



September 08, 2022

L-2022-143
10 CFR 54.17

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
11545 Rockville Pike
One White Flint North
Rockville, MD 20852-2746

St. Lucie Nuclear Plant Units 1 and 2
Dockets 50-335 and 50-389
Renewed Facility Operating Licenses DPR-67 and NPF-16

**SUBSEQUENT LICENSE RENEWAL APPLICATION - AGING MANAGEMENT REQUESTS FOR
ADDITIONAL INFORMATION (RAI) SET 1A RESPONSE**

References:

1. FPL Letter L-2021-192 dated October 12, 2021 – Subsequent License Renewal Application – Revision 1 (ADAMS Accession No. ML21285A107)
2. FPL Letter L-2022-043 dated April 7, 2022 – Subsequent License Renewal Application Revision 1 – Supplement 1 (ADAMS Accession No. ML22097A202)
3. FPL Letter L-2022-044 dated April 13, 2022 – Subsequent License Renewal Application Revision 1 – Supplement 2 (ADAMS Accession No. ML22103A014)
4. FPL Letter L-2022-071 dated May 19, 2022 – Subsequent License Renewal Application Revision 1 – Supplement 3 (ADAMS Accession No. ML22139A083)
5. NRC Email and Attachment dated July 11, 2022, St. Lucie SLRA RAI Safety Set 3 Final (ADAMS Accession Nos. ML22193A086, ML22193A087)
6. FPL Letter L-2022-108 dated July 11, 2022 – Subsequent License Renewal Application – Aging Management Requests for Additional Information (RAI) Set 2 Response
7. NRC Email and Attachment dated August 4, 2022, St. Lucie SLRA RAI (Second Round) 1a

Florida Power & Light Company (FPL), owner and licensee for St. Lucie Nuclear Plant (PSL) Units 1 and 2, has submitted a revised and supplemented subsequent license renewal application (SLRA) for the Facility Operating Licenses for PSL Units 1 and 2 (References 1-4). Based on the NRC's review of the SLRA, the NRC issued its Set 1a RAIs to FPL (Reference 7). Attachments 1-6 to this letter provide the response to those information requests. In addition, Attachment 6 to this letter provides a response to RAI B.2.3.27-1a that supersedes the previous Set 1a, Attachment 14 response (Reference 6). Attachment 7 to this letter supersedes the previously submitted SLRA Revision 1, Supplement 1, Attachment 18 submittal (Reference 2).

Certain attachments include associated revisions to the SLRA (Enclosure 3 Attachment 1 of Reference 1, as supplemented by References 2 - 4) denoted by ~~striketrough~~ (deletion) and/or **bold red underline** (insertion) text. Previous SLRA revisions are denoted by **bold black** text. SLRA table revisions are included as excerpts from each affected table.

Should you have any questions regarding this submittal, please contact me at (561) 304-6256 or William.Maher@fpl.com.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on the 8th day of September 2022.

Sincerely,
**William
Maher**

Digitally signed by William Maher
DN: cn=William Maher, o=Nuclear,
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William D. Maher

Licensing Director - Nuclear Licensing Projects
Florida Power & Light Company

Attachment: PSL Response to NRC RAI No. B.2.3.27-1a

Cc: Regional Administrator, USNRC, Region II
Senior Resident Inspector, USNRC, St. Lucie Plant
Chief, USNRC, Division of New and Renewed Licenses
Senior Project Manager, USNRC, Division of New and Renewed Licenses
Chief, Bureau of Radiation Control, Florida Department of Health

ATTACHMENT

L-2022-143

St. Lucie Units 1 and 2

PSL Response to NRC RAI No. B.2.3.27 - 1a

(42 pages follow)

Buried and Underground Piping and Tanks AMP

RAI B.2.3.27-1a

Regulatory Basis

Section 54.21(a)(3) of Title 10 of the *Code of Federal Regulations* (10 CFR) requires an applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation. One of the findings that the U.S. Nuclear Regulatory Commission (NRC) staff must make to issue a renewed license (10 CFR 54.29(a)) is that actions have been identified and have been or will be taken with respect to managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under 10 CFR 54.21, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis. In order to complete its review and enable making a finding under 10 CFR 54.29(a), the staff requires additional information in regard to the matters described below.

Background

SLRA Section B.2.3.27, "Buried and Underground Piping and Tanks," states "[t]he number of inspections for each 10-year inspection period, commencing 10 years prior to the start of SPEO, are based on the inspection quantities noted in NUREG-2191, Table XI.M41-2, adjusted for a 2-Unit plant site."

GALL-SLR Report Table XI.M41-1, "Preventive Actions for Buried and Underground Piping and Tanks," recommends that buried stainless steel piping is externally coated in accordance with the "preventive actions" program element of GALL-SLR Report AMP XI.M41, "Buried and Underground Piping and Tanks."

In addition, GALL-SLR Report AMP XI.M41 states the following:

- "[a]dditional inspections, beyond those in Table XI.M41-2, "Inspection of Buried and Underground Piping and Tanks," may be appropriate if exceptions are taken to program element 2, "preventive actions," or in response to plant-specific operating experience."
- "[t]here are no recommended preventive actions [e.g., external coatings] for titanium alloy, super austenitic stainless steels, and nickel alloy materials."

By letter dated June 13, 2022 (ADAMS Accession No. ML22164A802), the applicant stated the following in response to RAIs B.2.3.27-1 and B.2.3.21-2 (respectively):

- "[a] portion of the Unit 1 auxiliary feedwater (AFW) and condensate system (AFW pump suction) is buried stainless steel piping in sand beneath the turbine building. No coating was identified, however, due to the location beneath the turbine building, this buried piping is not susceptible to wetting."

- “[t]he table [referring to the soil corrosivity sampling results table] does not include an outlier soil sample associated with a Unit 2 intake cooling water (ICW) line, since that sample had been impacted by local saltwater foaming from the ICW discharge overflow/standpipe. The caulking between the standpipe and the concrete decking was weathered and porous, allowing saltwater foam to permeate into the soil.”

In response to RAI B.2.3.21-2, the applicant provided results from seven soil corrosivity samples which included the following parameters: pH, soil resistivity, moisture, chlorides, sulfates, redox potential, and microbiology. Based on its review of this data, the staff noted that the soil can be considered appreciably corrosive (using average values) or severely corrosive (using least conservative values) to stainless steel when scoring in accordance with Table 9-4, “Soil Corrosivity Index from BPWORKS,” of Electric Power Research Institute (EPRI) Report 3002005294, “Soil Sampling and Testing Methods to Evaluate the Corrosivity of the Environment for Buried Piping and Tanks at Nuclear Power Plants.”

Issue

The basis provided by the applicant for having uncoated buried stainless steel (i.e., an exception to GALL-SLR AMP XI.M41 guidance) is that the piping is not exposed to significant amounts of moisture (i.e., wetting). However, the staff notes that soil parameters beyond moisture (i.e., pH, soil resistivity, chlorides, sulfates, redox potential, and microbiology) impact the susceptibility of buried stainless steel to external corrosion. Based on the soil corrosivity data provided in the response to RAI B.2.3.21-2, the environment at St. Lucie can be considered corrosive to buried stainless steel. In addition, based on its review of the response to RAI B.2.3.21-2, the staff notes that there has been at least one incident of saltwater intrusion into the soil. Based on its review of Table 9-4 of EPRI Report 3002005294, the staff also notes buried stainless is more sensitive to the effects of chlorides than any other material type.

Request

1. State the approximate length of uncoated in-scope buried stainless steel piping.
2. State the basis for why the inspection quantities in GALL-SLR Report Table XI.M41-2 are appropriate for buried stainless steel piping. The technical basis could include (but is not limited to) discussion of the following: results of soil corrosivity testing in the vicinity of the subject piping, results of inspections of buried uncoated stainless steel piping, and type(s) of in-scope stainless steel (e.g., super austenitic) piping utilized in uncoated buried applications, etc.

References.

- EPRI. EPRI 3002005294, “Soil Sampling and Testing Methods to Evaluate the Corrosivity of the Environment for Buried Piping and Tanks at Nuclear Power Plants.” Palo Alto, California: Electric Power Research Institute. November 6, 2015.

PSL Response:

The only buried stainless steel piping at St. Lucie, which could not be confirmed as coated or encased in concrete, is comprised of the Unit 1 auxiliary feedwater (AFW) pump recirculation piping and condensate system (AFW pump suction) piping. Therefore, this piping is conservatively assumed to be uncoated. This grade 316 stainless steel piping traverses beneath the Unit 1 turbine building and has a total length of approximately 520 ft.

At St. Lucie, the application of external coatings on safety-related piping is a design feature and is controlled by engineering specifications and design drawings, as appropriate. The St. Lucie Unit 1 design specifications and drawings for buried stainless steel piping do not specify the application of a coating material.

NUREG-2191, Table XI.M41-1 identifies “coatings” and “backfill” as preventative actions for buried stainless steel piping. The Unit 1 buried grade 316 stainless steel piping meets the “backfill” preventive action in Table XI.M41-1. The soil environment in contact with this buried stainless steel piping is composed of backfill in accordance with the applicable plant specification, which is available on the ePortal and summarized as follows:

- Material to be used as compacted backfill for Unit 1 shall be a selected sand and be free of muddy material, organic matter, rubbish, debris, or other unsuitable materials. The moisture content of the sand shall be within the limits required to obtain the specified compaction. Dredged material shall be stockpiled so as to facilitate drainage. No limerock shall be used for fill. This meets and exceeds the NACE SP0169-2007 (Reference 1), Section 5.2.3.4 backfill recommendation from NUREG-2191.
- Backfill material designated as Class I material for Unit 1 shall have no more than 12% silt content (finer than No. 200 sieve), be free of clay balls, and no rock fragments larger than 6 inches shall be used for the fill except in areas where hand compaction is required wherein the maximum rock fragment size shall not exceed 3 inches. Sieve analyses are performed in accordance with ASTM D422 or D1140. Only Class I backfill is used at St. Lucie. This meets and exceeds the ASTM D 448-08 (Reference 2) size recommendation from NUREG-2191.

Although stainless steel is susceptible to attack by chlorides, such attacks are primarily catalyzed when moisture breaks the chloride molecules' ionic bonds freeing chlorine ions to attack the stainless steel piping. The concrete floor slab associated with the turbine building shields the piping from rainwater, saltwater, and other moisture or chloride intrusion. Even if moisture intrusion occurred, sand is known to have relatively good drainage properties, so stagnant moisture leading to a continued chloride attack would not occur. Additionally, as identified in the response to Set 1 RAI B.2.3.21-2, the majority of the soil samples listed had chloride and sulfate readings below the threshold of detection. The two exceptions to this were at soil samples near the intake cooling water (ICW) piping on the intake side of the plant, which measured 205 mg/kg dry chlorides and 149 mg/kg dry sulfates, and the outlier sample near the discharge structure where saltwater intrusion had occurred (Reference 3). Neither of the two outlier sample locations are near any of the subject grade 316 stainless steel piping.

An operating experience (OE) search of the 10-year action request (AR) database and component database (NAMS) did not identify any aging-related degradation for the Unit 1 stainless steel AFW and condensate system piping buried beneath the Unit 1 turbine building nor was age-related degradation identified for any other buried stainless steel piping at the site.

Due to the low number of chlorides within the soil, the low likelihood of stagnant moisture due to the concrete floor slab shielding, good soil/backfill drainage, and no history of negative OE, an exception to the NUREG-2191 recommendation of coating buried stainless steel piping as a preventive action is reasonable and will be taken with respect to the Unit 1 stainless steel AFW pump recirculation piping and condensate system (AFW pump suction) piping buried beneath the Unit 1 turbine building. Additionally, for the same reasoning, the inspection quantities listed in NUREG-2191 Table XI.M41-2 are adequate for providing reasonable assurance that the uncoated buried stainless piping at St. Lucie will maintain its pressure boundary function throughout the SPEO.

Due to the new exception for buried stainless steel piping “coatings”, the following SLRA tables and sections are impacted:

- Table 3.3-1, Summary of Aging Management Evaluations for the Auxiliary Systems
- Table 3.3.2-4, Diesel Generators and Support Systems – Summary of Aging Management Evaluation
- Table 3.3.2-5, Fire Protection / Service Water – Summary of Aging Management Evaluation
- Table 3.3.2-8, Intake Cooling Water / Emergency Cooling Canal – Summary of Aging Management Evaluation
- Table 3.3.2-9, Primary Makeup Water – Summary of Aging Management Evaluation
- Table 3.3.2-12, Ventilation – Summary of Aging Management Evaluation
- Table 3.4-1, Summary of Aging Management Evaluations for the Steam and Power Conversion Systems
- Table 3.4.2-3, Auxiliary Feedwater and Condensate – Summary of Aging Management Evaluation
- Table B-4, PSL Aging Management Program Consistency with NUREG-2191
- Section B.1.1, Overview
- Section B.2.3.27, Buried and Underground Piping and Tanks

Several of the impacted pages associated with the above tables and sections were also impacted by previous SLRA Supplements and RAI responses (References 3, 4, and 5).

References:

1. NACE. Standard Practice SP0169-2007, "Control of External Corrosion on Underground or Submerged Metallic Piping Systems." Houston, Texas: NACE International. 2007.
2. ASTM. ASTM D 448-08, "Classification for Sizes of Aggregate for Road and Bridge Construction." West Conshohocken, Pennsylvania: ASTM International. 2008.
3. Florida Power and Light Company (FPL) Letter to NRC L-2022-075 dated June 13, 2022, [St. Lucie Units 1 and 2] Subsequent License Renewal Application – Aging Management Requests for Additional Information (RAI) Set 1A Response and Request for Confirmation of Information (RCI) Set 1 Response, ADAMS Accession No. ML22164A802
4. Florida Power and Light Company (FPL) Letter to NRC L-2022-043 dated April 7, 2022, [St. Lucie Units 1 and 2] Subsequent License Renewal Application Revision 1 – Supplement 1, ADAMS Accession No. ML22097A202
5. Florida Power and Light Company (FPL) Letter to NRC L-2022-115 dated August 9, 2022, [St. Lucie Units 1 and 2] Subsequent License Renewal Application - Aging Management Requests for Additional Information (RAI) Set 3 Response and Submittal of Superseded Response for One Set 2 RAI and One Supplement 1 Attachment, ADAMS Accession No. ML22221A134

Associated SLRA Revisions:

SLRA Table 3.3-1, page 3.3-46, as updated by Supplement 1 Attachment 30 and Set 3 RAI 3.3.2.2.9-1, is updated as follows:

Table 3.3-1: Summary of Aging Management Evaluations for the Auxiliary Systems					
Item Number	Component	Aging Effect/Mechanism	Aging Management Program (AMP)/TLAA	Further Evaluation Recommended	Discussion
3.3-1, 107	Stainless steel, nickel alloy piping, piping components exposed to soil, concrete	Loss of material due to pitting, crevice corrosion, MIC (soil only)	AMP XI.M41, "Buried and Underground Piping and Tanks"	No	Consistent with NUREG-2191 with exception . The Buried and Underground Piping and Tanks AMP is used to manage loss of material in stainless steel piping, piping components exposed to soil or concrete
3.3-1, 108	Titanium, super austenitic, copper alloy, stainless steel, nickel alloy piping, piping components, tanks, closure bolting exposed to soil, concrete, underground	Loss of material due to general (copper alloy only), pitting, crevice corrosion, MIC (super austenitic, copper alloy, stainless steel, nickel alloy; soil environment only)	AMP XI.M41, "Buried and Underground Piping and Tanks"	No	Consistent with NUREG-2191 with exception . The Buried and Underground Piping and Tanks AMP is used to manage loss of material in stainless steel closure bolting exposed to soil.
3.3-1, 109	Steel piping, piping components, closure bolting exposed to soil, concrete, underground	Loss of material due to general, pitting, crevice corrosion, MIC (soil only)	AMP XI.M41, "Buried and Underground Piping and Tanks"	No	Consistent with NUREG-2191 with exception . The Buried and Underground Piping and Tanks AMP is used to manage loss of material in steel piping, piping components, and closure bolting exposed to soil or concrete that are subject to wetting.
3.3-1, 110	This line item only applies to BWRs.				
3.3-1, 111	Steel structural steel exposed to air – indoor uncontrolled	Loss of material due to general, pitting, crevice corrosion	AMP XI.S6, "Structures Monitoring"	No	Not used. Item Number 3.5-1, 077 is used for loss of material of steel structural steel exposed to air – indoor uncontrolled.
3.3-1, 112	Steel piping, piping components exposed to concrete	None	None	Yes (SRP-SLR Section 3.3.2.2.9)	Consistent with NUREG-2191. There are no aging effects to be managed for steel piping and piping components and the Unit 2 DOSTs exposed to concrete that are not subject to wetting. Further evaluation is documented in Section 3.2.2.9 .

SLRA Table 3.3-1, page 3.3-55, is updated as follows:

Table 3.3-1: Summary of Aging Management Evaluations for the Auxiliary Systems					
Item Number	Component	Aging Effect/Mechanism	Aging Management Program (AMP)/TLAA	Further Evaluation Recommended	Discussion
3.3-1, 144	Stainless steel, steel, aluminum piping, piping components, tanks exposed to soil, concrete	Cracking due to SCC (steel in carbonate/bicarbonate environment only)	AMP XI.M41, "Buried and Underground Piping and Tanks"	No	Consistent with NUREG-2191 <u>with exception</u> . The Buried and Underground Piping and Tanks AMP is used to manage cracking for steel and stainless steel piping, piping components, and bolting exposed to soil or concrete.
3.3-1, 145	Stainless steel closure bolting exposed to air, soil, concrete, underground, waste water	Cracking due to SCC	AMP XI.M18, "Bolting Integrity"	No	Consistent with NUREG-2191. The Bolting Integrity AMP is used to manage cracking of stainless steel closure bolting exposed to indoor uncontrolled air, outdoor air, and soil.
3.3-1, 146	Stainless steel underground piping, piping components, tanks	Cracking due to SCC	AMP XI.M32, "One-Time Inspection," AMP XI.M41, "Buried and Underground Piping and Tanks," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks"	Yes (SRP-SLR Section 3.3.2.2.3)	Consistent with NUREG-2191 <u>with exception for the Buried and Underground Piping and Tanks AMP</u> . The Buried and Underground Piping and Tanks AMP is used to manage loss of material of stainless piping exposed to an underground environment. Further evaluation is document in Section 3.3.2.2.3 .
3.3-1, 147	Nickel alloy, nickel alloy cladding piping, piping components exposed to closed-cycle cooling water	Loss of material due to pitting, crevice corrosion, MIC	AMP XI.M21A, "Closed Treated Water Systems"	No	Not applicable. There are no nickel alloy or nickel alloy clad piping or piping components exposed to closed-cycle cooling water in the Auxiliary Systems.
3.3-1, 149	Fiberglass piping, piping components, ducting, ducting components exposed to air – outdoor	Cracking, blistering, loss of material due to exposure to ultraviolet light, ozone, radiation, temperature, or moisture	AMP XI.M36, "External Surfaces Monitoring of Mechanical Components"	No	Not applicable. There are no fiberglass piping and piping components in the Auxiliary Systems exposed to outdoor air that require aging management.

SLRA Table 3.3-1, page 3.3-74, is updated as follows:

Table 3.3-1: Summary of Aging Management Evaluations for the Auxiliary Systems					
Item Number	Component	Aging Effect/Mechanism	Aging Management Program (AMP)/TLAA	Further Evaluation Recommended	Discussion
3.3-1, 246	Stainless steel, nickel alloy underground piping, piping components, tanks	Loss of material due to pitting, crevice corrosion	AMP XI.M32, "One-Time Inspection," AMP XI.M41, "Buried and Underground Piping and Tanks," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks"	Yes (SRP-SLR Section 3.3.2.2.4)	Consistent with NUREG-2191 <u>with exception for the Buried and Underground Piping and Tanks AMP</u> . The Buried and Underground Piping and Tanks AMP is used to manage cracking of stainless steel piping components exposed to an underground environment. Further evaluation is documented in Section 3.3.2.2.4 .
3.3-1, 247	Aluminum piping, piping components, tanks exposed to raw water, waste water	Loss of material due to pitting, crevice corrosion	AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks," AMP XI.M32, "One-Time Inspection," AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks"	Yes (SRP-SLR Section 3.3.2.2.10)	Not applicable. There are no aluminum piping or piping components exposed to raw water or waste water in the Auxiliary Systems.
3.3-1, 248	Aluminum piping, piping components, tanks exposed to air with borated water leakage	None	None	No	Not used. Boric acid corrosion is not an applicable aging effect for aluminum; the associated NUREG-2191 aging items are not used.

SLRA Table 3.3.2-4, page 3.3-119, is updated as follows:

Table 3.3.2-4: Diesel Generators and Support Systems – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Carbon steel	Treated water (int)	Loss of material	Closed Treated Water Systems (B.2.3.12)	VII.H2.AP-202	3.3-1, 045	A
Piping	Pressure boundary	Carbon steel	Underground (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-284	3.3-1, 109	AB
Piping	Pressure boundary	Copper alloy	Air – dry (int)	Loss of material	Compressed Air Monitoring (B.2.3.14)	VII.D.A-764	3.3-1, 235	A
Piping	Pressure boundary	Copper alloy	Air – indoor uncontrolled (ext)	None	None	VII.J.AP-144	3.3-1, 114	A
Piping	Pressure boundary	Copper alloy	Fuel oil (int)	Loss of material	Fuel Oil Chemistry (B.2.3.18) One-Time Inspection (B.2.3.20)	VII.H1.AP-132	3.3-1, 069	B A
Piping	Pressure boundary	Copper alloy	Treated water (int)	Loss of material	Closed Treated Water Systems (B.2.3.12)	VII.H2.AP-199	3.3-1, 046	A
Piping	Pressure boundary	Stainless steel	Air – dry (int)	Loss of material	Compressed Air Monitoring (B.2.3.14)	VII.D.A-764	3.3-1, 235	A
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.H1.AP-209b	3.3-1, 004	A
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.H1.AP-221b	3.3-1, 006	A
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (int)	Cracking	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.D.AP-209b	3.3-1, 004	A

SLRA Table 3.3.2-4, page 3.3-120, as updated by Supplement 1 Attachment 1, is updated as follows:

Table 3.3.2-4: Diesel Generators and Support Systems – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.H1.AP-221c	3.3-1, 006	A
Piping	Pressure boundary	Stainless steel	Fuel oil (int)	Loss of material	Fuel Oil Chemistry (B.2.3.18) One-Time Inspection (B.2.3.20)	VII.H1.AP-136	3.3-1, 071	B A
Piping	Pressure boundary	Stainless steel	Lubricating oil (int)	Loss of material	Lubricating Oil Analysis (B.2.3.25) One-Time Inspection (B.2.3.20)	VII.H2.AP-138	3.3-1, 100	A
Piping	Pressure boundary	Stainless steel	Treated water (int)	Loss of material	Closed Treated Water Systems (B.2.3.12)	VII.C2.A-52	3.3-1, 049	A
Piping	Pressure boundary	Stainless steel	Underground (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-714b	3.3-1, 146	<u>AB</u>
Piping	Pressure boundary	Stainless steel	Underground (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-775b	3.3-1, 246	<u>AB</u>
Piping (insulated)	Pressure boundary	Carbon steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-405a	3.3-1, 132	A
Piping and piping components	Pressure boundary	Carbon steel	Diesel exhaust (int)	Cumulative fatigue damage	TLAA – Section 4.3.2, Metal Fatigue of Non-Class 1 Components	VII.E1.A-34	3.3-1, 002	A
Piping and piping components	Pressure boundary	Stainless steel	Diesel exhaust (int)	Cumulative fatigue damage	TLAA – Section 4.3.2, Metal Fatigue of Non-Class 1 Components	VII.E1.A-57	3.3-1, 002	A

SLRA Table 3.3.2-5, page 3.3-135 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Accumulator	Pressure boundary	Carbon steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Accumulator	Pressure boundary	Carbon steel	Air – outdoor (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	V.A.E-29	3.2-1, 044	A
Bolting	Mechanical closure	Carbon steel	Air – indoor uncontrolled (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Carbon steel	Air – indoor uncontrolled (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Carbon steel	Air – outdoor (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Carbon steel	Air – outdoor (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Carbon steel	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	<u>GD</u>
Bolting	Mechanical closure	Carbon steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-241	3.3-1, 109	<u>AB</u>
Bolting	Mechanical closure	Carbon steel	Soil (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Cast iron	Air – indoor uncontrolled (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Cast iron	Air – indoor uncontrolled (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Cast iron	Air – outdoor (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Cast iron	Air – outdoor (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A

SLRA Table 3.3.2-5, page 3.3-136 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Bolting	Mechanical closure	Cast iron	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	<u>GD</u>
Bolting	Mechanical closure	Cast iron	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-241	3.3-1, 109	<u>AB</u>
Bolting	Mechanical closure	Cast iron	Soil (ext)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-02	3.3-1, 072	C
Bolting	Mechanical closure	Cast iron	Soil (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	Bolting Integrity (B.2.3.9)	VII.I.A-426	3.3-1, 145	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Stainless steel	Air – outdoor (ext)	Cracking	Bolting Integrity (B.2.3.9)	VII.I.A-426	3.3-1, 145	A
Bolting	Mechanical closure	Stainless steel	Air – outdoor (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Stainless steel	Air – outdoor (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Stainless steel	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	<u>GD</u>
Bolting	Mechanical closure	Stainless steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-243	3.3-1, 108	<u>AB</u>
Bolting	Mechanical closure	Stainless steel	Soil (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Drip pan	Direct flow	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.G.AP-209b	3.3-1, 004	A

SLRA Table 3.3.2-5, page 3.3-137 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Drip pan	Direct flow	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.G.AP-221b	3.3-1, 006	A
Drip pan	Direct flow	Stainless steel	Air – indoor uncontrolled (int)	Cracking	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.G.AP-209c	3.3-1, 004	A
Drip pan	Direct flow	Stainless steel	Air – indoor uncontrolled (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.G.AP-221c	3.3-1, 006	A
Drip pan	Direct flow	Stainless steel	Lubricating oil (int)	Loss of material	Lubricating Oil Analysis (B.2.3.25) One-Time Inspection (B.2.3.20)	VII.G.AP-138	3.3-1, 100	C
Fire hydrant	Pressure boundary	Gray cast iron	Air – outdoor (ext)	Loss of material	Fire Water System (B.2.3.16)	VII.G.AP-149	3.3-1, 063	A
Fire hydrant	Pressure boundary	Gray cast iron	Air – outdoor (int)	Loss of material	Fire Water System (B.2.3.16)	VII.G.AP-149	3.3-1, 063	A
Fire hydrant	Pressure boundary	Gray cast iron	Raw water (int)	Long-term loss of material	One-Time Inspection (B.2.3.20)	VII.G.A-532	3.3-1, 193	A
Fire hydrant	Pressure boundary	Gray cast iron	Raw water (int)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-51	3.3-1, 072	A
Fire hydrant	Pressure boundary	Gray cast iron	Raw water (int)	Loss of material Flow blockage	Fire Water System (B.2.3.16)	VII.G.AP-149	3.3-1, 063	A
Fire hydrant	Pressure boundary	Gray cast iron	Raw water (int)	Wall thinning – erosion	Fire Water System (B.2.3.16)	VII.C1.A-409	3.3-1, 126	E, 1
Fire hydrant	Pressure boundary	Gray cast iron	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB

SLRA Table 3.3.2-5, page 3.3-138 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Fire hydrant	Pressure boundary	Gray cast iron	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Fire hydrant	Pressure boundary	Gray cast iron	Soil (ext)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-02	3.3-1, 072	A
Flame arrestor	Fire prevention	Aluminum	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.G.A-451b	3.3-1, 189	A
Flame arrestor	Fire prevention	Aluminum	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.H2.A-763b	3.3-1, 234	A
Flame arrestor	Fire prevention	Aluminum	Air – indoor uncontrolled (int)	Cracking	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.G.A-451c	3.3-1, 189	A
Flame arrestor	Fire prevention	Aluminum	Air – indoor uncontrolled (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.H2.A-763c	3.3-1, 234	A
Flame arrestor	Fire prevention	Aluminum	Lubricating oil (int)	Loss of material	Lubricating Oil Analysis (B.2.3.25) One-Time Inspection (B.2.3.20)	VII.G.AP-162	3.3-1, 099	A
Flame arrestor	Fire prevention	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.G.AP-209b	3.3-1, 004	A

SLRA Table 3.3.2-5, page 3.3-145 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Carbon steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Piping	Pressure boundary	Carbon steel	Air – indoor uncontrolled (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	V.A.E-29	3.2-1, 044	A
Piping	Pressure boundary	Carbon steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Piping	Pressure boundary	Carbon steel	Air – outdoor (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	V.A.E-29	3.2-1, 044	A
Piping	Pressure boundary	Carbon steel	Concrete (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB
Piping	Pressure boundary	Carbon steel	Concrete (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Piping	Pressure boundary	Carbon steel	Lubricating oil (int)	Loss of material	Lubricating Oil Analysis (B.2.3.25) One-Time Inspection (B.2.3.20)	VII.G.AP-127	3.3-1, 097	A
Piping	Pressure boundary	Carbon steel	Raw water (ext)	Loss of material	Fire Water System (B.2.3.16)	VII.G.A-33	3.3-1, 064	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Long-term loss of material	One-Time Inspection (B.2.3.20)	VII.G.A-532	3.3-1, 193	A

SLRA Table 3.3.2-5, page 3.3-146 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Carbon steel	Raw water (int)	Loss of material Flow blockage	Fire Water System (B.2.3.16)	VII.G.A-33	3.3-1, 064	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Loss of material Flow blockage	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.C1.A-727	3.3-1, 134	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Wall thinning – erosion	Fire Water System (B.2.3.16)	VII.C1.A-409	3.3-1, 126	E, 1
Piping	Pressure boundary	Carbon steel	Raw water (int)	Wall thinning – erosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.C1.A-409	3.3-1, 126	E, 2
Piping	Pressure boundary	Carbon steel	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB
Piping	Pressure boundary	Carbon steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Piping	Pressure boundary	Coating	Raw water (int)	Loss of coating or lining integrity	Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks (B.2.3.28)	VII.G.A-416	3.3-1, 138	A
Piping	Pressure boundary	Coating (cementitious)	Raw water (int)	Loss of coating or lining integrity (cementitious)	Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks (B.2.3.28)	VII.G.A-416	3.3-1, 138	A
Piping	Pressure boundary	Copper alloy	Air – indoor uncontrolled (ext)	None	None	VII.J.AP-144	3.3-1, 114	A

SLRA Table 3.3.2-5, page 3.3-147 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Copper alloy	Air – outdoor (ext)	None	None	VII.J.AP-144	3.3-1, 114	A
Piping	Pressure boundary	Copper alloy	Raw water (int)	Loss of material Flow blockage	Fire Water System (B.2.3.16)	VII.G.AP-197	3.3-1, 064	A
Piping	Pressure boundary	Copper alloy	Raw water (int)	Wall thinning – erosion	Fire Water System (B.2.3.16)	VII.C1.A-409	3.3-1, 126	E, 1
Piping	Pressure boundary	Copper alloy > 15% Zn	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.H.S-454	3.4-1, 106	A
Piping	Pressure boundary	Copper alloy > 15% Zn	Air – indoor uncontrolled (int)	None	None	VII.J.AP-144	3.3-1, 114	A
Piping	Pressure boundary	Copper alloy > 15% Zn	Air – outdoor (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.H.S-454	3.4-1, 106	A
Piping	Pressure boundary	Copper alloy > 15% Zn	Air – outdoor (int)	None	None	VII.J.AP-144	3.3-1, 114	A
Piping	Pressure boundary	Ductile iron	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Piping	Pressure boundary	Ductile iron	Concrete (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Piping	Pressure boundary	Ductile iron	Raw water (int)	Long-term loss of material	One-Time Inspection (B.2.3.20)	VII.G.A-532	3.3-1, 193	A
Piping	Pressure boundary	Ductile iron	Raw water (int)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-51	3.3-1, 072	A
Piping	Pressure boundary	Ductile iron	Raw water (int)	Loss of material Flow blockage	Fire Water System (B.2.3.16)	VII.G.A-33	3.3-1, 064	A
Piping	Pressure boundary	Ductile iron	Raw water (int)	Wall thinning – erosion	Fire Water System (B.2.3.16)	VII.C1.A-409	3.3-1, 126	E, 1

SLRA Table 3.3.2-5, page 3.3-148 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Ductile iron	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB
Piping	Pressure boundary	Ductile iron	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Piping	Pressure boundary	Ductile iron	Soil (ext)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-02	3.3-1, 072	A
Piping	Pressure boundary	Galvanized steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Piping	Pressure boundary	Galvanized steel	Air – outdoor (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	V.A.E-29	3.2-1, 044	A
Piping	Pressure boundary	Galvanized steel	Raw water (int)	Long-term loss of material	One-Time Inspection (B.2.3.20)	VII.G.A-532	3.3-1, 193	A
Piping	Pressure boundary	Galvanized steel	Raw water (int)	Loss of material Flow blockage	Fire Water System (B.2.3.16)	VII.G.A-33	3.3-1, 064	A
Piping	Pressure boundary	Galvanized steel	Raw water (int)	Wall thinning – erosion	Fire Water System (B.2.3.16)	VII.C1.A-409	3.3-1, 126	E, 1
Piping	Pressure boundary	Gray cast iron	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Piping	Pressure boundary	Gray cast iron	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A

SLRA Table 3.3.2-5, page 3.3-149 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Gray cast iron	Concrete (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Piping	Pressure boundary	Gray cast iron	Raw water (int)	Long-term loss of material	One-Time Inspection (B.2.3.20)	VII.G.A-532	3.3-1, 193	A
Piping	Pressure boundary	Gray cast iron	Raw water (int)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-51	3.3-1, 072	A
Piping	Pressure boundary	Gray cast iron	Raw water (int)	Loss of material Flow blockage	Fire Water System (B.2.3.16)	VII.G.A-33	3.3-1, 064	A
Piping	Pressure boundary	Gray cast iron	Raw water (int)	Wall thinning – erosion	Fire Water System (B.2.3.16)	VII.C1.A-409	3.3-1, 126	E, 1
Piping	Pressure boundary	Gray cast iron	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB
Piping	Pressure boundary	Gray cast iron	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Piping	Pressure boundary	Gray cast iron	Soil (ext)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-02	3.3-1, 072	A
Piping	Pressure boundary	PVC/CPVC	Air – indoor uncontrolled (ext)	None	None	VII.J.AP-268	3.3-1, 119	A
Piping	Pressure boundary	PVC/CPVC	Air – indoor uncontrolled (int)	None	None	VII.J.AP-268	3.3-1, 119	A
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.G.AP-209b	3.3-1, 004	A
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.G.AP-221b	3.3-1, 006	A

SLRA Table 3.3.2-5, page 3.3-162 is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Valve body	Pressure boundary	Ductile iron	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Valve body	Pressure boundary	Ductile iron	Raw water (int)	Long-term loss of material	One-Time Inspection (B.2.3.20)	VII.G.A-532	3.3-1, 193	A
Valve body	Pressure boundary	Ductile iron	Raw water (int)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-51	3.3-1, 072	A
Valve body	Pressure boundary	Ductile iron	Raw water (int)	Loss of material Flow blockage	Fire Water System (B.2.3.16)	VII.G.A-33	3.3-1, 064	A
Valve body	Pressure boundary	Ductile iron	Raw water (int)	Wall thinning – erosion	Fire Water System (B.2.3.16)	VII.C1.A-409	3.3-1, 126	E, 1
Valve body	Pressure boundary	Gray cast iron	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Valve body	Pressure boundary	Gray cast iron	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Valve body	Pressure boundary	Gray cast iron	Raw water (int)	Long-term loss of material	One-Time Inspection (B.2.3.20)	VII.G.A-532	3.3-1, 193	A
Valve body	Pressure boundary	Gray cast iron	Raw water (int)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-51	3.3-1, 072	A
Valve body	Pressure boundary	Gray cast iron	Raw water (int)	Loss of material Flow blockage	Fire Water System (B.2.3.16)	VII.G.A-33	3.3-1, 064	A
Valve body	Pressure boundary	Gray cast iron	Raw water (int)	Wall thinning – erosion	Fire Water System (B.2.3.16)	VII.C1.A-409	3.3-1, 126	E, 1
Valve body	Pressure boundary	Gray cast iron	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB

SLRA Table 3.3.2-5, page 3.3-163, as updated by Supplement 1 Attachment 21, is updated as follows:

Table 3.3.2-5: Fire Protection / Service Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Valve body	Pressure boundary	Gray cast iron	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Valve body	Pressure boundary	Gray cast iron	Soil (ext)	Loss of material	Selective Leaching (B.2.3.21)	VII.G.A-02	3.3-1, 072	A
Valve body	Pressure boundary	Stainless steel	Air – outdoor (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.G.AP-209b	3.3-1, 004	A
Valve body	Pressure boundary	Stainless steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.G.AP-221b	3.3-1, 006	A
Valve body	Pressure boundary	Stainless steel	Air – outdoor (int)	Cracking	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.G.AP-209c	3.3-1, 004	A
Valve body	Pressure boundary	Stainless steel	Air – outdoor (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.G.AP-221c	3.3-1, 006	A
Valve body	Pressure boundary	Stainless steel	Raw water (int)	Loss of material Flow blockage	Fire Water System (B.2.3.16)	VII.G.A-55	3.3-1, 066	A
Valve body	Pressure boundary	Stainless steel	Raw water (int)	Wall thinning – erosion	Fire Water System (B.2.3.16)	VII.C1.A-409	3.3-1, 126	E, 1
Valve body (halon) (Unit 1 only)	Pressure boundary	Carbon steel	Air – outdoor (ext)	Loss of material	Fire Protection (B.2.3.15)	VII.G.AP-150	3.3-1, 058	A

SLRA, Section 3.3, page 3.3-165 is updated as follows:

B. Consistent with component, material, environment, aging effect, and AMP listed for NUREG-2191 line item. AMP has exceptions to NUREG-2191 AMP description.

C. Component is different, but consistent with material, environment, aging effect, and AMP listed for NUREG-2191 line item. AMP is consistent with NUREG-2191 AMP description.

D. Component is different, but consistent with material, environment, aging effect, and AMP listed for NUREG-2191 line item. AMP has exceptions to NUREG 2191 AMP description.

E. Consistent with NUREG-2191 material, environment, and aging effect but a different AMP is credited or NUREG-2191 identifies a plant-specific AMP.

G. Environment not in NUREG-2191 for this component and material.

Plant Specific Notes

1. The Fire Water System AMP is used to manage the wall thinning due to erosion aging effect for fire protection components exposed to raw water.
2. The Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components AMP is used to manage the wall thinning due to erosion aging effect for service water components exposed to raw water.
3. The Fire Water System AMP is used to manage the cracking aging effect for copper alloy >15% Zn components internally exposed to raw water.
4. The Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components AMP is used to manage the cracking aging effect for copper alloy >15% Zn components internally exposed to raw water.
5. The External Surfaces Monitoring of Mechanical Components AMP is used to manage loss of material for the external surfaces of the yard sump pump 2A.

SLRA Table 3.3.2-8, page 3.3-184 is updated as follows:

Table 3.3.2-8: Intake Cooling Water / Emergency Cooling Canal – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Bolting	Mechanical closure	Carbon steel	Air – indoor uncontrolled (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Carbon steel	Air – indoor uncontrolled (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Carbon steel	Air – outdoor (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Carbon steel	Air – outdoor (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Carbon steel	Raw water (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-423	3.3-1, 142	A
Bolting	Mechanical closure	Carbon steel	Raw water (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Carbon steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-241	3.3-1, 109	AB
Bolting	Mechanical closure	Carbon steel	Soil (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Copper alloy > 8% Al	Raw water (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-423	3.3-1, 142	A
Bolting	Mechanical closure	Copper alloy > 8% Al	Raw water (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	Bolting Integrity (B.2.3.9)	VII.I.A-426	3.3-1, 145	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting (Unit 1 only)	Mechanical closure	Stainless steel	Air – outdoor (ext)	Cracking	Bolting Integrity (B.2.3.9)	VII.I.A-426	3.3-1, 145	A

SLRA Table 3.3.2-8, page 3.3-188 is updated as follows:

Table 3.3.2-8: Intake Cooling Water / Emergency Cooling Canal – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Orifice	Throttle	Stainless steel	Raw water (int)	Loss of material Flow blockage	Open-Cycle Cooling Water System (B.2.3.11)	VII.C1.A-54	3.3-1, 040	A
Orifice	Throttle	Stainless steel	Raw water (int)	Wall thinning – erosion	Open-Cycle Cooling Water System (B.2.3.11)	VII.C1.A-409	3.3-1, 126	E, 1
Orifice (Unit 2 only)	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.C1.AP-209b	3.3-1, 004	A
Orifice (Unit 2 only)	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.C1.AP-221b	3.3-1, 006	A
Piping	Pressure boundary	Carbon steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Piping	Pressure boundary	Carbon steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.I.A-77	3.3-1, 078	A
Piping	Pressure boundary	Carbon steel	Air – outdoor (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	V.A.E-29	3.2-1, 044	A
Piping	Pressure boundary	Carbon steel	Concrete (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB

SLRA Table 3.3.2-8, page 3.3-189 is updated as follows:

Table 3.3.2-8: Intake Cooling Water / Emergency Cooling Canal – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Carbon steel	Concrete (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Piping	Pressure boundary	Carbon steel	Raw water (ext)	Long-term loss of material	One-Time Inspection (B.2.3.20)	VII.C1.A-532	3.3-1, 193	A
Piping	Pressure boundary	Carbon steel	Raw water (ext)	Loss of material	Open-Cycle Cooling Water System (B.2.3.11)	VII.C1.A-400a	3.3-1, 127	A
Piping	Pressure boundary	Carbon steel	Raw water (ext)	Loss of material	Open-Cycle Cooling Water System (B.2.3.11)	VII.C1.AP-194	3.3-1, 037	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Long-term loss of material	One-Time Inspection (B.2.3.20)	VII.C1.A-532	3.3-1, 193	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Loss of material	Open-Cycle Cooling Water System (B.2.3.11)	VII.C1.A-400a	3.3-1, 127	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Loss of material Flow blockage	Open-Cycle Cooling Water System (B.2.3.11)	VII.C1.AP-194	3.3-1, 037	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Wall thinning – erosion	Open-Cycle Cooling Water System (B.2.3.11)	VII.C1.A-409	3.3-1, 126	E, 1
Piping	Pressure boundary	Carbon steel	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB
Piping	Pressure boundary	Carbon steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-198	3.3-1, 109	AB
Piping	Pressure boundary	Coating	Raw water (int)	Loss of coating or lining integrity	Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks (B.2.3.28)	VII.C1.A-416	3.3-1, 138	A

SLRA Table 3.3.2-8, page 3.3-193, as updated by Supplement 1 Attachments 24 and 25, is updated as follows:

Table 3.3.2-8: Intake Cooling Water / Emergency Cooling Canal – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Stainless steel	Air – outdoor (int)	Cracking	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.C1.AP-209c	3.3-1, 004	A
Piping	Pressure boundary	Stainless steel	Air – outdoor (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.C1.AP-221c	3.3-1, 006	A
Piping	Pressure boundary	Stainless steel	Raw water (int)	Loss of material Flow blockage	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.C1.A-727	3.3-1, 134	A
Piping	Pressure boundary	Stainless steel	Raw water (int)	Loss of material Flow blockage	Open-Cycle Cooling Water System (B.2.3.11)	VII.C1.A-54	3.3-1, 040	A
Piping	Pressure boundary	Stainless steel	Raw water (int)	Wall thinning – erosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.C1.A-409	3.3-1, 126	E, 2
Piping	Pressure boundary	Stainless steel	Raw water (int)	Wall thinning – erosion	Open-Cycle Cooling Water System (B.2.3.11)	VII.C1.A-409	3.3-1, 126	E, 1
Piping (Unit 1 only)	Pressure boundary	Stainless steel	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB
Piping (Unit 1 only)	Pressure boundary	Stainless steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-137	3.3-1, 107	AB

Table 3.3.2-8: Intake Cooling Water / Emergency Cooling Canal – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Stainless steel	Concrete (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	AB
Piping	Pressure boundary	Stainless steel	Concrete (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-137	3.3-1, 107	AB

SLRA, Section 3.3, page 3.3-202 is updated as follows:

General Notes

- A. Consistent with component, material, environment, aging effect, and AMP listed for NUREG-2191 line item. AMP is consistent with NUREG-2191 AMP description.
- B. Consistent with component, material, environment, aging effect, and AMP listed for NUREG-2191 line item. AMP has exceptions to NUREG-2191 AMP description.**
- E. Consistent with NUREG-2191 material, environment, and aging effect but a different AMP is credited or NUREG-2191 identifies a plant-specific AMP.

Plant Specific Notes

1. The Open-Cycle Cooling Water AMP is used to manage wall thinning due to erosion for the interior surfaces of components within the service water system exposed to raw water within the scope of the GL 89-13 program.
2. The Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components AMP is used to manage wall thinning due to erosion for the interior surfaces of components within the intake cooling water system exposed to raw water not within the scope of the GL 89-13 program.

SLRA Table 3.3.2-9, page 3.3-203 is updated as follows:

Table 3.3.2-9: Primary Makeup Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Bolting	Mechanical closure	Carbon steel	Air – indoor uncontrolled (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Carbon steel	Air – indoor uncontrolled (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Carbon steel	Air – outdoor (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Carbon steel	Air – outdoor (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Carbon steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-241	3.3-1, 109	AB
Bolting	Mechanical closure	Carbon steel	Soil (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	Bolting Integrity (B.2.3.9)	VII.I.A-426	3.3-1, 145	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Stainless steel	Air – outdoor (ext)	Cracking	Bolting Integrity (B.2.3.9)	VII.I.A-426	3.3-1, 145	A
Bolting	Mechanical closure	Stainless steel	Air – outdoor (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Stainless steel	Air – outdoor (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Stainless steel	Soil (ext)	Cracking	Bolting Integrity (B.2.3.9)	VII.I.A-426	3.3-1, 145	A
Bolting	Mechanical closure	Stainless steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-243	3.3-1, 108	AB
Bolting	Mechanical closure	Stainless steel	Soil (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A

SLRA Table 3.3.2-9, page 3.3-206 is updated as follows:

Table 3.3.2-9: Primary Makeup Water – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Nickel alloy	Treated water (int)	Loss of material	Water Chemistry (B.2.3.2) One-Time Inspection (B.2.3.20)	VIII.E.SP-87	3.4-1, 085	A
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.E1.AP-209b	3.3-1, 004	A
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.E1.AP-221b	3.3-1, 006	A
Piping	Pressure boundary	Stainless steel	Air – outdoor (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.E1.AP-209b	3.3-1, 004	A
Piping	Pressure boundary	Stainless steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.E1.AP-221b	3.3-1, 006	A
Piping	Pressure boundary	Stainless steel	Concrete (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	<u>AB</u>
Piping	Pressure boundary	Stainless steel	Concrete (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-137	3.3-1, 107	<u>AB</u>
Piping	Pressure boundary	Stainless steel	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.A-425	3.3-1, 144	<u>AB</u>
Piping	Pressure boundary	Stainless steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-137	3.3-1, 107	<u>AB</u>

SLRA Table 3.3.2-12, page 3.3-222 is updated as follows:

Table 3.3.2-12: Ventilation – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Bolting	Mechanical closure	Carbon steel	Air – indoor uncontrolled (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Carbon steel	Air – indoor uncontrolled (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	Bolting Integrity (B.2.3.9)	VII.I.A-426	3.3-1, 145	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	Bolting Integrity (B.2.3.9)	VII.I.A-03	3.3-1, 012	A
Bolting	Mechanical closure	Stainless steel	Air – indoor uncontrolled (ext)	Loss of preload	Bolting Integrity (B.2.3.9)	VII.I.AP-124	3.3-1, 015	A
Demister	Moisture removal	Stainless steel	Air – indoor uncontrolled (int)	Cracking	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.F1.AP-209c	3.3-1, 004	A
Demister	Moisture removal	Stainless steel	Air – indoor uncontrolled (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.F1.AP-221c	3.3-1, 006	A
Duct	Pressure boundary	Ductile iron	Air – indoor uncontrolled (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.F3.A-778	3.3-1, 249	C
Duct	Pressure boundary	Ductile iron	Underground (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VII.I.AP-284	3.3-1, 109	GD
Duct	Pressure boundary	Galvanized steel	Air – indoor uncontrolled (ext)	None	None	VII.J.AP-13	3.3-1, 116	C

SLRA, Section 3.3, page 3.3-231 is updated as follows:

Table 3.3.2-12: Ventilation – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Valve body	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.F3.AP-209b	3.3-1, 004	A
Valve body	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VII.F3.AP-221b	3.3-1, 006	A
Valve body	Pressure boundary	Stainless steel	Air – indoor uncontrolled (int)	Cracking	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.F1.AP-209c	3.3-1, 004	A
Valve body	Pressure boundary	Stainless steel	Air – indoor uncontrolled (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VII.F1.AP-221c	3.3-1, 006	A

General Notes

- A. Consistent with component, material, environment, aging effect, and AMP listed for NUREG-2191 line item. AMP is consistent with NUREG-2191 AMP description.
- C. Component is different, but consistent with material, environment, aging effect, and AMP listed for NUREG-2191 line item. AMP is consistent with NUREG-2191 AMP description.
- D. Component is different, but consistent with material, environment, aging effect, and AMP listed for NUREG-2191 line item. AMP has exceptions to NUREG 2191 AMP description.**

Plant Specific Notes

None.

SLRA Table 3.4-1, page 3.4-23, as updated by Supplement 1 Attachment 25, is updated as follows:

Table 3.4-1: Summary of the Aging Management Evaluations for the Steam and Power Conversion Systems					
Item Number	Component	Aging Effect / Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4-1, 043	Copper alloy piping, piping components exposed to lubricating oil	Loss of material due to pitting, crevice corrosion, MIC	AMP XI.M39, "Lubricating Oil Analysis," and AMP XI.M32, "One-Time Inspection"	No	Not applicable. There are no copper alloy piping or piping components exposed to lubricating oil in the Steam and Power Conversion Systems.
3.4-1, 044	Stainless steel piping, piping components, heat exchanger components exposed to lubricating oil	Loss of material due to pitting, crevice corrosion, MIC	AMP XI.M39, "Lubricating Oil Analysis," and AMP XI.M32, "One-Time Inspection"	No	Consistent with NUREG-2191. The Lubricating Oil Analysis and One-Time Inspection AMPs are used to manage the loss of material in stainless steel heat exchanger components exposed to lubricating oil.
3.4-1, 045	Aluminum heat exchanger tubes exposed to lubricating oil	Reduction of heat transfer due to fouling	AMP XI.M39, "Lubricating Oil Analysis," and AMP XI.M32, "One-Time Inspection"	No	Not applicable. There are no aluminum heat exchanger tubes in the Steam and Power Conversion Systems.
3.4-1, 046	Stainless steel, steel, copper alloy heat exchanger tubes exposed to lubricating oil	Reduction of heat transfer due to fouling	AMP XI.M39, "Lubricating Oil Analysis," and AMP XI.M32, "One-Time Inspection"	No	Consistent with NUREG-2191. The Lubricating Oil Analysis and One-Time Inspection AMPs are used to manage reduction of heat transfer in steel or stainless steel heat exchanger tubes exposed to lubricating oil.
3.4-1, 047	Stainless steel piping, piping components, tanks, closure bolting exposed to soil, concrete	Loss of material due to pitting, crevice corrosion, MIC (soil only)	AMP XI.M41, "Buried and Underground Piping and Tanks"	No	Consistent with NUREG-2191 with exception . This item is used for components in the Auxiliary Systems. The Buried and Underground Piping and Tanks AMP is used to manage loss of material in stainless steel piping exposed to soil or concrete.
3.4-1, 048	Nickel alloy piping, piping components, tanks, closure bolting exposed to soil, concrete	Loss of material due to pitting, crevice corrosion, MIC (soil only)	AMP XI.M41, "Buried and Underground Piping and Tanks"	No	Not applicable. There are no nickel alloy components in the Steam and Power Conversion Systems exposed to soil or concrete.
3.4-1, 050	Steel piping, piping components, tanks, closure bolting exposed to soil, concrete, underground	Loss of material due to general, pitting, crevice corrosion, MIC (soil only)	AMP XI.M41, "Buried and Underground Piping and Tanks"	No	Consistent with NUREG-2191 with exception. The Buried and Underground Piping and Tanks AMP is used to manage loss of material for underground steel components.

SLRA Table 3.4-1, page 3.4-28, is updated as follows:

Table 3.4-1: Summary of the Aging Management Evaluations for the Steam and Power Conversion Systems					
Item Number	Component	Aging Effect / Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4-1, 072	Stainless steel, steel, aluminum piping, piping components, tanks exposed to soil, concrete	Cracking due to SCC (steel in carbonate/bicarbonate environment only)	AMP XI.M41, "Buried and Underground Piping and Tanks"	No	Consistent with NUREG-2191 <u>with exception</u> . This item is used for components in the Auxiliary Systems. The Buried and Underground Piping and Tanks AMP is used to manage cracking of stainless steel piping exposed to concrete or soil.
3.4-1, 073	Stainless steel closure bolting exposed to air, soil, concrete, underground, waste water	Cracking due to SCC	AMP XI.M18, "Bolting Integrity"	No	Consistent with NUREG-2191. The Bolting Integrity AMP is used to manage cracking of stainless steel bolting exposed to air.
3.4-1, 074	Stainless steel underground piping, piping components, tanks	Cracking due to SCC	AMP XI.M32, "One-Time Inspection," AMP XI.M41, "Buried and Underground Piping and Tanks," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks"	Yes (SRP-SLR Section 3.4.2.2.2)	Not applicable. There are no stainless steel underground components in the Steam and Power Conversion Systems.
3.4-1, 075	Stainless steel, steel, aluminum, copper alloy, titanium heat exchanger tubes exposed to air, condensation	Reduction of heat transfer due to fouling	AMP XI.M36, "External Surfaces Monitoring of Mechanical Components"	No	Consistent with NUREG-2191. This line item is used for heat exchanger fins in the Auxiliary Systems. The External Surface Monitoring of Mechanical Components AMP is used to manage loss of material of copper alloy heat exchanger fins exposed to indoor uncontrolled air.
3.4-1, 077	Elastomer piping, piping components, seals exposed to air, condensation	Hardening or loss of strength due to elastomer degradation	AMP XI.M36, "External Surfaces Monitoring of Mechanical Components"	No	Not applicable. There are no elastomer components in the Steam and Power Conversion Systems.

SLRA Table 3.4.2-3, page 3.4-71, as updated by Supplement 1 Attachment 25, is updated as follows:

Table 3.4.2-3: Auxiliary Feedwater and Condensate – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Orifice (Unit 1 only)	Leakage boundary (spatial)	Stainless steel	Treated water (int)	Wall thinning – erosion	Flow-Accelerated Corrosion (B.2.3.8)	VIII.G.S-408	3.4-1, 060	A
Orifice (Unit 1 only)	Leakage boundary (spatial)	Stainless steel	Treated water >140°F (int)	Cracking	Water Chemistry (B.2.3.2) One-Time Inspection (B.2.3.20)	VIII.E.SP-88	3.4-1, 011	A
Piping	Pressure boundary	Carbon steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.H.S-29	3.4-1, 034	A
Piping	Pressure boundary	Carbon steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.H.S-29	3.4-1, 034	A
Piping	Pressure boundary	Carbon steel	Air – outdoor (int)	Loss of material	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.3.24)	VIII.G.SP-59	3.4-1, 036	A
Piping	Pressure boundary	Carbon steel	Gas (int)	None	None	VIII.I.SP-4	3.4-1, 059	A
Piping	Pressure boundary	Carbon steel	Treated water (int)	Loss of material	Water Chemistry (B.2.3.2) One-Time Inspection (B.2.3.20)	VIII.E.SP-73	3.4-1, 014	A
Piping	Pressure boundary	Carbon steel	Treated water (int)	Wall thinning – erosion	Flow-Accelerated Corrosion (B.2.3.8)	VIII.G.S-408	3.4-1, 060	A
Piping	Pressure boundary	Carbon steel	Treated water (int)	Wall thinning – FAC	Flow-Accelerated Corrosion (B.2.3.8)	VIII.G.S-16	3.4-1, 005	A
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.G.SP-118b	3.4-1, 002	A
Piping	Pressure boundary	Stainless steel	Air – indoor uncontrolled (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.G.SP-127b	3.4-1, 003	A
Piping	Pressure boundary	Stainless steel	Air – outdoor (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.G.SP-118b	3.4-1, 002	A
Piping	Pressure boundary	Stainless steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.G.SP-127b	3.4-1, 003	A

Table 3.4.2-3: Auxiliary Feedwater and Condensate – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Carbon steel	Underground (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VIII.H.SP-161	3.4-1, 050	AB

SLRA Table 3.4.2-3, page 3.4-72 is updated as follows:

Table 3.4.2-3: Auxiliary Feedwater and Condensate – Summary of Aging Management Evaluation								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-2191 Item	Table 1 Item	Notes
Piping	Pressure boundary	Stainless steel	Concrete (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VIII.H.S-420	3.4-1, 072	AB
Piping	Pressure boundary	Stainless steel	Concrete (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VIII.H.SP-145	3.4-1, 047	AB
Piping	Pressure boundary	Stainless steel	Soil (ext)	Cracking	Buried and Underground Piping and Tanks (B.2.3.27)	VIII.H.S-420	3.4-1, 072	AB
Piping	Pressure boundary	Stainless steel	Soil (ext)	Loss of material	Buried and Underground Piping and Tanks (B.2.3.27)	VIII.H.SP-145	3.4-1, 047	AB
Piping	Pressure boundary	Stainless steel	Treated water (int)	Loss of material	Water Chemistry (B.2.3.2) One-Time Inspection (B.2.3.20)	VIII.G.SP-87	3.4-1, 085	A
Piping	Pressure boundary	Stainless steel	Treated water (int)	Wall thinning – erosion	Flow-Accelerated Corrosion (B.2.3.8)	VIII.G.S-408	3.4-1, 060	A
Piping	Pressure boundary	Stainless steel	Treated water >140°F (int)	Cracking	Water Chemistry (B.2.3.2) One-Time Inspection (B.2.3.20)	VIII.G.SP-88	3.4-1, 011	A
Piping (insulated)	Pressure boundary	Stainless steel	Air – outdoor (ext)	Cracking	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.H.S-452c	3.4-1, 104	A
Piping (insulated)	Pressure boundary	Stainless steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.H.S-451c	3.4-1, 103	A
Piping (insulated) (Unit 1 only)	Leakage boundary (spatial)	Carbon steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.H.S-402a	3.4-1, 063	A
Piping (Unit 1 only)	Leakage boundary (spatial)	Carbon steel	Air – outdoor (ext)	Loss of material	External Surfaces Monitoring of Mechanical Components (B.2.3.23)	VIII.H.S-29	3.4-1, 034	A
Piping (Unit 1 only)	Leakage boundary (spatial)	Carbon steel	Treated water (int)	Loss of material	Water Chemistry (B.2.3.2) One-Time Inspection (B.2.3.20)	VIII.G.SP-74	3.4-1, 014	A
Piping (Unit 1 only)	Leakage boundary (spatial)	Carbon steel	Treated water (int)	Wall thinning – erosion	Flow-Accelerated Corrosion (B.2.3.8)	VIII.G.S-408	3.4-1, 060	A
Piping (Unit 1 only)	Leakage boundary (spatial)	Carbon steel	Treated water (int)	Wall thinning – FAC	Flow-Accelerated Corrosion (B.2.3.8)	VIII.G.S-16	3.4-1, 005	A

SLRA Section B.1.1, page B-6, as updated by Supplement 1 Attachments 10 and 18, is updated as follows:

- PSL Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components AMP ([Section B.2.3.24](#)),
- PSL Buried and Underground Piping and Tanks AMP ([Section B.2.3.27](#)),
- PSL Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks AMP ([Section B.2.3.28](#)),
- PSL Electrical Insulation for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements used in Instrumentation Circuits AMP ([Section B.2.3.37](#)),
- PSL Electrical Insulation for Inaccessible Medium-Voltage Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements AMP ([Section B.2.3.38](#)),
- PSL Electrical Insulation for Inaccessible Instrument and Control Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements AMP ([Section B.2.3.39](#)),
- PSL Electrical Insulation for Inaccessible Low-Voltage Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements AMP ([Section B.2.3.40](#)),
- PSL Metal Enclosed Bus AMP ([Section B.2.3.41](#)),
- PSL Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements AMP ([Section B.2.3.42](#)), and
- PSL High-Voltage Insulators AMP ([Section B.2.3.43](#)).

These new AMPs will be consistent with the 10 elements of their respective NUREG-2191 AMPs.

The following programs each have exception(s) justified by technical data:

- PSL Reactor Head Closure Stud Bolting AMP ([Section B.2.3.3](#)),
- **Thermal Aging Embrittlement of Cast Austenitic Stainless Steel ([Section B.2.3.6](#))**,
- **PSL Steam Generators AMP ([Section B.2.3.10](#))**,
- PSL Outdoor and Large Atmospheric Metallic Storage Tank AMP ([Section B.2.3.17](#)),
- PSL Fuel Oil Chemistry AMP ([Section B.2.3.18](#)),
- PSL Reactor Vessel Material Surveillance AMP ([Section B.2.3.19](#)),
- **PSL Buried and Underground Piping and Tanks AMP ([Section B.2.3.27](#))**,
- PSL ASME Section XI, Subsection IWF AMP ([Section B.2.3.30](#)), and
- PSL Structures Monitoring AMP ([Section B.2.3.33](#))

B.1.2 Method of Discussion

For those PSL AMPs that are consistent with the AMP descriptions and assumptions made in Sections X and XI of NUREG-2191, or are consistent with exceptions or enhancements, each AMP discussion is presented in the following format:

- A Program Description abstract of the overall program form and function is provided. This Program Description also includes whether the program is existing (and if it replaces LR programs) or new for SLR.

SLRA Table B-4, page B-21 is updated as follows:

**Table B-4
PSL Aging Management Program Consistency with NUREG-2191**

PSL Aging Management Program	Section	PSL Plant-Specific?	NUREG-2191 Comparison		
			NUREG-2191 Section	Enhancements?	Exceptions?
Fire Protection	B.2.3.15	No	XI.M26	Yes	No
Fire Water System	B.2.3.16	No	XI.M27	Yes	No
Outdoor and Large Atmospheric Metallic Storage Tanks	B.2.3.17	No	XI.M29	Yes	Yes
Fuel Oil Chemistry	B.2.3.18	No	XI.M30	Yes	Yes
Reactor Vessel Material Surveillance	B.2.3.19	No	XI.M31	No	Yes
One-Time Inspection	B.2.3.20	No	XI.M32	New	No
Selective Leaching	B.2.3.21	No	XI.M33	New	No
ASME Code Class 1 Small-Bore Piping	B.2.3.22	No	XI.M35	No	No
External Surfaces Monitoring of Mechanical Components	B.2.3.23	No	XI.M36	Yes	No
Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	B.2.3.24	No	XI.M38	New	No
Lubricating Oil Analysis	B.2.3.25	No	XI.M39	Yes	No
Monitoring of Neutron-Absorbing Materials Other Than Boraflex	B.2.3.26	No	XI.M40	Yes	No
Buried and Underground Piping and Tanks	B.2.3.27	No	XI.M41	New	No Yes
Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks	B.2.3.28	No	XI.M42	New	No
ASME Section XI, Subsection IWE	B.2.3.29	No	XI.S1	Yes	No
ASME Section XI, Subsection IWF	B.2.3.30	No	XI.S3	Yes	Yes
10 CFR Part 50, Appendix J	B.2.3.31	No	XI.S4	No	No
Masonry Walls	B.2.3.32	No	XI.S5	Yes	No
Structures Monitoring	B.2.3.33	No	XI.S6	Yes	Yes

SLRA Appendix B, Section B.2.3.27, page B-216, as updated by Supplement 1 Attachments 7 and 25, is updated as follows:

selected for buried steel piping after the cathodic protection system has been in service for approximately 10 years and annual effectiveness reviews are performed. However, if these conditions were to change, the Preventive Action Category would require reevaluation and could potentially change.

The number of inspections for each 10-year inspection period, **beginning** 10 years **before** the SPEO, are based on the inspection quantities noted in NUREG-2191, Table XI.M41-2, adjusted for a 2-Unit plant site.

Material	No. of Inspections	Notes
Steel (buried)	11* prior to the SPEO (Category F) 4 in each 10-year period in the SPEO (Category C)	Includes 2 additional inspections to meet the requirements of NUREG-2191 Section XI.M41, paragraph 4.e.i regarding the aging effects associated with fire mains.
Steel (underground)	3	
Stainless steel (underground)	Pressure testing per note	Perform periodic pressure testing and blow-out testing (purging) with air or nitrogen of the annular volume between the underground stainless steel fuel oil piping and its respective guard piping to verify no leakage of guard pipe and no leakage from the fuel oil piping. This testing will be performed for at least 25 percent of the stainless steel fuel oil piping housed within guard piping at an interval not to exceed 5 years with the first occurrence prior to the SPEO. The annular volume between the fuel oil piping and guard piping will be pressurized to 110 percent of the design pressure of any component within the boundary (not to exceed the maximum allowable test pressure of any non-isolated components) with test pressure being held for a continuous eight hour interval.
Stainless steel (buried)	2	

*If after five years of operation the cathodic protection system does not meet the effectiveness acceptance criteria defined by NUREG-2191, Tables XI.M41-2 and -3 (-850 mV relative to a CSE, instant off, for at least 80 percent of the time, and in operation for at least 85 percent of the time), FPL commits to performing two additional buried steel piping inspections beyond the number required by Preventive Action Category F resulting in a total of thirteen (13) inspections being completed six months prior to the SPEO. **The cathodic protection criterion listed above will continue to be used after five years through the end of the SPEO.**

This AMP does not provide aging management of selective leaching. The PSL Selective Leaching of Materials ([Section B.2.3.21](#)) AMP is applied in addition to this program for applicable materials and environments.

The PSL Buried and Underground Piping and Tanks AMP requires the creation of new governing and inspection procedures consistent with NUREG-2191, Section XI.M41, as well as a new sampling plan and work orders to support the new inspections. A new cathodic protection system will also be installed, and an effectiveness review per Table XI.M41-2 of NUREG-2191, Section XI.M41 will be performed throughout each of the 10-year inspection periods. Initial inspections begin 10 years **before** to the SPEO and are completed no later than six months prior to entering the SPEO or no later than the last RFO prior to the SPEO.

NUREG-2191 Consistency

The PSL Buried and Underground Piping and Tanks AMP will be consistent without exception to the 10 elements of NUREG-2191, Section XI.M41, "Buried and Underground Piping and Tanks."

Exceptions to NUREG-2191

~~None.~~ An exception to the NUREG-2191 recommendation of coating buried stainless steel as a preventive action will be taken with respect to the Unit 1 stainless steel AFW pump recirculation piping and condensate system (AFW pump suction) piping buried beneath the Unit 1 turbine building. This exception is justified due to the low number of chlorides within the soil, the low likelihood of stagnant moisture due to the concrete floor slab shielding, good soil/backfill drainage, and no history of negative OE for buried stainless steel piping at St. Lucie.

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Associated Enclosures:

None.