aging Management Program Elements

The results of an evaluation of each of the 10 aging management program elements described in NUREG-1801, Section XI.M34, are provided as follows:

- **Preventive Actions**

  In accordance with industry practice, coatings and wrapping are used to protect against corrosion by isolating the external surface of the piping from the soil environment*, as applicable. Exception is taken to coating and wrapping AL-6XN stainless steel, because it is resistant to corrosion*. The program will ensure that the integrity of the coatings and wrappings of buried pipe is maintained *where they are used*.

- **Parameters Monitored / Inspected**

  When the opportunity arises, buried piping and tanks will be visually inspected for *corrosion and* coating and wrapping integrity. Any evidence of damaged wrapping or coating defects, such as coating perforation, holidays, or other damage, is an indicator of possible corrosion damage to the external surface of piping and tanks.

- **Acceptance Criteria**

  Any coating and wrapping degradations *or evidence of corrosion* found during inspections of buried piping and tanks will be evaluated, tracked, and repaired using the Corrective Action Program.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section B.2.10	**Pages B.2-26 – 28**	**Entire Section (as marked)**

LRA Section B.2.10, "Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection," requires revision to align this plant-specific program with guidance provided in an NRC letter dated August 29, 2007, "Proposed License Renewal Interim Staff Guidance LR-ISG-2007-02: Changes To Generic Aging Lesson Learned (GALL) Report Aging Management Program (Amp) XI.E6, "Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements."" Also, the 4th paragraph, last sentence of the "Program Description" subsection requires correction to clarify that there is no Unit 1 metal enclosed bus subject to aging management review. LRA Section B.2.10 is revised to read:

B.2.10 Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection

Program Description

The Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program is a new, plant-specific program that will focus on the metallic parts of the cable connection. This sampling program will be implemented and completed prior to the period of extended operation. A representative sample of electrical cable connection population subject to aging management review will be ~~*inspected or*~~ tested. Electrical connections covered under the EQ program, or connections inspected or tested as part of a preventative maintenance program will be excluded from aging management review. ~~*The program is a plant-specific alternate to NUREG-1801, XI.E6, "Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements."*~~

This sampling program provides a one-time inspection to ~~*verify*~~ *confirm* that the loosening of ~~*bolted*~~ *cable* connections due to thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation is not an aging issue that requires a periodic aging management program. The design of these connections accounts for the stresses associated with ohmic heating, thermal cycling, and dissimilar metal connections. Therefore, these stressors or mechanisms should not be a significant aging issue. However, confirmation of the lack of aging effects will be required. The factors to be considered for sample selection will be ~~*application*~~ *voltage level* (medium and low

voltage), circuit loading (high loading), and location (high temperature, high humidity, vibration, etc.). The technical basis for the sample selection will be documented. Any unacceptable conditions found during the inspection will be evaluated through the Corrective Action Program.

For Unit 2 only, the metallic parts of metal enclosed bus connections are managed by the Metal Enclosed Bus Program (Unit 2 only) [Section B.2.26] as delineated in NUREG-1801, XI.E4, "Metal Enclosed Bus," and are therefore not included within the scope of the program. There is no *in-scope* metal enclosed bus at Unit 1 *that requires aging management*.

This new plant-specific aging management program is an alternate to NUREG-1801, XI.E6, *"Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The program is consistent with guidance provided in an NRC letter dated August 29, 2007, "Proposed License Renewal Interim Staff Guidance LR-ISG-2007-02: Changes To Generic Aging Lesson Learned (GALL) Report Aging Management Program (Amp) XI.E6, "Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements,""* and will adequately manage the aging effects listed for connections not included in the EQ program.

Aging Management Program Elements

The results of an evaluation of each of the ten aging management program elements described in NUREG-1800 [Reference 1.3-4], Appendix A, are provided as follows:

- **Scope of Program**

  External connections terminating at an active or passive device ~~*Non-EQ connections*~~ associated with cables in scope of license renewal are part of this program. *Wiring connections internal to an active assembly are considered a part of the active assembly and therefore are not within the scope of this program.* This program does not include the high~~er~~ voltage (> 35 kV) *Switchyard* connections~~, such as the Switchyard connections~~. *The cable connections covered under the EQ program are not included in the scope of this program.*

  In-scope *cable* connections are evaluated for applicability of this program. The criteria for including connections in this program are that the connection ~~*is a bolted connection, and*~~ is not covered under the EQ program or an existing preventative maintenance program.

- **Preventive Actions**

  This one-time inspection program is a condition monitoring program; therefore, no actions are taken as part of this program to prevent or mitigate aging degradation.

- **Parameters Monitored/Inspected**

  This program will focus on the metallic parts of the cable connections. ~~*The one-time inspection verifies*~~ *Monitoring confirms* that the loosening of bolted connections *or high resistance of cable connections* due to thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation is not an aging effect that requires a periodic aging management program.

  A representative sample of electrical connections within the scope of license renewal and subject to aging management review will be tested. The factors considered for sample selection will be voltage level (medium and low voltage), circuit loading (high loading), and location (high temperature, high humidity, vibration, etc.). The technical basis for the sample selected is to be documented.

- **Detection of Aging Effects**

  A representative sample of electrical connections within the scope of license renewal, and subject to aging management review will be ~~*inspected or*~~ tested prior to the period of extended operation to ~~*verify*~~ *confirm that* there are no aging effects requiring management during the period of extended operation. ~~*The factors considered for sample selection will be application (medium and low voltage), circuit loading (high loading), and location (high temperature, high humidity, vibration, etc.). The technical basis for the sample selected is to be documented.*~~ *Testing* ~~*Inspection*~~ methods will include quantitative measurements such as thermography, contact resistance testing, or other appropriate methods based on plant configuration and industry guidance *without removing the connection insulation, such as heat shrink tape, sleeving and insulating boots*. The one-time inspection provides additional confirmation to support industry operating experience that shows electrical connections have not experienced a high degree of failures, and that existing installation and maintenance practices are effective.

- **Monitoring and Trending**

  Trending actions are not included as part of this program because this is one-time inspection program.

- **Acceptance Criteria**

  The acceptance criteria for each ~~*inspection / surveillance*~~ *test* are defined by the specific type of ~~*inspection or*~~ test performed for the specific type of cable connections *tested*. Acceptance criteria ensure that the intended functions of the cable connections can be maintained consistent with the current licensing basis.

- **Corrective Actions**

  If the ~~*inspection or*~~ test acceptance criteria are not met, the Corrective Action Program will be used to perform an evaluation for extent of condition, the indications of aging effects, and possible changes to the one-time inspection program. ~~*such as increased frequency and sample size.*~~ *Corrective actions may include, but are not limited to sample expansion, increased inspection frequency, and replacement or repair of the affected cable connection components.*

  As discussed in the appendix to NUREG-1801, the requirements of 10 CFR Part 50, Appendix B, is acceptable to address the corrective actions. The BVPS Corrective Action Program, which is implemented in accordance with requirements of 10 CFR Part 50, Appendix B, applies to the Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program.

  This element is discussed further in Section B.1.3.

- **Confirmation Process**

  This element is discussed further in Section B.1.3.

- **Administrative Controls**

  This element is discussed further in Section B.1.3.

- **Operating Experience**

  The Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program is a new aging management program for which there is no plant-specific program operating experience for program effectiveness.

  Industry and plant-specific operating experience will be evaluated in the development and implementation of this program. As additional operating experience is obtained, lessons learned will be appropriately incorporated into the program.

Industry operating experience that forms the basis for the program is described in the operating experience element of the NUREG-1801 Section XI.E6 program description.

Enhancements

None

Conclusion

The implementation of the Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements One-Time Inspection Program will provide reasonable assurance that the aging effects will be managed so that the systems and components within the scope of this program will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section B.2.15	**Pages B.2-41**	**Aging Management Program Elements—Detection of Aging Effects, 5th Paragraph**

LRA Section B.2.15, "External Surfaces Monitoring," subsection "Aging Management Program Elements," under the program element "Detection of Aging Effects," the 5th paragraph requires additional information to clarify what is meant by the term "not readily accessible," and to incorporate examples of those inaccessible areas and when and how external surfaces of equipment in those areas will be inspected. LRA Section B.2.15, "Aging Management Program Elements," under the program element "Detection of Aging Effects," the 5th paragraph, is revised to read:

"Component surfaces *in areas* that are ~~inaccessible or~~ not *readily accessible* ~~visible~~ during plant operations and refueling outages will be inspected at such intervals that will provide reasonable assurance that the effects of aging will be managed such that applicable components will perform their intended function during the period of extended operation. *Examples of areas that are not readily accessible are Intake Structure (and Auxiliary Intake Structure) bays and River Water / Service Water Valve Pits. Valve pits are located adjacent to the southern end of the Intake Structure, adjacent to the northern end of the Unit 2 Safeguards Area, and in the yard areas where the Auxiliary River Water system connects to the River Water system. These areas are accessible for inspections during specific activities such as bay cleaning, maintenance, clearance operations, or valve stroke tests. Areas such as pipe trenches are to be inspected when the areas are made accessible for maintenance or other reasons. If only partial inspections are possible for an area such as a pipe trench, the extent of condition of any deficiencies identified are to be evaluated to provide assurance that any remaining inaccessible components (such as within pipe trenches) will remain capable of performing their intended functions, or the remaining portion of the normally inaccessible areas are to be exposed for inspection.*"

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section B.2.20	**Pages B.2-54 & 56**	**Program Description, 1st Paragraph; and, Enhancements—Detection of Aging Effects (New Paragraph)**

LRA Section B.2.20, "Fuel Oil Chemistry," subsection "Enhancements," program element "Detection of Aging Effects," requires revision to include a new program enhancement. The revision also affects the "Program Description." FENOC plans to perform periodic ultrasonic testing (UT) thickness measurement of accessible above-ground fuel oil tank bottoms in addition to periodic or conditional visual inspection of the internal surfaces of tanks to ensure that significant degradation is not occurring. The UT thickness measurement is applicable to the following tanks:

- Unit 1 and Unit 2 Emergency Diesel Generator rack-mounted day tanks;
- Emergency Response Facility Diesel Generator day tank;
- Security Diesel Generator day tank; and,
- Diesel-driven fire pump fuel oil storage tank.

LRA Section B.2.20, "Program Description," 1st paragraph, and "Enhancements," subsection "Detection of Aging Effects" program element, is revised to read:

B.2.20 Fuel Oil Chemistry

Program Description

The Fuel Oil Chemistry Program is a mitigation and condition monitoring program which manages aging effects of the internal surfaces of oil storage tanks and associated components in systems that contain diesel fuel oil. The program includes (a) surveillance and monitoring procedures for maintaining diesel fuel oil quality by controlling contaminants in accordance with ASTM Standards D 975, D 1796, D 2276 and D 4057; (b) periodic sampling of fuel oil tanks and new fuel oil shipments for the presence of water and contaminants, and draining of accumulated water from the tanks; (c) sampling of fuel oil tanks and new fuel oil shipments for numerous other factors such as sediment, viscosity, and flash point; (d) periodic or conditional visual inspection of internal surfaces of tanks, and ~~or~~ wall thickness measurements (e.g., ultrasonic testing) of *accessible, above-ground* tanks.

The One-Time Inspection Program (Section B.2.30) will be used to verify the effectiveness of the Fuel Oil Chemistry Program.

Enhancements

Program Element Affected

- **Detection of Aging Effects**

  Revise implementing procedures to perform UT thickness measurements of accessible above-ground fuel oil tank bottoms at the same frequency as tank cleaning and inspections to ensure that significant degradation is not occurring.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section B.2.21	**Pages B.2-58 – 61**	**Entire Section**

LRA Section B.2.21, "Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements," requires replacement of the entire section, because the program is being changed from a new program consistent with NUREG-1801 to a new plant-specific program. FENOC has confirmed that the all inaccessible medium-voltage cables within the scope of the new plant-specific program are suitable for operation in a submerged water environment. NUREG-1801 does not require inspection and testing of cables qualified for submergence (i.e., submarine cables). Therefore, no aging effect requiring management was identified for the BVPS cables. However, FENOC concluded that periodic inspection and testing of submerged medium-voltage cables was conservative to confirm that the aging effects are not occurring, and is revising the program to be plant-specific. LRA Section B.2.21 is replaced in its entirety, and is revised to read:

B.2.21 *Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program*

Program Description

The Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new plant-specific program that BVPS will implement prior to the period of extended operation.

The inaccessible medium-voltage cables not subject to 10 CFR 50.49 environmental qualification requirements and within the scope of this program are suitable for submergence and therefore, no aging effect requiring management was identified for these cables.

The purpose of this aging management program will be to confirm that the aging effects caused by moisture and voltage stress are not occurring so that there is reasonable assurance that the cables will perform their intended function in accordance with the current licensing basis during the period of extended operation. In-scope medium-voltage cables will be tested to provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined prior to the initial test, and is to be a proven test for

detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or other testing that is state-of-the-art at the time the test is performed. Testing will be conducted at least once every ten (10) years, with initial testing completed prior to the period of extended operation. Also, periodic visual inspections will be performed on the accessible portions of cables (i.e., in manholes) for water induced damage. These inspections will be performed at least once every two (2) years, with the first inspection to be completed prior to the period of extended operation.

Aging Management Program Elements

The results of an evaluation of each of the 10 aging management program elements described in NUREG-1800 [Reference 1.3-4], Appendix A, are provided as follows:

- ***Scope of Program***

  The program is applicable to inaccessible, non- EQ medium-voltage cables suitable for submergence that support a license renewal intended function and are exposed to significant moisture simultaneously with significant voltage.

  The program defines significant moisture as periodic exposure to moisture that lasts more than a few days (e.g., cable in standing water). Periodic exposure to moisture which lasts less than a few days (i.e., normal rain and drain) is not significant.

  The program defines significant voltage as being subject to system voltage for more than twenty-five percent (25%) of the time.

  The moisture and voltage exposures described as significant in these definitions, which are based on operating experience and engineering judgment, are not significant for medium-voltage cables that are suitable for these conditions (i.e., submarine cables). The BVPS in-scope medium-voltage cables have been determined to be suitable for submergence; therefore, no aging effect requiring management was identified for these cables.

- ***Preventive Actions***

  This program is a condition monitoring program which will confirm by inspecting and testing that aging effects are not occurring; therefore, no actions are taken as part of this program to prevent or mitigate aging degradation.

- ***Parameters Monitored/Inspected***

  The cables will be tested to provide indications of localized damage and breakdown of insulation leading to electrical failure due to moisture intrusion, water trees.

  Through manhole inspections, accessible portions of cables will be inspected for visual indications of water induced damage.

- ***Detection of Aging Effects***

  Testing of the cables will be performed at least once every ten (10) years, with the first test to be completed prior to the period of extended operation. This testing will provide an indication of the condition of the conductor insulation. The specific type of test to be performed will be determined prior to the initial test, and is to be a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, as described in EPRI guidance documents., or other testing that is state-of-the-art at the time the test is performed.

  Through manhole inspections, accessible portions of the cables will be visually inspected at least once every two (2) years, with the first inspection to be completed prior to the period of extended operation. This inspection will identify visual indications of water induced damage. Water identified in the applicable manholes will be drained at the time of inspection to facilitate visual inspection of the cables.

- ***Monitoring and Trending***

  Trending actions are not included as part of this program because the ability to trend results is dependent on the specific type of test chosen. However, all test and inspection results will be maintained as part of plant records. Therefore, these results are available for review and/or trending during subsequent tests and inspections as needed.

- ***Acceptance Criteria***

  Testing acceptance criteria will be defined by the specific type of test performed and the specific cable tested.

  Visual inspection acceptance criteria will provide that the accessible portions of the cables are to be free from visual indications of surface anomalies.

- ***Corrective Actions***

  The program will require that unacceptable cable test/inspection results are to be documented in the BVPS Corrective Action Program. Any subsequent engineering evaluations and extent-of-condition determinations are conducted according to the Corrective Action Program.

  This element is discussed further in Section B.1.3.

- ***Confirmation Process***

  This element is discussed further in Section B.1.3.

- ***Administrative Controls***

  This element is discussed further in Section B.1.3.

- ***Operating Experience***

  The Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new plant-specific Beaver Valley Power Station aging management program for which there is no plant specific operating experience for program effectiveness.

  Industry and plant-specific operating experience will be considered in the development and implementation of this program. As additional operating experience is obtained, lessons learned will be appropriately incorporated into the program.

  BVPS currently has a manhole inspection procedure, which provides for the identification of water induced damage to cables and cable supports contained in manholes. The BVPS manhole inspection procedure was performed in September 2006. The results of the procedure are documented in the Corrective Action Program. The findings included missing seals, cracked walls, corroded supports, and water intrusion. No cable damage was found. The associated work order indentifies varying amounts of water in in-scope manholes, with some in-scope manholes having water levels above the cable level.

  A 2008 engineering evaluation has confirmed that in-scope medium voltage cables are suitable for operation in submerged environments. The inspection frequency of at least once every two (2) years will provide reasonable

assurance that the cables will perform their intended function in accordance with the current licensing basis during the period of extended operation.

In the response to NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients," FENOC reported that BVPS has not experienced failure of inaccessible or underground power cables within the scope of 10 CFR 50.65.

The lack of cable failures and the lack of cable degradation support the cable testing frequency of at least once every ten (10) years.

Enhancements

None

Conclusion

The implementation of the Inaccessible Medium-Voltage Cables Suitable for Submergence and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program will provide reasonable assurance that the aging effects will be managed so that the systems and components within the scope of this program will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

~~**B.2.21 *INACCESSIBLE MEDIUM-VOLTAGE CABLES NOT SUBJECT TO 10 CFR 50.49 ENVIRONMENTAL QUALIFICATION REQUIREMENTS***~~

~~***Program Description***~~

~~*The Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new program that BVPS will implement prior to the period of extended operation. The purpose of this aging management program will be to demonstrate that inaccessible, non-EQ medium voltage cables, susceptible to aging effects caused by moisture and voltage stress, will be managed such that there is reasonable assurance that the cables will perform their intended function in accordance with the current licensing basis during the period of extended operation.*~~

~~*In this aging management program, periodic actions are taken, at least once every two years, to prevent cables from being exposed to significant moisture, such as inspecting for water collection in cable manholes and conduit, and draining water, as needed. In-scope, medium-voltage cables exposed to*~~

~~*significant moisture and significant voltage are tested to provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined prior to the initial test, and is to be a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or other testing that is state-of-the-art at the time the test is performed. Testing will be conducted at least once every 10 years, with initial testing completed prior to the period of extended operation.*~~

~~***NUREG-1801 Consistency***~~

~~*The Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new program that is consistent with NUREG-1801, Section XI.E3, Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.*~~

~~***Exceptions to NUREG-1801***~~

~~*None*~~

~~***Enhancements***~~

~~*None*~~

~~***Aging Management Program Elements***~~

~~*The results of an evaluation of each of the 10 aging management program elements described in NUREG-1801, Section XI.E3, are provided as follows:*~~

- ~~***Scope of Program***~~

  ~~*The program is applicable to inaccessible medium-voltage cables within the scope of license renewal that are exposed to significant moisture simultaneously with significant voltage.*~~

  ~~*The program defines "significant moisture" exposure as periodic exposure to moisture that lasts more than a few days (e.g., cable in standing water). Periodic exposure to moisture, which lasts less than a few days (i.e., normal rain and drain), is not significant.*~~

  ~~*The program defines "significant voltage" exposure as being subjected to system voltage for more than twenty five percent (25%) of the time.*~~

  ~~*The definition for significant moisture and significant voltage defined in the program is consistent with NUREG-1801. Cables qualified for submergence (i.e., submarine cables) are excluded from this program.*~~

- ~~***Preventive Actions***~~

  ~~*The program identifies the applicable manholes and will require inspection of these manholes once every two years to inspect for water collection in cable manholes, and draining of water as needed.*~~

- ~~***Parameters Monitored / Inspected***~~

  ~~*The program allows that the specific type of test performed will be determined prior to the initial test, and is to be a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, as described in EPRI guidance documents, or other testing that is state-of-the-art at the time the test is performed.*~~

- ~~***Detection of Aging Effects***~~

  ~~*Testing of medium-voltage cables exposed to significant moisture and significant voltage that are within the scope of the program will be conducted at least once every 10 years, with the first inspection to be completed prior to the period of extended operation.*~~

  ~~*The program identifies the applicable manholes and will require inspection of these manholes at least once every two years. The inspection frequency will be based on actual plant experience with water accumulation in the manhole, with the first inspection to be completed prior to the period of extended operation.*~~

- ~~***Monitoring and Trending***~~

  ~~*Trending will not be included as part of the program. However, all test and inspection results will be maintained as part of plant records. Therefore, these results are available for review and/or trending during subsequent tests and inspections as needed.*~~

- ~~***Acceptance Criteria***~~

  ~~*The acceptance criteria will be defined by the specific type of test performed and the specific cable tested.*~~

- ~~***Corrective Actions***~~

  ~~*The program will require that unacceptable cable test results are documented in the BVPS Corrective Action Program. Any subsequent engineering evaluations and extent-of-condition determinations are conducted according to the Corrective Action Program.*~~

~~*This element is discussed further in Section B.1.3.*~~

- ~~***Confirmation Process***~~

  ~~*This element is discussed further in Section B.1.3.*~~

- ~~***Administrative Controls***~~

  ~~*This element is discussed further in Section B.1.3.*~~

- ~~***Operating Experience***~~

  ~~*The Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new BVPS aging management program for which there is no plant-specific operating experience for program effectiveness. Industry and plant-specific operating experience will be evaluated in the development and implementation of this program. Industry operating experience that forms the basis for the program is described in the operating experience element of the NUREG-1801, Section XI.E3 program description. BVPS plant-specific operating experience is consistent with the operating experience in the program description.*~~

  ~~*The BVPS program is based on industry operating experience. As such, incorporation of industry and plant-specific operating experience into the program provides reasonable assurance that the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program will manage the effects of aging such that the applicable components will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation. Future operating experience will be appropriately incorporated into the program.*~~

  ~~*BVPS currently has a manhole inspection program, which identifies and evaluates water collection in the manholes. This prevention program has been effective in monitoring and evaluating the exposure of cable and cable supports located in manholes to water. Reducing the exposure to water minimizes the aging effects of the applicable non-EQ medium-voltage cables, so these cables will continue to perform their intended function.*~~

  ~~*BVPS plant-specific operating experience demonstrates the effectiveness of the prevention portion of the XI.E3 program. The BVPS manhole inspection was last performed in September 2006. The findings included missing seals, cracked walls, corroded supports, and water intrusion. No cable damage was found. No water was reported in in-scope manholes.*~~

~~*The plant-specific operating experience supports the Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualifications Requirements Program manhole inspection frequency of once every two years for in-scope manholes. The lack of cable failures combined with the plant-specific operating experience for manhole inspections supports the cable testing frequency of at least once every 10 years.*~~

~~***Conclusion***~~

~~*The implementation of the Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program will provide reasonable assurance that the aging effects will be managed so that the systems and components within the scope of this program will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.*~~

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section B.2.25	**Page B.2-70**	**Enhancements— Monitoring and Trending (New Paragraph)**

LRA Section B.2.25, "Masonry Wall," subsection "Enhancements," program element "Monitoring and Trending," requires revision to include a new program enhancement to ensure that the results of the program inspections will be incorporated into the inspection report to document the condition of the walls. LRA Section B.2.25, subsection "Enhancements," is revised to include:

Enhancements

The following enhancements will be implemented prior to the period of extended operation.

Program Elements Affected:

- ***Monitoring and Trending***

  Revise the program to require that the results of the Masonry Wall Program inspections are incorporated into the inspection report to document the condition of the walls.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section B.2.30	**Page B.2-82**	**Aging Management Program Elements—Monitoring and Trending (New Paragraph)**

LRA Section B.2.30, "One-Time Inspection," subsection "Aging Management Program Elements," program element "Monitoring and Trending," requires revision to identify the method by which the inspection sample size for the One-Time Inspection Program inspections will be determined. The LRA is silent on this issue; however, the information necessary to determine the sample size for one-time inspections is detailed in the proposed One-Time Inspection Program implementing procedure. The representative sample size will be determined based on Chapter 4 of EPRI TR-107514, "Age-Related Degradation Inspection Method and Demonstration: In Behalf of Calvert Cliffs Nuclear Power Plant License Renewal Application," which outlines a method to determine the number of inspections required for 90% confidence that 90% of the population does not experience degradation (90/90). Each group of components with the same material-environment combination is considered a separate population. LRA Section B.2.30, subsection "Aging Management Program Elements," program element "Monitoring and Trending," is revised to read:

- **Monitoring and Trending**

  The program owner will determine the inspection sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience. Inspection findings will be evaluated by assigned engineering personnel. Inspection findings not meeting the acceptance criteria will be evaluated and tracked through the Corrective Action Program. The Corrective Action Program will be used to identify appropriate corrective actions including additional inspections or expansion of inspection sample size.

  The representative sample size will be determined based on Chapter 4 of EPRI TR-107514, "Age-Related Degradation Inspection Method and Demonstration: In Behalf of Calvert Cliffs Nuclear Power Plant License Renewal Application," which outlines a method to determine the number of inspections required for 90% confidence that 90% of the population does not experience degradation (90/90). Each group of components with the same material-environment combination is considered a separate population.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section B.2.32	**Pages B.2-87**	**NUREG-1801 Consistency; Exceptions to NUREG-1801; and, Enhancements**

LRA Section B.2.32, "Open-Cycle Cooling Water System," requires revision to incorporate a program exception to the NUREG-1801, Section XI.M20 (same title) aging management program recommendation to periodically flush lines to remove accumulations of biofouling agents, corrosion products, and silt. FENOC does not periodically flush the River Water System (Unit 1) and Service Water System (Unit 2) piping supplying backup water sources to the Auxiliary Feedwater Systems and to the Spent Fuel Pools. Flushing these lines could contaminate the Auxiliary Feedwater Systems and Spent Fuel Pools with raw water. The design and configuration of these piping sections precludes concerns for silt and sediment buildup. Therefore, the Open-Cycle Cooling Water System Program described in the BVPS LRA should include an exception to the NUREG-1801 program.

Also, the program scope needs to be revised to include a heat exchanger from the Unit 1 Post Accident Sample System that was inadvertently left out of the scope of the program. Loss of material of the shell of the heat exchanger will be managed by the program. Therefore, the Open-Cycle Cooling Water System Program described in the LRA is revised to incorporate an enhancement for the additional scope of the Unit 1 Post Accident Sample System heat exchanger.

The program requires further revision to incorporate an enhancement to assess the internal condition of buried piping by opportunistic inspections of accessible header piping internals during removal of expansion joints and inline valves located in the header. These inspection opportunities occur during refueling outages, and include header check valve inspections, expansion joint removal or replacement, and other unscheduled maintenance. Additionally, the internal condition of above-ground header piping is evaluated during heat exchanger cleaning and valve or expansion joint maintenance. Evaluations of inspection results will be documented and trended. Therefore, the Open-Cycle Cooling Water System Program described in the LRA is further revised to incorporate an enhancement to assess the internal condition of buried piping through inspections of opportunity.

LRA Section B.2.32, subsections "NUREG-1801 Consistency," "Exceptions to NUREG-1801," and "Enhancements," are revised to read:

NUREG-1801 Consistency

The Open-Cycle Cooling Water System Program is an existing program that, *following enhancement,* is consistent with NUREG-1801, Section XI.M20, "Open-Cycle Cooling Water System," *with exception*.

Exceptions to NUREG-1801

~~*None*~~

Program Element Affected:

- ***Preventive Actions***

  River Water / Service Water lines supplying backup water sources to the Auxiliary Feedwater Systems and to the Spent Fuel Pools will not be periodically flushed. It is undesirable to contaminate the Auxiliary Feedwater system and Spent Fuel Pool with raw water, and the configuration of these piping sections precludes concerns for silt and sediment buildup.

Enhancements

~~*None*~~

The following enhancements will be implemented prior to the period of extended operation.

Program Elements Affected:

- ***Scope of Program***

  The scope of the program will be expanded to include a Unit 1 Post Accident Sample System heat exchanger (PAS-E-1) credited with a leakage boundary function.

- ***Detection of Aging Effects***

  The internal condition of buried piping will be assessed by opportunistic inspections of header piping internals during removal of expansion joints and inline valves in the headers. Evaluation of inspection results will be documented and trended.

Affected LRA Section	LRA Page No.	Affected Paragraph and Sentence
Section B.2.39	**Pages B.2-108**	**Enhancements—Detection of Aging Effects, Monitoring and Trending, and Acceptance Criteria (New Paragraphs)**

LRA Section B.2.39, "Structures Monitoring," subsection "Enhancements," requires revision to include new program enhancements under program elements "Detection of Aging," "Monitoring and Trending," and "Acceptance Criteria." These enhancements are administrative in nature, and provide clarification of the guidance documents to be used for characterizing structural deficiencies, and direction to compare inspection results with previous inspection results and to add the completed inspection reports to the FENOC document control system for storage and retrieval purposes. LRA Section B.2.39, subsection "Enhancements," is revised to include:

Enhancements

The following enhancements will be implemented prior to the period of extended operation.

Program Elements Affected:

- ***Detection of Aging Effects***

  Add a program requirement to perform specific measurements and/or characterizations of structural deficiencies, based on the results of previous inspections and guidance from ACI 349.3R-96, Section 5.1.1, and ACI 201.1-68.

- ***Monitoring and Trending***

  Add a program requirement to document in the program inspection report a comparison of the results of the program inspections with the results of the previous program inspection.

  Add a program requirement to file the Structures Monitoring Program inspection reports in the BVPS document control system so that inspection results can be more effectively monitored.

- ***Acceptance Criteria***

  Add a program requirement to apply inspection acceptance criteria based on the results of past inspections and guidance from ACI 349.3R-96, Section 5.1.1, and ACI 201.1-68.

  Add a program requirement that noted deficiencies will be reported using the Corrective Action Program.

ENCLOSURE B

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

Letter L-08-262

Revised License Renewal Application Boundary Drawings

The following License Renewal Application Boundary Drawings are revised and are enclosed:

LR Drawing 1-24-2	**Revision 6**
LR Drawing 1-41C-1	**Revision 5**
LR Drawing 2-32-1	**Revision 5**
LR Drawing 2-34-2	**Revision 3**

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