

1 **Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System**  
 2 **Evaluated in Chapter IV of the GALL-SLR Report**

| <b>New,<br/>Modified,<br/>Deleted,<br/>Edited Item</b> | <b>ID</b> | <b>Type</b>  | <b>Component</b>   | <b>Aging<br/>Effect/Mechanism</b>                                  | <b>Aging<br/>Management<br/>Program (AMP)/<br/>Time-Limited<br/>Aging Analyses<br/>(TLAA)</b>             | <b>Further<br/>Evaluation<br/>Recommended</b> | <b>Generic Aging<br/>Lessons Learned<br/>for Subsequent<br/>License Renewal<br/>(GALL-SLR) Item</b> |
|--|-----------|--|--|--|---|---|---|
|  | 001       | Boiling water reactor (BWR) / pressure water reactor (PWR) | Steel reactor vessel (RV) closure flange assembly components exposed to air-indoor uncontrolled                      | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, Standard Review Plan for Review of Subsequent License Renewal (SRP-SLR) Section 4.3 "Metal Fatigue" | Yes (SRP-SLR Section 3.1.2.2.1)               | IV.A1.RP-201<br>IV.A2.RP-54   |
|  | 002       | PWR  | Nickel-alloy tubes and sleeves exposed to reactor coolant, secondary feedwater/steam                                 | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"   | Yes (SRP-SLR Section 3.1.2.2.1)               | IV.D1.R-46<br>IV.D2.R-46  |
|  | 003       | BWR/PWR  | Stainless steel (SS), nickel alloy reactor vessel internal (RVI) components exposed to reactor coolant, neutron flux | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"   | Yes (SRP-SLR Section 3.1.2.2.1)               | IV.B1.R-53<br>IV.B2.RP-303<br>IV.B3.RP-339<br>IV.B4.R-53  |
|  | 004       | BWR/PWR  | Steel pressure vessel support skirt and attachment welds   | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"   | Yes (SRP-SLR Section 3.1.2.2.1)               | IV.A1.R-70<br>IV.A2.R-70  |

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**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component   | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|---|--|--|---------------------------------|--|
|                                     | 005 | PWR  | Steel, SS, steel (with SS or nickel alloy cladding) steam generator components, pressurizer relief tank components, piping components, bolting  | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"                          | Yes (SRP-SLR Section 3.1.2.2.1) | IV.C2.R-13<br>IV.C2.R-18<br>IV.D1.R-33<br>IV.D2.R-33                         |
|                                     | 006 | BWR  | SS, steel (with or without nickel alloy or SS cladding), nickel alloy reactor coolant pressure boundary components: piping, piping components; other pressure retaining components exposed to reactor coolant | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"                          | Yes (SRP-SLR Section 3.1.2.2.1) | IV.C1.R-220  |
|                                     | 007 | BWR  | SS, steel (with or without nickel alloy or SS cladding), nickel-alloy RV components:  | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"                          | Yes (SRP-SLR Section 3.1.2.2.1) | IV.A1.R-04   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component   | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|---|--|--|---------------------------------|--|
|                                     |     |      | nozzles, penetrations, safe ends, thermal sleeves, vessel shells, heads and welds exposed to reactor coolant  |  |  |                                 |  |
|                                     | 008 | PWR  | SS, steel (with or without nickel alloy or SS cladding), nickel-alloy steam generator components exposed to reactor coolant   | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"                          | Yes (SRP-SLR Section 3.1.2.2.1) | IV.D1.R-221<br>IV.D2.R-222   |
|                                     | 009 | PWR  | SS, steel (with or without nickel alloy or SS cladding), nickel-alloy reactor coolant pressure boundary piping, piping components, other pressure retaining components exposed to reactor coolant | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"                          | Yes (SRP-SLR Section 3.1.2.2.1) | IV.C2.R-223  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended                     | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|---------|--|--|--|--|--|
| E                                   | 010 | PWR     | Steel (with or without nickel alloy or stainless steel cladding), SS, or nickel-alloy RV components: nozzles, penetrations, pressure housings, safe ends; thermal sleeves, vessel shells, heads and welds exposed to reactor coolant | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"  | Yes (SRP-SLR Section 3.1.2.2.1)                    | IV.A2.R-219  |
| E                                   | 011 | BWR/PWR | Steel or SS pump and valve closure bolting exposed to high temperatures and thermal cycles   | Cumulative fatigue damage: cracking due to fatigue, cyclic loading | TLAA, SRP-SLR Section 4.3 "Metal Fatigue"  | Yes (SRP-SLR Section 3.1.2.2.1)                    | IV.C1.RP-44<br>IV.C2.RP-44   |
|                                     | 012 | PWR     | Steel steam generator components: upper and lower shells, transition cone, new transition cone closure weld exposed to   | Loss of material due to general, pitting, crevice corrosion        | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" | Yes (SRP-SLR Sections 3.1.2.2.2.1 and 3.1.2.2.2.2) | IV.D1.RP-368   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/Mechanism  | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)                             | Further Evaluation Recommended    | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|---------|---|---|--|-----------------------------------|--|
|                                     |     |         | secondary feedwater or steam  |   |  |                                   |  |
|                                     | 013 | BWR/PWR | Steel (with or without stainless steel or nickel-alloy cladding) reactor vessel beltline shell, nozzle, and weld components exposed to reactor coolant and neutron flux | Loss of fracture toughness due to neutron irradiation embrittlement | TLAA, SRP-SLR Section 4.2 "Reactor Pressure Vessel Neutron Embrittlement"                      | Yes (SRP-SLR Section 3.1.2.2.3.1) | IV.A1.R-62<br>IV.A2.R-84   |
|                                     | 014 | BWR/PWR | Steel (with or without cladding) reactor vessel beltline shell, nozzle, and weld components, exposed to reactor coolant and neutron flux                                | Loss of fracture toughness due to neutron irradiation embrittlement | AMP XI.M31, "Reactor Vessel Material Surveillance," and AMP X.M2, "Neutron Fluence Monitoring" | Yes (SRP-SLR Section 3.1.2.2.3.2) | IV.A1.RP-227<br>IV.A2.RP-229   |
| E                                   | 015 | PWR     | Stainless steel Babcock & Wilcox (B&W) (including cast austenitic stainless steel [CASS], martensitic   | Reduction in fracture toughness due to neutron irradiation          | TLAA, SRP-SLR Section 4.7 "Other Plant-Specific TLAA's"  | Yes (SRP-SLR Section 3.1.2.2.3.3) | IV.B4.RP-376   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/Mechanism  | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended    | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|--|---|--|-----------------------------------|--|
|                                     |     |      | SS, and precipitation-hardened [PH] SS) and nickel-alloy RVI components exposed to reactor coolant and neutron flux                            |   |  |                                   |  |
|                                     | 016 | BWR  | SS or nickel-alloy reactor vessel top head enclosure flange leakage detection line exposed to air-indoor uncontrolled, reactor coolant leakage | Cracking due to SCC, intergranular stress corrosion cracking (IGSCC)        | AMP XI.M32, "One-Time Inspection," or AMP XI.M36, "External Surfaces Monitoring of Mechanical Components"          | Yes (SRP-SLR Section 3.1.2.2.4.1) | IV.A1.R-61a<br>IV.A1.R-61b   |
|                                     | 017 | BWR  | SS isolation condenser components exposed to reactor coolant   | Cracking due to SCC, irradiation-assisted stress corrosion cracking (IGSCC) | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" | Yes (SRP-SLR Section 3.1.2.2.4.2) | IV.C1.R-15   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>   | <b>Aging Effect/Mechanism</b>                   | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b>  | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b> |
|--|-----------|-------------|--|---|--|---------------------------------------|---|
|  | 018       | PWR         | RV shell fabricated of SA508-CI 2 forgings clad with SS using a high-heat-input welding process exposed to reactor coolant | Crack growth due to cyclic loading              | TLAA, SRP-SLR Section 4.7 "Other Plant-Specific TLAA's"  | Yes (SRP-SLR Section 3.1.2.2.5)       | IV.A2.R-85  |
| M  | 019       | PWR         | SS RV bottom-mounted instrument guide tubes (external to RV) exposed to reactor coolant                                    | Cracking due to stress corrosion cracking (SCC) | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" | No                                    | IV.A2.RP-154  |
| M  | 020       | PWR         | cast austenitic stainless steel (CASS) Class 1 piping, piping components exposed to reactor coolant                        | Cracking due to SCC                             | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" | No                                    | IV.C2.R-05  |
|  | 021       | BWR         | Steel and SS isolation condenser components  | Cracking due to cyclic loading                  | AMP XI.M1, "ASME Section XI Inservice Inspection,  | Yes (SRP-SLR Section 3.1.2.2.7)       | IV.C1.R-225   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component   | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended                       | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item  |
|-------------------------------------|-----|------|---|--|--|--|---|
|                                     |     |      | exposed to reactor coolant  |  | Subsections IWB, IWC, and IWD"   |  |   |
|                                     | 022 | PWR  | Steel steam generator (SG) feedwater impingement plate and support exposed to secondary feedwater   | Loss of material due to erosion  | Plant-specific aging management program  | Yes (SRP-SLR Section 3.1.2.2.8)                      | IV.D1.R-39  |
| M                                   | 025 | PWR  | Steel (with nickel-alloy cladding) or nickel-alloy SG (primary side components: divider plate and tube-to-tube sheet welds exposed to reactor coolant | Cracking due to primary water SCC  | AMP XI.M2, "Water Chemistry," and AMP XI.M19, "Steam Generator" In addition, use of the One-Time Inspection AMP is to be evaluated | Yes (SRP-SLR Sections 3.1.2.2.11.1 and 3.1.2.2.11.2) | IV.D1.RP-367<br>IV.D1.RP-385<br>IV.D2.RP-185  |
| M                                   | 028 | PWR  | Westinghouse-specific "Existing Programs" components: SS, nickel-alloy, and X-750 control rod guide tube support pins (split pins)                    | Loss of material due to wear; cracking due to SCC, irradiation-assisted stress corrosion cracking (IASCC), fatigue | AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry" (for SCC mechanisms only)                                    | Yes (SRP-SLR Section 3.1.2.2.9)                      | IV.B2.RP-355 (if AMP XI.M16A is credited for aging management)<br><br>IV.E.R-444 (if components are defined as ASME |



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| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/Mechanism                     | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item   |
|-------------------------------------|-----|------|--|--|--|--------------------------------|--|
|                                     |     |      | exposed to reactor coolant and neutron flux  |  |  |                                | Section XI category components and the XI.M1 inservice inspection AMP is credited for aging management)<br><br>IV.B2.RP-265 (if components can be placed in the "No Additional Measures" category) |
| M                                   | 029 | BWR  | Nickel-alloy core shroud and core plate access hole cover (welded covers) exposed to reactor coolant | Cracking due to SCC, IGSCC, IASCC          | AMP XI.M9, "BWR Vessel Internals," and AMP XI.M2, "Water Chemistry"  | No                             | IV.B1.R-94   |
|                                     | 030 | BWR  | Stainless steel, nickel alloy penetration: drain line exposed to reactor coolant                     | Cracking due to SCC, IGSCC, cyclic loading | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" | No                             | IV.A1.RP-371   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|--|--|--|--------------------------------|--|
|                                     |     |      |  |  | (SCC, IGSCC mechanisms only)   |                                |  |
|                                     | 031 | BWR  | Steel and SS isolation condenser components exposed to reactor coolant   | Loss of material due to general (steel only), pitting, crevice corrosion, wear | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" | No                             | IV.C1.RP-39  |
| D                                   | 032 |      |  | "  |  |                                |  |
|                                     | 033 | PWR  | SS, steel with SS cladding Class 1 reactor coolant pressure boundary components exposed to reactor coolant             | Cracking due to SCC  | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" | No                             | IV.C2.R-09<br>IV.C2.R-217<br>IV.C2.RP-344<br>IV.D1.RP-232                    |
| E                                   | 034 | PWR  | SS, steel with SS cladding pressurizer relief tank (tank shell and heads, flanges, nozzles) exposed to treated borated | Cracking due to SCC  | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" | No                             | IV.C2.RP-231   |

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| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/Mechanism  | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)               | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|---------|--|---|--|--------------------------------|--|
|                                     |     |         | water >60 °C (>140 °F)   |   |  |                                |  |
|                                     | 035 | PWR     | SS, steel with SS cladding reactor coolant system cold leg, hot leg, surge line, and spray line piping and fittings exposed to reactor coolant | Cracking due to cyclic loading                                | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD" | No                             | IV.C2.R-56   |
|                                     | 036 | PWR     | Steel, SS pressurizer integral support exposed to any environment  | Cracking due to cyclic loading                                | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD" | No                             | IV.C2.R-19   |
|                                     | 037 | PWR     | Steel reactor vessel flange  | Loss of material due to wear                                  | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD" | No                             | IV.A2.R-87   |
|                                     | 038 | BWR/PWR | CASS Class 1 valve bodies and bonnets exposed  | Loss of fracture toughness due to thermal aging embrittlement | AMP XI.M1, "ASME Section XI Inservice Inspection,                                | No                             | IV.C1.R-08<br>IV.C2.R-08   |

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| New, Modified, Deleted, Edited Item | ID   | Type    | Component   | Aging Effect/Mechanism  | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|------|---------|---|---|---|--------------------------------|--|
|                                     |      |         | to reactor coolant >250 °C (>482 °F)  |   | Subsections IWB, IWC, and IWD”  |                                |  |
| E                                   | 039  | BWR/PWR | SS, steel (with or without nickel-alloy or SS cladding), nickel-alloy Class 1 piping, fittings and branch connections <nominal pipe size (NPS) 4 exposed to reactor coolant | Cracking due to SCC (for SS or nickel-alloy surfaces exposed to reactor coolant only), IGSCC (for stainless steel or nickel-alloy surfaces exposed to reactor coolant only), or thermal, mechanical, or vibratory loading | AMP XI.M1, “ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD,” AMP XI.M2, “Water Chemistry,” and XI.M35, “ASME Code Class 1 Small-Bore Piping” | No                             | IV.C1.RP-230<br>IV.C2.RP-235   |
|                                     | 040  | PWR     | Steel with SS or nickel-alloy cladding, or SS pressurizer components exposed to reactor coolant   | Cracking due to cyclic loading  | AMP XI.M1, “ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD”  | No                             | IV.C2.R-58   |
|                                     | 040a | PWR     | Nickel-alloy core support pads, core guide lugs exposed to reactor coolant  | Cracking due to primary water SCC   | AMP XI.M1, “ASME Section XI Inservice Inspection, Subsections IWB,  | No                             | IV.A2.RP-57  |

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| New, Modified, Deleted, Edited Item | ID  | Type | Component   | Aging Effect/Mechanism                             | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|---|--|--|--------------------------------|--|
|                                     |     |      |   |  | IWC, and IWD," and AMP XI.M2, "Water Chemistry"  |                                |  |
| M                                   | 041 | BWR  | Nickel-alloy core shroud and core plate access hole cover (mechanical covers) exposed to reactor coolant  | Cracking due to SCC, IGSCC, IASCC                  | AMP XI.M9, "BWR Vessel Internals," and AMP XI.M2, "Water Chemistry"  | No                             | IV.B1.R-95   |
|                                     | 042 | PWR  | Steel with SS or nickel-alloy cladding, SS primary side components, SG upper and lower heads, and tubesheet welds pressurizer components exposed to reactor coolant | Cracking due to SCC, primary water SCC             | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" | No                             | IV.C2.R-25<br>IV.D2.RP-47  |
|                                     | 043 | BWR  | SS and nickel-alloy RVI exposed to reactor coolant  | Loss of material due to pitting, crevice corrosion | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD,"                                  | No                             | IV.B1.RP-26  |

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|-------------------------------------|-----|------|--|-----------------------------------|---|--------------------------------|--|
|                                     |     |      |  |                                   | and AMP XI.M2, "Water Chemistry"  |                                |  |
|                                     | 044 | PWR  | Steel SG secondary manway and handhole cover seating surfaces exposed to treated water, steam                          | Loss of material due to erosion   | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD"  | No                             | IV.D1.R-31<br>IV.D2.R-31   |
| E                                   | 045 | PWR  | Nickel-alloy, steel with nickel-alloy cladding reactor coolant pressure boundary components exposed to reactor coolant | Cracking due to primary water SCC | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC and IWD," and AMP XI.M2, "Water Chemistry," and, for nickel-alloy, AMP XI.M11B, "Cracking of Nickel-Alloy Components and Loss of Material due to Boric Acid-Induced Corrosion in reactor coolant pressure boundary | No                             | IV.A2.R-90<br>IV.A2.RP-186<br>IV.A2.RP-59<br>IV.C2.RP-156<br>IV.C2.RP-159<br>IV.C2.RP-37<br>IV.D1.RP-36<br>IV.D2.RP-36 |

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|-------------------------------------|-----|------|--|--|--|--------------------------------|--|
|                                     |     |      |  |  | (RCPB) Components (PWRs Only)"   |                                |  |
| E                                   | 046 | PWR  | SS, nickel-alloy control rod drive head penetration pressure housings, RV nozzles, nozzle safe ends and welds exposed to reactor coolant | Cracking due to SCC, primary water SCC | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC and IWD," and AMP XI.M2, "Water Chemistry," and, for nickel-alloy, AMP XI.M11B, "Cracking of Nickel-Alloy Components and Loss of Material due to Boric Acid-Induced Corrosion in RCPB Components (PWRs Only)" | No                             | IV.A2.RP-234   |
|                                     | 047 | PWR  | SS, nickel-alloy control rod drive head penetration pressure housing   | Cracking due to SCC, primary water SCC | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB,   | No                             | IV.A2.RP-55  |

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|-------------------------------------|-----|------|--|--|--|--------------------------------|--|
|                                     |     |      | exposed to reactor coolant   |  | IWC and IWD,” and AMP XI.M2, “Water Chemistry”   |                                |  |
| E                                   | 048 | PWR  | Steel external surfaces: RV top head, RV bottom head, reactor coolant pressure boundary piping or components adjacent to dissimilar metal (Alloy 82/182) welds exposed to air with borated water leakage | Loss of material due to boric acid corrosion | AMP XI.M10, “Boric Acid Corrosion,” and AMP XI.M11B, “Cracking of Nickel-Alloy Components and Loss of Material due to Boric Acid-Induced Corrosion in RCPB Components (PWRs Only)” | No                             | IV.A2.RP-379<br>IV.C2.RP-380   |
|                                     | 049 | PWR  | Steel reactor, vessel, piping, piping components in the reactor coolant pressure boundary of PWRs, and applicable exterior attachments, or steel steam generators in                                     | Loss of material due to boric acid corrosion | AMP XI.M10, “Boric Acid Corrosion”   | No                             | IV.A2.R-17<br>IV.C2.R-17<br>IV.C2.RP-167<br>IV.D1.R-17<br>IV.D2.R-17         |



**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type    | Component  | Aging Effect/Mechanism  | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)                              | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item   |
|-------------------------------------|------|---------|--|---|---|---------------------------------|--|
|                                     |      |         | PWRs: external surfaces or closure bolting exposed to air with borated water leakage   |   |   |                                 |  |
|                                     | 050  | BWR/PWR | CASS Class 1 piping, piping components (including pump casings and control rod drive pressure housings) exposed to reactor coolant >250 °F (>482 °C) | Loss of fracture toughness due to thermal aging embrittlement | AMP XI.M12, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)"             | No                              | IV.A2.R-77<br>IV.C1.R-52<br>IV.C2.R-52   |
| M                                   | 051a | PWR     | SS, nickel-alloy Babcock and Wilcox (B&W) reactor internal "Primary" components exposed to reactor coolant, neutron flux                             | Cracking due to SCC, IASCC, fatigue                           | AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry" (for SCC mechanisms only) | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B4.RP-241<br>IV.B4.RP-241a<br>IV.B4.RP-242a<br>IV.B4.RP-247<br>IV.B4.RP-247a<br>IV.B4.RP-248<br>IV.B4.RP-248a<br>IV.B4.RP-252c<br>IV.B4.RP-256<br>IV.B4.RP-256a<br>IV.B4.RP-261 |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/Mechanism</b>                 | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b>                       | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b>   |
|--|-----------|-------------|---|---|---|---------------------------------------|---|
| M  | 051b      | PWR         | SS, nickel-alloy B&W reactor internal "Expansion" components exposed to reactor coolant, neutron flux                       | Cracking due to SCC, IASCC, fatigue, overload | AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry" (for SCC mechanisms only) | Yes (SRP-SLR Section 3.1.2.2.9)       | IV.B4.RP-244<br>IV.B4.RP-245<br>IV.B4.RP-245a<br>IV.B4.RP-246<br>IV.B4.RP-246a<br>IV.B4.RP-246c<br>IV.B4.RP-246d<br>IV.B4.RP-260a<br>IV.B4.RP-262<br>IV.B4.RP-352             |
| M  | 052a      | PWR         | SS, nickel-alloy Combustion Engineering (CE) reactor internal "Primary" components exposed to reactor coolant, neutron flux | Cracking due to SCC, IASCC, fatigue           | AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry" (for SCC mechanisms only) | Yes (SRP-SLR Section 3.1.2.2.9)       | IV.B3.RP-312<br>IV.B3.RP-314<br>IV.B3.RP-322<br>IV.B3.RP-324<br>IV.B3.RP-327<br>IV.B3.RP-328<br>IV.B3.RP-338<br>IV.B3.RP-342<br>IV.B3.RP-343<br>IV.B3.RP-358<br>IV.B3.RP-362a |
| M  | 052b      | PWR         | SS, nickel-alloy CE reactor internal "Expansion" components exposed to reactor  | Cracking due to SCC, IASCC, fatigue           | AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry"                           | Yes (SRP-SLR Section 3.1.2.2.9)       | IV.B3.RP-313<br>IV.B3.RP-316<br>IV.B3.RP-323<br>IV.B3.RP-325<br>IV.B3.RP-329<br>IV.B3.RP-330  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>   | <b>Aging Effect/Mechanism</b>       | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b>                       | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b>  |
|--|-----------|-------------|--|-------------------------------------|---|---------------------------------------|--|
|  |           |             | coolant, neutron flux  |                                     | (for SCC mechanisms only)   |                                       | IV.B3.RP-333<br>IV.B3.RP-335<br>IV.B3.RP-362c<br>IV.B3.RP-363  |
| M  | 052c      | PWR         | SS, nickel-alloy CE reactor internal "Existing Programs" components exposed to reactor coolant, neutron flux | Cracking due to SCC, IASCC, fatigue | AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry" (for SCC mechanisms only) | Yes (SRP-SLR Section 3.1.2.2.9)       | IV.B3.RP-320<br>IV.B3.RP-320a<br>IV.B3.RP-334  |
| M  | 053a      | PWR         | SS, nickel-alloy Westinghouse reactor internal "Primary" components exposed to reactor coolant, neutron flux | Cracking due to SCC, IASCC, fatigue | AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry" (for SCC mechanisms only) | Yes (SRP-SLR Section 3.1.2.2.9)       | IV.B2.RP-270a<br>IV.B2.RP-271<br>IV.B2.RP-275<br>IV.B2.RP-276<br>IV.B2.RP-296a<br>IV.B2.RP-298<br>IV.B2.RP-302<br>IV.B2.RP-387 |
| M  | 053b      | PWR         | SS Westinghouse reactor internal "Expansion" components exposed to reactor coolant and neutron flux          | Cracking due to SCC, IASCC, fatigue | AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry" (for SCC mechanisms only) | Yes (SRP-SLR Section 3.1.2.2.9)       | IV.B2.RP-273<br>IV.B2.RP-280<br>IV.B2.RP-286<br>IV.B2.RP-291<br>IV.B2.RP-291a<br>IV.B2.RP-291b                                 |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type | Component   | Aging Effect/Mechanism                                  | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)                              | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item  |
|-------------------------------------|------|------|---|---|---|---------------------------------|---|
|                                     |      |      |   |   |   |                                 | IV.B2.RP-293<br>IV.B2.RP-294<br>IV.B2.RP-298a<br>IV.B2.RP-387a                |
| M                                   | 053c | PWR  | SS, nickel-alloy, or stellite Westinghouse reactor internal "Existing Programs" components exposed to reactor coolant, neutron flux                     | Cracking due to SCC, IASCC, fatigue                     | AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry" (for SCC mechanisms only) | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B2.RP-289<br>IV.B2.RP-301<br>IV.B2.RP-345a<br>IV.B2.RP-346<br>IV.B2.RP-399 |
| M                                   | 054  | PWR  | SS Westinghouse-design bottom-mounted instrument system flux thimble tubes (with or without chrome plating) exposed to reactor coolant and neutron flux | Loss of material due to wear                            | AMP XI.M37, "Flux Thimble Tube Inspection"  | No                              | IV.B2.RP-284  |
|                                     | 055a | PWR  | SS, nickel alloy B&W reactor internal "No   | No additional aging management for reactor internal "No | AMP XI.M16A, "PWR Vessel Internals"   | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B4.RP-236  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type | Component   | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|------|------|---|--|--|---------------------------------|--|
|                                     |      |      | Additional Measures” components exposed to reactor coolant, neutron flux  | Additional Measures” components unless required by ASME Section XI, Examination Category B-N-3 or relevant operating experience exists   |  |                                 |  |
|                                     | 055b | PWR  | SS, nickel-alloy CE reactor internal “No Additional Measures” components exposed to reactor coolant, neutron flux | No additional aging management for reactor internal “No Additional Measures” components unless required by ASME Section XI, Examination Category B-N-3 or relevant operating experience exists | AMP XI.M16A, “PWR Vessel Internals”                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B3.RP-306   |
|                                     | 055c | PWR  | SS, nickel-alloy Westinghouse reactor internal “No Additional Measures” components                                | No additional aging management for reactor internal “No Additional Measures” components unless   | AMP XI.M16A, “PWR Vessel Internals”                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B2.RP-265   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type | Component  | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item  |
|-------------------------------------|------|------|--|--|--|---------------------------------|---|
|                                     |      |      | exposed to reactor coolant, neutron flux   | required by ASME Section XI, Examination Category B-N-3 or relevant operating experience exists  |  |                                 |   |
| M                                   | 056a | PWR  | SS, including CASS, precipitation-hardening (PH) SS or martensitic SS or nickel-alloy CE reactor internal "Primary" components exposed to reactor coolant and neutron flux | Loss of fracture toughness due to neutron irradiation embrittlement and for CASS, martensitic SS, and PH SS due to thermal aging embrittlement, changes in dimensions due to void swelling, distortion, loss of preload due to thermal and irradiation-enhanced stress relaxation or creep, loss of material due to wear | AMP XI.M16A, "PWR Vessel Internals"                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B3.RP-315<br>IV.B3.RP-318<br>IV.B3.RP-326<br>IV.B3.RP-338a<br>IV.B3.RP-359<br>IV.B3.RP-360<br>IV.B3.RP-362<br>IV.B3.RP-365<br>IV.B3.RP-366 |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type | Component  | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item   |
|-------------------------------------|------|------|--|--|--|---------------------------------|--|
| M                                   | 056b | PWR  | SS, including CASS, PH SS or martensitic SS CE “Expansion” reactor internal components exposed to reactor coolant and neutron flux | Loss of fracture toughness due to neutron irradiation embrittlement and for CASS, martensitic SS, and PH SS due to thermal aging embrittlement, changes in dimensions due to void swelling, distortion, loss of preload due to thermal and irradiation-enhanced stress relaxation or creep, loss of material due to wear | AMP XI.M16A, “PWR Vessel Internals”                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B3.RP-317<br>IV.B3.RP-331<br>IV.B3.RP-333a<br>IV.B3.RP-359a<br>IV.B3.RP-361<br>IV.B3.RP-362b<br>IV.B3.RP-364<br>IV.B3.R-455 |
| M                                   | 056c | PWR  | SS, including CASS, PH SS or martensitic SS or nickel-alloy CE reactor internal “Existing Programs” components                     | Loss of fracture toughness due to neutron irradiation embrittlement and for CASS, martensitic SS, and PH SS due to thermal aging   | AMP XI.M16A, “PWR Vessel Internals”                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B3.RP-319<br>IV.B3.RP-332<br>IV.B3.RP-336<br>IV.B3.RP-357   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type | Component   | Aging Effect/Mechanism  | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item  |
|-------------------------------------|------|------|---|---|--|---------------------------------|---|
|                                     |      |      | exposed to reactor coolant and neutron flux   | embrittlement, changes in dimensions due to void swelling, distortion, loss of preload due to thermal and irradiation-enhanced stress relaxation or creep, loss of material due to wear   |  |                                 |   |
| M                                   | 058a | PWR  | SS, including CASS, PH SS or martensitic SS, nickel-alloy B&W reactor internal "Primary" components exposed to reactor coolant and neutron flux | Loss of fracture toughness due to neutron irradiation embrittlement and for CASS, martensitic SS, and PH SS due to thermal aging embrittlement, or changes in dimensions due to void swelling or distortion, or loss of preload due to wear; or loss of | AMP XI.M16A, "PWR Vessel Internals"                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B4.RP-240<br>IV.B4.RP-240a<br>IV.B4.RP-242<br>IV.B4.RP-247b<br>IV.B4.RP-247c<br>IV.B4.RP-248b<br>IV.B4.RP-249<br>IV.B4.RP-251<br>IV.B4.RP-251a<br>IV.B4.RP-252<br>IV.B4.RP-252b<br>IV.B4.RP-256b<br>IV.B4.RP-258<br>IV.B4.RP-259 |



**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type | Component   | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item   |
|-------------------------------------|------|------|---|--|--|---------------------------------|--|
|                                     |      |      |   | material due to wear   |  |                                 |  |
| M                                   | 058b | PWR  | SS, including CASS, PH SS or martensitic SS, nickel-alloy B&W reactor internal "Expansion" components exposed to reactor coolant and neutron flux | Loss of fracture toughness due to neutron irradiation embrittlement and for CASS, martensitic SS, and PH SS due to thermal aging embrittlement, or changes in dimensions due to void swelling, or distortion, or loss of preload due to thermal and irradiation-enhanced stress relaxation or creep, or loss of material due to wear | AMP XI.M16A, "PWR Vessel Internals"                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B4.RP-243<br>IV.B4.RP-243a<br>IV.B4.RP-245b<br>IV.B4.RP-245c<br>IV.B4.RP-246b<br>IV.B4.RP-246e<br>IV.B4.RP-250<br>IV.B4.RP-252a<br>IV.B4.RP-260<br>iv.B4.RP-386 |
|                                     | 059a | PWR  | SS, including CASS, PH SS or martensitic SS or nickel-alloy Westinghouse  | Loss of fracture toughness due to neutron irradiation embrittlement and for CASS,  | AMP XI.M16A, "PWR Vessel Internals"                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B2.RP-270<br>IV.B2.RP-272<br>IV.B2.RP-296<br>IV.B2.RP-297<br>IV.B2.RP-302a  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type | Component  | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item  |
|-------------------------------------|------|------|--|--|--|---------------------------------|---|
|                                     |      |      | reactor internal "Primary" components exposed to reactor coolant and neutron flux  | martensitic SS, and PH SS due to thermal aging embrittlement, changes in dimensions due to void swelling, distortion, loss of preload due to thermal and irradiation-enhanced stress relaxation or creep, loss of material due to wear |  |                                 | IV.B2.RP-354<br>IV.B2.RP-388<br>IV.B2.RP-300  |
| M                                   | 059b | PWR  | SS, including CASS, PH SS or martensitic SS Westinghouse reactor internal "Expansion" components exposed to reactor coolant and neutron flux | Loss of fracture toughness due to neutron irradiation embrittlement and for CASS, martensitic SS, and PH SS due to thermal aging embrittlement; changes in dimensions due to void swelling, distortion; loss of                        | AMP XI.M16A, "PWR Vessel Internals"                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B2.RP-274<br>IV.B2.RP-280a<br>IV.B2.RP-287<br>IV.B2.RP-290<br>IV.B2.RP-290a<br>IV.B2.RP-290b<br>IV.B2.RP-292<br>IV.B2.RP-295<br>IV.B2.RP-297a<br>IV.B2.RP-388a |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type | Component   | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|------|------|---|--|--|---------------------------------|--|
|                                     |      |      |   | preload due to thermal and irradiation-enhanced stress relaxation or creep; loss of material due to wear   |  |                                 |  |
| M                                   | 059c | PWR  | SS, including CASS, PH SS or martensitic SS, nickel-alloy, or stellite Westinghouse reactor internal "Existing Programs" components exposed to reactor coolant and neutron flux | Loss of fracture toughness due to neutron irradiation embrittlement and for CASS, martensitic SS, and PH SS due to thermal aging embrittlement, changes in dimensions due to void swelling, distortion, loss of preload due to thermal and irradiation-enhanced stress relaxation or creep, loss of material due to wear | AMP XI.M16A, "PWR Vessel Internals"                                | Yes (SRP-SLR Section 3.1.2.2.9) | IV.B2.RP-285<br>IV.B2.RP-288<br>IV.B2.RP-299<br>IV.B2.RP-345                 |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/Mechanism</b>  | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b> | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b> |
|--|-----------|-------------|---|--|---|---------------------------------------|---|
|  | 060       | BWR         | Steel piping, piping components exposed to reactor coolant  | Wall thinning due to flow-accelerated corrosion                                | AMP XI.M17, "Flow-Accelerated Corrosion"                                  | No                                    | IV.C1.R-23  |
|  | 061       | PWR         | Steel SG steam nozzle and safe end, feedwater nozzle and safe end, auxiliary feedwater nozzles and safe ends exposed to secondary feedwater/steam | Wall thinning due to flow-accelerated corrosion                                | AMP XI.M17, "Flow-Accelerated Corrosion"                                  | No                                    | IV.D1.R-37<br>IV.D2.R-38  |
|  | 062       | BWR/PWR     | High-strength steel, SS closure bolting; SS control rod drive head penetration flange bolting exposed to air-indoor uncontrolled                  | Cracking due to SCC  | AMP XI.M18, "Bolting Integrity"   | No                                    | IV.A2.R-78<br>IV.C1.R-11<br>IV.C2.R-11<br>IV.D1.R-10<br>IV.D2.R-10                  |
|  | 063       | BWR         | Steel or SS closure bolting exposed to air – indoor uncontrolled  | Loss of material due to general (steel only), pitting, crevice corrosion, wear | AMP XI.M18, "Bolting Integrity"   | No                                    | IV.C1.RP-42   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>   | <b>Aging Effect/Mechanism</b>  | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b> | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b> |
|--|-----------|-------------|--|--|---|---------------------------------------|---|
|  | 064       | PWR         | Steel or SS closure bolting exposed to air – indoor uncontrolled   | Loss of material due to general (steel only), pitting, crevice corrosion, wear | AMP XI.M18, “Bolting Integrity”   | No                                    | IV.C2.RP-166<br>IV.D1.RP-166<br>IV.D2.RP-166  |
|  | 065       | PWR         | SS control rod drive head penetration flange bolting exposed to air-indoor uncontrolled                            | Loss of material due to wear   | AMP XI.M18, “Bolting Integrity”   | No                                    | IV.A2.R-79  |
|  | 066       | PWR         | Steel, SS closure bolting; SS control rod drive head penetration flange bolting exposed to air-indoor uncontrolled | Loss of preload due to thermal effects, gasket creep, self-loosening           | AMP XI.M18, “Bolting Integrity”   | No                                    | IV.A2.R-80<br>IV.C2.R-12  |
|  | 067       | BWR/PWR     | Steel or SS closure bolting exposed to air – indoor uncontrolled (external)  | Loss of preload due to thermal effects, gasket creep, self-loosening           | AMP XI.M18, “Bolting Integrity”   | No                                    | IV.C1.RP-43<br>IV.D1.RP-46<br>IV.D2.RP-46   |
|  | 068       | PWR         | Nickel-alloy SG tubes exposed to secondary feedwater or steam  | Changes in dimension (“denting”) due to corrosion of carbon                    | AMP XI.M19, “Steam Generators,” and                                       | No                                    | IV.D1.R-43<br>IV.D2.R-226   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component   | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)                | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|---|--|---|--------------------------------|--|
|                                     |     |      |   | steel tube support plate   | AMP XI.M2, "Water Chemistry"  |                                |  |
|                                     | 069 | PWR  | Nickel-alloy SG tubes and sleeves exposed to secondary feedwater or steam   | Cracking due to outer diameter SCC, intergranular attack   | AMP XI.M19, "Steam Generators," and AMP XI.M2, "Water Chemistry"                  | No                             | IV.D1.R-47<br>IV.D2.R-47   |
|                                     | 070 | PWR  | Nickel-alloy SG tubes, repair sleeves, and tube plugs exposed to reactor coolant  | Cracking due to primary water SCC  | AMP XI.M19, "Steam Generators," and AMP XI.M2, "Water Chemistry"                  | No                             | IV.D1.R-40<br>IV.D1.R-44<br>IV.D2.R-40<br>IV.D2.R-44                         |
|                                     | 071 | PWR  | Steel, chrome plated steel, SS, nickel-alloy SG U-bend supports including anti-vibration bars exposed to secondary feedwater or steam | Cracking due to SCC or other mechanism(s); loss of material due general (steel only), pitting, crevice corrosion | AMP XI.M19, "Steam Generators," and AMP XI.M2, "Water Chemistry"                  | No                             | IV.D1.RP-226<br>IV.D1.RP-384   |
|                                     | 072 | PWR  | Steel SG tube support plate, tube bundle wrapper, supports and mounting hardware exposed to   | Loss of material due to general, pitting, crevice corrosion, erosion, ligament cracking due to corrosion         | AMP XI.M19, "Steam Generators," and AMP XI.M2, "Water Chemistry" (corrosion based | No                             | IV.D1.R-42<br>IV.D1.RP-161<br>IV.D2.R-42<br>IV.D2.RP-162                     |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component   | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|---|--|--|--------------------------------|--|
|                                     |     |      | secondary feedwater or steam  |  | aging effects and mechanisms only)                                 |                                |  |
|                                     | 073 | PWR  | Nickel-alloy SG tubes and sleeves exposed to phosphate chemistry in secondary feedwater or steam                          | Loss of material due to wastage, pitting corrosion                 | AMP XI.M19, "Steam Generators," and AMP XI.M2, "Water Chemistry"   | No                             | IV.D1.R-50   |
|                                     | 074 | PWR  | Steel SG upper assembly and separators including feedwater inlet ring and support exposed to secondary feedwater or steam | Wall thinning due to flow-accelerated corrosion                    | AMP XI.M19, "Steam Generators," and AMP XI.M2, "Water Chemistry"   | No                             | IV.D1.RP-49  |
|                                     | 075 | PWR  | Steel SG tube support lattice bars exposed to secondary feedwater or steam  | Wall thinning due to flow-accelerated corrosion, general corrosion | AMP XI.M19, "Steam Generators," and AMP XI.M2, "Water Chemistry"   | No                             | IV.D1.RP-48  |
|                                     | 076 | PWR  | Steel, chrome plated steel, SS, nickel-alloy steam generator U-bend supports including                                    | Loss of material due to wear, fretting                             | AMP XI.M19, "Steam Generators"                                     | No                             | IV.D1.RP-225   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component   | Aging Effect/Mechanism                             | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|---|--|---|--------------------------------|--|
|                                     |     |      | anti-vibration bars exposed to secondary feedwater or steam   |  |   |                                |  |
|                                     | 077 | PWR  | Nickel-alloy SG tubes and sleeves exposed to secondary feedwater or steam   | Loss of material due to wear, fretting             | AMP XI.M19, "Steam Generators"  | No                             | IV.D1.RP-233<br>IV.D2.RP-233   |
|                                     | 078 | PWR  | Nickel-alloy SG components such as, secondary side nozzles (vent, drain, and instrumentation) exposed to secondary feedwater or steam | Cracking due to SCC                                | AMP XI.M2, "Water Chemistry," and AMP XI.M32, "One-Time Inspection," or AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD." | No                             | IV.D2.R-36   |
|                                     | 079 | BWR  | SS; steel with nickel-alloy or SS cladding; and nickel-alloy reactor coolant pressure boundary components                             | Loss of material due to pitting, crevice corrosion | AMP XI.M2, "Water Chemistry," and AMP XI.M32, "One-Time Inspection"   | No                             | IV.C1.RP-158   |



**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/Mechanism                                      | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|--|---|---|--------------------------------|--|
|                                     |     |      | exposed to reactor coolant   |   |   |                                |  |
|                                     | 080 | PWR  | SS or steel with SS cladding pressurizer relief tank: tank shell and heads, flanges, nozzles (none—ASME Section XI components) exposed to treated borated water >60 °C (>140 °F) | Cracking due to SCC   | AMP XI.M2, “Water Chemistry,” and AMP XI.M32, “One-Time Inspection” | No                             | IV.C2.RP-383   |
|                                     | 081 | PWR  | SS pressurizer spray head exposed to reactor coolant   | Cracking due to SCC   | AMP XI.M2, “Water Chemistry,” and AMP XI.M32, “One-Time Inspection” | No                             | IV.C2.RP-41  |
|                                     | 082 | PWR  | Nickel-alloy pressurizer spray head exposed to reactor coolant   | Cracking due to SCC, primary water SCC                      | AMP XI.M2, “Water Chemistry,” and AMP XI.M32, “One-Time Inspection” | No                             | IV.C2.RP-40  |
|                                     | 083 | PWR  | Steel SG shell assembly exposed to secondary feedwater or steam  | Loss of material due to general, pitting, crevice corrosion | AMP XI.M2, “Water Chemistry,” and AMP XI.M32,                       | No                             | IV.D1.RP-372<br>IV.D2.RP-153   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/Mechanism                                      | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|--|---|---|--------------------------------|--|
|                                     |     |      |  |   | "One-Time Inspection"   |                                |  |
|                                     | 084 | BWR  | Steel top head enclosure (without cladding): top head, top head nozzles (vent, top head spray, reactor core isolation cooling, spare) exposed to reactor coolant                 | Loss of material due to general, pitting, crevice corrosion | AMP XI.M2, "Water Chemistry," and AMP XI.M32, "One-Time Inspection" | No                             | IV.A1.RP-50  |
|                                     | 085 | BWR  | SS, nickel-alloy, and steel with nickel-alloy or SS cladding reactor vessel flanges, nozzles, penetrations, safe ends, vessel shells, heads and welds exposed to reactor coolant | Loss of material due to pitting, crevice corrosion          | AMP XI.M2, "Water Chemistry," and AMP XI.M32, "One-Time Inspection" | No                             | IV.A1.RP-157   |
|                                     | 086 | PWR  | SS or SG primary side divider plate exposed to reactor coolant   | Cracking due to SCC   | AMP XI.M2, "Water Chemistry"  | No                             | IV.D1.RP-17  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/Mechanism</b>   | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b> | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b> |
|--|-----------|-------------|---|---|---|---------------------------------------|---|
|  | 087       | PWR         | SS, nickel-alloy PWR reactor internal components exposed to reactor coolant, neutron flux   | Loss of material due to pitting, crevice corrosion  | AMP XI.M2, "Water Chemistry"  | No                                    | IV.B2.RP-24<br>IV.B3.RP-24<br>IV.B4.RP-24   |
|  | 088       | PWR         | SS; steel with nickel-alloy or stainless steel cladding; and nickel-alloy reactor coolant pressure boundary components exposed to reactor coolant | Loss of material due to pitting, crevice corrosion  | AMP XI.M2, "Water Chemistry"  | No                                    | IV.A2.RP-28<br>IV.C2.RP-23  |
| E  | 089       | PWR         | Steel piping, piping components exposed to closed-cycle cooling water   | Loss of material due to general, pitting, crevice corrosion, microbologically-induced corrosion (MIC) | AMP XI.M21A, "Closed Treated Water Systems"                               | No                                    | IV.C2.RP-221  |
|  | 090       | PWR         | Copper alloy piping, piping components  | Loss of material due to pitting,  | AMP XI.M21A, "Closed Treated Water Systems"                               | No                                    | IV.C2.RP-222  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component   | Aging Effect/Mechanism  | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|---|---|--|--------------------------------|--|
|                                     |     |      | exposed to closed-cycle cooling water   | crevice corrosion, MIC  |  |                                |  |
|                                     | 091 | BWR  | Steel (including high-strength steel) RV closure flange assembly components (including flanges, nut, studs, and washers) exposed to air-indoor uncontrolled | Cracking due to SCC; loss of material due to general, pitting, crevice corrosion, wear        | AMP XI.M3, "Reactor Head Closure Stud Bolting"                     | No                             | IV.A1.RP-165<br>IV.A1.RP-51  |
|                                     | 092 | PWR  | Steel (including high-strength steel) RV closure flange assembly components (including flanges, nut, studs, and washers) exposed to air-indoor uncontrolled | Cracking due to SCC, IGSCC; loss of material due to general, pitting, crevice corrosion, wear | AMP XI.M3, "Reactor Head Closure Stud Bolting"                     | No                             | IV.A2.RP-52<br>IV.A2.RP-53   |
|                                     | 093 | PWR  | Copper alloy >15% zinc or >8% aluminum piping, piping components exposed to closed-   | Loss of material due to selective leaching  | AMP XI.M33, "Selective Leaching"                                   | No                             | IV.C2.RP-12  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/Mechanism                     | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|--|--|--|--------------------------------|--|
|                                     |     |      | cycle cooling water, treated water   |  |  |                                |  |
|                                     | 094 | BWR  | SS and nickel-alloy vessel shell attachment welds exposed to reactor coolant   | Cracking due to SCC, IGSCC, cyclic loading | AMP XI.M4, "BWR Vessel ID Attachment Welds," and AMP XI.M2, "Water Chemistry" (SCC, IGSCC mechanisms only) | No                             | IV.A1.R-64   |
|                                     | 095 | BWR  | Steel (with or without SS or nickel-alloy cladding) feedwater nozzles exposed to reactor coolant   | Cracking due to cyclic loading             | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD"                           | No                             | IV.A1.R-65   |
|                                     | 096 | BWR  | Steel (with or without SS cladding) control rod drive return line nozzles and their nozzle-to-vessel welds exposed to reactor coolant in BWR-3, BWR-4, | Cracking due to SCC, IGSCC, cyclic loading | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD"                           | No                             | IV.A1.R-66   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component   | Aging Effect/Mechanism                           | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)                           | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|---|--|--|--------------------------------|--|
|                                     |     |      | BWR-5, and BWR-6 designs  |  |  |                                |  |
| E                                   | 097 | BWR  | SS and nickel-alloy piping, piping components $\geq 4$ NPS; nozzle safe ends and associated welds, control rod drive return line nozzle cap and associated cap-to-nozzle weld or cap-to-safe end weld in BWR-3, BWR 4, BWR 5, and BWR-6 designs | Cracking due to SCC, IGSCC                       | AMP XI.M7, "BWR Stress Corrosion Cracking," and AMP XI.M2, "Water Chemistry"                 | No                             | IV.A1.R-412<br>IV.C1.R-20<br>IV.C1.R-21                                      |
|                                     | 098 | BWR  | SS, nickel-alloy penetrations: instrumentation and standby liquid control exposed to reactor coolant  | Cracking due to SCC, IGSCC, cyclic loading       | AMP XI.M8, "BWR Penetrations," and AMP XI.M2, "Water Chemistry" (SCC, IGSCC mechanisms only) | No                             | IV.A1.RP-369   |
| M                                   | 099 | BWR  | SS (including CASS; PH martensitic SS; martensitic SS);   | Loss of fracture toughness due to thermal aging, | AMP XI.M9, "BWR Vessel Internals"  | No                             | IV.B1.RP-182<br>IV.B1.RP-200<br>IV.B1.RP-219<br>IV.B1.RP-220                 |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|--|--|---|--------------------------------|--|
|                                     |     |      | nickel-alloy (including X-750 alloy) reactor internal components exposed to reactor coolant and neutron flux | neutron irradiation embrittlement  |   |                                | IV.B1.R-416<br>IV.B1.R-417<br>IV.B1.R-419                                    |
|                                     | 100 | BWR  | SS RVI components (jet pump wedge surface) exposed to reactor coolant  | Loss of material due to wear   | AMP XI.M9, "BWR Vessel Internals"                                   | No                             | IV.B1.RP-377   |
|                                     | 101 | BWR  | SS steam dryers exposed to reactor coolant   | Cracking due to flow-induced vibration, SCC, IGSCC; loss of material due to wear | AMP XI.M9, "BWR Vessel Internals"                                   | No                             | IV.B1.RP-155   |
|                                     | 102 | BWR  | SS fuel supports and control rod drive assemblies control rod drive housing exposed to reactor coolant       | Cracking due to SCC, IGSCC   | AMP XI.M9, "BWR Vessel Internals," and AMP XI.M2, "Water Chemistry" | No                             | IV.B1.R-104  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>   | <b>Aging Effect/Mechanism</b>     | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b> | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b>   |
|--|-----------|-------------|--|-----------------------------------|---|---------------------------------------|---|
| M  | 103       | BWR         | SS, nickel-alloy reactor internal components exposed to reactor coolant and neutron flux | Cracking due to SCC, IGSCC, IASCC | AMP XI.M9, "BWR Vessel Internals," and AMP XI.M2, "Water Chemistry"       | No                                    | IV.B1.R-422<br>IV.B1.R-100<br>IV.B1.R-105<br>IV.B1.R-92<br>IV.B1.R-93<br>IV.B1.R-96<br>IV.B1.R-97<br>IV.B1.R-98<br>IV.B1.R-99 |
|  | 104       | BWR         | Nickel-alloy RVI components exposed to reactor coolant and neutron flux                  | Cracking due to IGSCC             | AMP XI.M9, "BWR Vessel Internals," and AMP XI.M2, "Water Chemistry"       | No                                    | IV.B1.RP-381  |
|  | 105       | BWR/PWR     | Steel piping, piping components exposed to concrete                                      | None                              | None  | Yes (SRP-SLR Section 3.1.2.2.15)      | IV.E.RP-353   |
|  | 106       | BWR/PWR     | Nickel-alloy piping, piping components exposed to air with borated water leakage         | None                              | None  | No                                    | IV.E.RP-378   |
|  | 107       | BWR/PWR     | SS piping, piping components exposed to gas, air   | None                              | None  | No                                    | IV.E.RP-05<br>IV.E.RP-07  |



**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|---------|---|--|--|--------------------------------|--|
|                                     |     |         | with borated water leakage  |  |  |                                |  |
|                                     | 110 | BWR     | Metallic piping, piping components exposed to reactor coolant   | Wall thinning due to erosion   | AMP XI.M17, "Flow-Accelerated Corrosion"   | No                             | IV.C1.R-406  |
|                                     | 111 | PWR     | Nickel-alloy SG tubes exposed to secondary feedwater or steam   | Reduction of heat transfer due to fouling  | AMP XI.M2, "Water Chemistry," and AMP XI.M19, "Steam Generators"   | No                             | IV.D1.R-407<br>IV.D2.R-407   |
|                                     | 113 | BWR     | Steel RV external attachments exposed to indoor, uncontrolled air   | Loss of material due to general, pitting, crevice corrosion, wear  | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD"   | No                             | IV.A1.R-409  |
| M                                   | 114 | BWR/PWR | Reactor coolant system components defined as ASME Section XI Code Class components (ASME Code Class 1 reactor coolant pressure boundary components, RVI | Cracking due to SCC, IGSCC, primary water stress corrosion cracking (PWSCC), IASCC (SCC mechanisms for SS, nickel-alloy components only), fatigue, or cyclic | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," and AMP XI.M2, "Water Chemistry" (water chemistry-related or | No                             | IV.E.R-444   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/Mechanism   | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended     | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|---------|--|--|--|------------------------------------|--|
|                                     |     |         | attachments, or core support structure components; or ASME Class 2 or 3 components — including ASME defined appurtenances, component supports, and associated pressure boundary welds, or components subject to plant-specific equivalent classifications for these ASME Code classes) | loading; loss of material due to general corrosion (steel only), pitting corrosion, crevice corrosion, or wear | corrosion-related aging effect mechanisms only)                    |                                    |  |
|                                     | 115 | BWR/PWR | SS piping, piping components exposed to concrete   | None   | None   | Yes (SRP-SLR Section 3.1.2.2.15)   | IV.E.RP-06   |
|                                     | 116 | PWR     | Nickel-alloy control rod drive penetration nozzles   | Loss of material due to wear   | Plant-specific aging management program                            | Yes (SRP-SLR Section 3.1.2.2.10.1) | IV.A2.R-413  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>   | <b>Aging Effect/Mechanism</b>  | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b>  | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b> |
|--|-----------|-------------|--|--|--|---------------------------------------|---|
|  |           |             | exposed to reactor coolant   |  |  |                                       |   |
|  | 117       | PWR         | SS, nickel-alloy control rod drive penetration nozzle thermal sleeves exposed to reactor coolant   | Loss of material due to wear   | Plant-specific aging management program  | Yes (SRP-SLR Section 3.1.2.2.10.2)    | IV.A2.R-414   |
| M  | 118       | PWR         | SS, nickel-alloy PWR RVI components or license renewal applications (LRA)/subsequent license renewal application (SLRA) specified RVI component exposed to reactor coolant, neutron flux | Cracking due to SCC, IASCC, cyclic loading, fatigue                    | Plant-specific aging management program or AMP XI.M16A, "PWR Vessel Internals," and AMP XI.M2, "Water Chemistry" (SCC and IASCC only), with an adjusted site-specific or component-specific aging management basis for a specified RVI component | Yes (SRP-SLR Section 3.1.2.2.9)       | IV.B2.R-423<br>IV.B3.R-423<br>IV.B4.R-423   |
| M  | 119       | PWR         | SS, nickel-alloy, stellite PWR RVI components or LRA/SLRA-   | Loss of fracture toughness due to neutron irradiation embrittlement or | Plant-specific aging management program or AMP XI.M16A, "PWR   | Yes (SRP-SLR Section 3.1.2.2.9)       | IV.B2.R-424<br>IV.B3.R-424<br>IV.B4.R-424   |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/Mechanism  | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended   | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|--|---|---|----------------------------------|--|
|                                     |     |      | specified RVI component exposed to reactor coolant, neutron flux             | thermal aging embrittlement; changes in dimensions due to void swelling or distortion; loss of preload due to thermal and irradiation-enhanced stress relaxation or creep; loss of material due to wear | Vessel Internals,“ with an adjusted site-specific or component-specific aging management basis for a specified reactor vessel internal component  |                                  |  |
|                                     | 120 | BWR  | SS core plate rim holddown bolts exposed to reactor coolant and neutron flux | Loss of preload due to thermal or irradiation-enhanced stress relaxation  | AMP XI.M9, “BWR Vessel Internals,” and TLAA SRP-SLR 4.7 “Other Plant-Specific TLAAs” [if an analysis is performed as part of the aging management basis and conforms to the definition of a TLAA in 10 CFR 54.3(a)] | Yes (SRP-SLR Section 3.1.2.2.14) | IV.B1.R-420  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/Mechanism</b>  | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b> | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b> |
|--|-----------|-------------|---|--|---|---------------------------------------|---|
|  | 121       | BWR         | SS jet pump assembly<br>holddown beam<br>bolts exposed to reactor coolant and neutron flux    | Loss of preload due to thermal or irradiation-enhanced stress relaxation | AMP XI.M9, "BWR Vessel Internals"   | No                                    | IV.B1.R-421   |
| D  | 122       |             |   |  |   |                                       |   |
|  | 124       | BWR/PWR     | Steel piping, piping components exposed to air-indoor uncontrolled, air outdoor, condensation | Loss of material due to general, pitting, crevice corrosion              | AMP XI.M36, "External Surfaces Monitoring of Mechanical Components"       | No                                    | IV.C1.R-431<br>IV.C2.R-431  |
|  | 125       | PWR         | Nickel-alloy SG tubes at support plate locations exposed to secondary feedwater or steam      | Cracking due to flow-induced vibration, high-cycle fatigue               | AMP XI.M19, "Steam Generators"  | No                                    | IV.D1.R-437<br>IV.D2.R-442  |
|  | 127       | PWR         | Steel (with SS or nickel-alloy cladding) SG heads and tubesheets exposed to reactor coolant   | Loss of material due to boric acid corrosion                             | AMP XI.M2, "Water Chemistry," and AMP XI.M19, "Steam Generators"          | No                                    | IV.D1.R-436<br>IV.D2.R-440  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/Mechanism         | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)               | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|------|--|--------------------------------|--|--------------------------------|--|
|                                     | 128 | BWR  | SS, nickel-alloy nozzles safe ends and welds: high pressure core spray; low pressure core spray; recirculating water, low pressure coolant injection or RHR injection mode exposed to reactor coolant  | Cracking due to SCC, IGSCC     | AMP XI.M7, "BWR Stress Corrosion Cracking," and AMP XI.M2, "Water Chemistry"     | No                             | IV.A1.R-68   |
|                                     | 129 | BWR  | Steel and SS piping, piping components exposed to reactor coolant: welded connections between the re-routed control rod drive return line and the inlet piping system that delivers return line flow to the reactor pressure vessel exposed to reactor coolant | Cracking due to cyclic loading | AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD" | No                             | IV.C1.R-432  |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/Mechanism</b>                                   | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b>  | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b>  |
|--|-----------|-------------|---|---|--|---------------------------------------|--|
| D  | 130       |             |   |   |  |                                       |  |
|  | 133       | BWR/PWR     | Steel components exposed to treated water                               | Long-term loss of material due to general corrosion             | AMP XI.M32, "One-Time Inspection"  | No                                    | IV.A1.R-448<br>IV.C1.R-448   |
|  | 134       | BWR/PWR     | Nonmetallic thermal insulation exposed to air, condensation             | Reduced thermal insulation resistance due to moisture intrusion | AMP XI.M36, "External Surfaces Monitoring of Mechanical Components"  | No                                    | IV.A1.R-450<br>IV.A2.R-450<br>IV.C1.R-450<br>IV.C2.R-450<br>IV.D1.R-450<br>IV.D2.R-450                                       |
| D  | 135       |             |   |   |  |                                       |  |
|  | 136       | BWR/PWR     | SS, nickel-alloy piping, piping components exposed to air, condensation | Loss of material due to pitting, crevice corrosion              | AMP XI.M32, "One-Time Inspection," AMP XI.M36, "External Surfaces Monitoring of Mechanical Components," AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components," or AMP XI.M42, "Internal | Yes (SRP-SLR Section 3.1.2.2.16)      | IV.C1.R-452a<br>IV.C1.R-452b<br>IV.C1.R-452c<br>IV.C1.R-452d<br>IV.C2.R-452a<br>IV.C2.R-452b<br>IV.C2.R-452c<br>IV.C2.R-452d |

**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/Mechanism          | Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended    | Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item |
|-------------------------------------|-----|---------|--|---------------------------------|---|-----------------------------------|--|
|                                     |     |         |  |                                 | Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks”                      |                                   |  |
|                                     | 137 | BWR/PWR | Copper alloy piping, piping components exposed to air, condensation, gas   | None                            | None  | No                                | IV.E.R-453   |
|                                     | 139 | PWR     | SS, nickel-alloy RV top head enclosure flange leakage detection line exposed to air-indoor uncontrolled, reactor coolant leakage | Cracking due to SCC             | AMP XI.M32, “One-Time Inspection,” or AMP XI.M36, “External Surfaces Monitoring of Mechanical Components” | Yes (SRP-SLR Section 3.1.2.2.6.3) | IV.A2.R-74a<br>IV.A2.R-74b   |
| N                                   | 140 | BWR/PWR | Steel, SS or nickel-alloy piping, piping components exposed to reactor coolant   | Cracking due to thermal fatigue | Plant-specific aging management program   | Yes (SRP-SLR Section 3.1.2.2.17)  | IV.C1.R-456<br>IV.C2.R-456   |



**Table 3.1-1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL-SLR Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>   | <b>Aging Effect/Mechanism</b> | <b>Aging Management Program (AMP)/ Time-Limited Aging Analyses (TLAA)</b>                | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Item</b> |
|--|-----------|-------------|--|-------------------------------|--|---------------------------------------|---|
| N  | 141       | BWR/PWR     | Steel, SS or nickel-alloy ASME Code Class 1 small-bore piping, and piping components with reflective metal insulation exposed to air | Loss of material due to wear  | Plant-specific or existing aging management program if loss of material is not mitigated | Yes (SRP-SLR Section 3.1.2.2.10.3)    | IV.A1.R-457<br>IV.A2.R-457  |

AMP = aging management program; ASME = American Society of Mechanical Engineers; B&W = Babcock and Wilcox; BWR = boiling water reactor; CASS = cast austenitic stainless steel; CE = Combustion Engineering; GALL-SLR = Generic Aging Lessons Learned for Subsequent License Renewal; IASCC = irradiation-assisted SCC; IGSCC = intergranular stress corrosion cracking; LRA = license renewal applications; MIC = microbiologically-induced corrosion; NPS = nominal pipe size; PH = precipitation-hardening; PWR = pressure water reactor; PWSCC = primary water stress corrosion cracking; RCPB = reactor coolant pressure boundary; RV = reactor vessel; RVI = reactor vessel internal; SCC = stress corrosion cracking; SG = steam generator; SLRA = subsequent license renewal application; SRP-SLR = Standard Review Plan for Review of Subsequent License Renewal; SS = stainless steel; TLAA = time-limited aging analyses.

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1 **Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the**  
 2 **Generic Aging Lessons Learned for Subsequent License Renewal Report**

| New, Modified, Deleted, Edited Item | ID  | Type  | Component  | Aging Effect/<br>Mechanism                         | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item  |
|-------------------------------------|-----|---|--|--|---|---------------------------------|--|
|                                     | 001 | Boiling water reactor (BWR)/pressurized water reactor (PWR) | Stainless steel (SS), steel piping, piping components exposed to any environment   | Cumulative fatigue damage due to fatigue           | TLAA, Standard Review Plan for Review of Subsequent License Renewal (SRP-SLR) Section 4.3 "Metal Fatigue"   | Yes (SRP-SLR Section 3.2.2.1)   | V.D1.E-13<br>V.D2.E-10   |
| D                                   | 002 |   |  |  |   |                                 |  |
| D                                   | 003 |   |  |  |   |                                 |  |
|                                     | 004 | BWR/PWR   | SS, nickel-alloy piping, piping components exposed to air, condensation (external) | Loss of material due to pitting, crevice corrosion | AMP XI.M32, "One-Time Inspection," AMP XI.M36, "External Surfaces Monitoring of Mechanical Components," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks" | Yes (SRP-SLR Section 3.2.2.2.2) | V.B.EP-107a<br>V.B.EP-107b<br>V.B.EP-107d<br>V.C.EP-107a<br>V.C.EP-107b<br>V.C.EP-107d<br>V.D1.EP-107a<br>V.D1.EP-107b<br>V.D1.EP-107d<br>V.D2.EP-107a<br>V.D2.EP-107b<br>V.D2.EP-107d |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type | Component  | Aging Effect/<br>Mechanism  | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item  |
|-------------------------------------|-----|------|--|---|---|---------------------------------|--|
| E                                   | 005 | PWR  | SS orifice (miniflow recirculation when centrifugal high-pressure safety injection (HPSI) pumps are used for normal charging) exposed to treated borated water | Loss of material due to erosion   | AMP XI.M32, "One-Time Inspection"   | No                              | V.D1.E-24  |
|                                     | 006 | BWR  | Metallic drywell and suppression chamber spray system (internal surfaces): flow orifice; spray nozzles exposed to air – indoor uncontrolled, condensation      | Loss of material due to general, pitting, crevice corrosion; flow blockage due to fouling | AMP XI.M32, "One-Time Inspection," or AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components"                                    | Yes (SRP-SLR Section 3.2.2.2.3) | V.D2.EP-113a<br>V.D2.EP-113b   |
|                                     | 007 | BWR  | SS piping, piping components, tanks exposed to air, condensation   | Cracking due to stress corrosion cracking (SCC)   | AMP XI.M32, "One-Time Inspection," AMP XI.M36, "External Surfaces Monitoring of Mechanical Components," AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous | Yes (SRP-SLR Section 3.2.2.2.4) | V.A.EP-103b<br>V.A.EP-103c<br>V.A.EP-103d<br>V.A.EP-103e<br>V.B.EP-103b<br>V.B.EP-103c<br>V.B.EP-103d<br>V.B.EP-103e<br>V.C.EP-103b<br>V.C.EP-103c |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism                                    | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item  |
|-------------------------------------|-----|---------|--|---|---|--------------------------------|--|
|                                     |     |         |  |   | Piping and Ducting Components,” or AMP XI.M42, “Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks” |                                | V.C.EP-103d<br>V.C.EP-103e<br>V.D1.EP-103b<br>V.D1.EP-103c<br>V.D1.EP-103d<br>V.D1.EP-103e<br>V.D2.EP-103b<br>V.D2.EP-103c<br>V.D2.EP-103d<br>V.D2.EP-103e |
|                                     | 008 | PWR     | Copper alloy (>15% Zinc) piping, piping components exposed to air with borated water leakage                         | Loss of material due to boric acid corrosion                  | AMP XI.M10, “Boric Acid Corrosion”  | No                             | V.E.EP-38  |
|                                     | 009 | PWR     | Steel external surfaces exposed to air with borated water leakage  | Loss of material due to boric acid corrosion                  | AMP XI.M10, “Boric Acid Corrosion”  | No                             | V.E.E-28   |
|                                     | 010 | BWR/PWR | Cast austenitic stainless steel (CASS) piping, piping components exposed to treated borated water >250 °C (>482 °F), | Loss of fracture toughness due to thermal aging embrittlement | AMP XI.M12, “Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)”   | No                             | V.D1.E-47<br>V.D2.E-11   |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism   | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|---|--|---|--------------------------------|---|
|                                     |     |         | treated water >250 °C (>482 °F)   |  |   |                                |   |
| E                                   | 011 | BWR/PWR | Steel piping, piping components exposed to steam, treated water                                       | Wall thinning due to flow-accelerated corrosion  | AMP XI.M17, "Flow Accelerated Corrosion"                            | No                             | V.C.E-09<br>V.D1.E-09<br>V.D2.E-07<br>V.D2.E-09                   |
|                                     | 012 | BWR/PWR | High-strength steel closure bolting exposed to air, soil, underground                                 | Cracking due to "SCC; cyclic loading"  | AMP XI.M18, "Bolting Integrity"                                     | No                             | V.E.E-03  |
| D                                   | 013 |         |   |  |   |                                |   |
|                                     | 014 | BWR/PWR | SS, steel, nickel-alloy closure bolting exposed to air-indoor uncontrolled, air outdoor, condensation | Loss of material due to general (steel only), pitting, crevice corrosion                               | AMP XI.M18, "Bolting Integrity"                                     | No                             | V.E.E-02  |
|                                     | 015 | BWR/PWR | Metallic closure bolting exposed to any environment, soil underground                                 | Loss of preload due to thermal effects, gasket creep, self-loosening                                   | AMP XI.M18, "Bolting Integrity"                                     | No                             | V.E.EP-116  |
| E                                   | 016 | BWR/PWR | Steel piping, piping components exposed to treated water  | Loss of material due to general, pitting, crevice corrosion, microbiologically-induced corrosion (MIC) | AMP XI.M2, "Water Chemistry," and AMP XI.M32, "One-Time Inspection" | No                             | V.C.EP-62<br>V.D2.EP-60   |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/<br/>Mechanism</b>                      | <b>Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)</b> | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal Item</b>                    |
|--|-----------|-------------|---|---|--|---------------------------------------|---|
| E  | 017       | BWR/PWR     | Aluminum piping, piping components exposed to treated water, treated borated water  | Loss of material due to pitting, crevice corrosion      | AMP XI.M2, "Water Chemistry," and AMP XI.M32, "One-Time Inspection"      | No                                    | V.D1.EP-71<br>V.D2.EP-71  |
| D  | 018       |             |   |   |  |                                       |   |
| M  | 019       | BWR/PWR     | Stainless steel, nickel-alloy heat exchanger tubes exposed to treated water, treated borated water                              | Reduction of heat transfer due to fouling               | AMP XI.M2, "Water Chemistry," and AMP XI.M32, "One-Time Inspection"      | No                                    | V.A.E-20<br>V.D2.EP-74<br>V.D1.E-20   |
|  | 020       | PWR         | SS, steel (with SS or nickel-alloy cladding) piping, piping components, tanks exposed to treated borated water >60 °C (>140 °F) | Cracking due to SCC                                     | AMP XI.M2, "Water Chemistry," and AMP XI.M32, "One-Time Inspection"      | No                                    | V.A.E-12<br>V.D1.E-12   |
| D  | 021       |             |   |   |  |                                       |   |
|  | 022       | BWR/PWR     | Nickel-alloy, SS heat exchanger components, piping, piping components, tanks exposed to treated water,                          | Loss of material due to pitting, crevice corrosion, MIC | AMP XI.M2, "Water Chemistry," and AMP XI.M32, "One-Time Inspection"      | No                                    | V.A.E-428<br>V.A.EP-41<br>V.C.EP-63<br>V.D1.E-428<br>V.D2.E-428<br>V.D1.EP-41<br>V.D2.EP-73 |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/<br/>Mechanism</b>   | <b>Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)</b> | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal Item</b> |
|--|-----------|-------------|---|--|--|---------------------------------------|--|
|  |           |             | treated borated water   |  |  |                                       |  |
|  | 023       | BWR/PWR     | Steel heat exchanger components, piping, piping components exposed to raw water     | Loss of material due to general, pitting, crevice corrosion, MIC; flow blockage due to fouling | AMP XI.M20, "Open Cycle Cooling Water System"                            | No                                    | V.A.EP-90<br>V.C.E-22<br>V.D1.EP-90<br>V.D2.EP-90                        |
|  | 024       | PWR         | SS piping, piping components exposed to raw water                                   | Loss of material due to pitting, crevice corrosion, MIC; flow blockage due to fouling          | AMP XI.M20, "Open Cycle Cooling Water System"                            | No                                    | V.C.E-34<br>V.D1.EP-55   |
|  | 025       | BWR/PWR     | SS heat exchanger components exposed to raw water                                   | Loss of material due to pitting, crevice corrosion, MIC; flow blockage due to fouling          | AMP XI.M20, "Open Cycle Cooling Water System"                            | No                                    | V.A.EP-91<br>V.D1.EP-91<br>V.D2.EP-91                                    |
| D  | 026       |             |   |  |  |                                       |  |
|  | 027       | BWR/PWR     | SS, steel heat exchanger tubes exposed to raw water                                 | Reduction of heat transfer due to fouling  | AMP XI.M20, "Open Cycle Cooling Water System"                            | No                                    | V.A.E-21<br>V.D1.E-21<br>V.D2.E-21<br>V.D2.E-23                          |
|  | 028       | BWR/PWR     | SS piping, piping components exposed to closed-cycle cooling water >60 °C (>140 °F) | Cracking due to SCC  | AMP XI.M21A, "Closed Treated Water Systems"                              | No                                    | V.A.EP-98<br>V.C.EP-98<br>V.D1.EP-98<br>V.D2.EP-98                       |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/<br/>Mechanism</b>                               | <b>Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)</b> | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal Item</b>                    |
|--|-----------|-------------|---|--|--|---------------------------------------|---|
|  | 029       | BWR/PWR     | Steel piping, piping components exposed to closed-cycle cooling water                                   | Loss of material due to general, pitting, crevice corrosion, MIC | AMP XI.M21A, "Closed Treated Water Systems"                              | No                                    | V.C.EP-99   |
|  | 030       | BWR/PWR     | Steel heat exchanger components exposed to closed-cycle cooling water                                   | Loss of material due to general, pitting, crevice corrosion, MIC | AMP XI.M21A, "Closed Treated Water Systems"                              | No                                    | V.A.EP-92<br>V.D1.EP-92<br>V.D2.EP-92   |
|  | 031       | BWR/PWR     | SS heat exchanger components, 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                                    | V.A.EP-93<br>V.A.EP-95<br>V.C.EP-95<br>V.D1.EP-93<br>V.D1.EP-95<br>V.D2.EP-93<br>V.D2.EP-95 |
|  | 032       | BWR/PWR     | Copper alloy heat exchanger components, 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                                    | V.A.EP-94<br>V.A.EP-97<br>V.B.EP-97<br>V.D1.EP-94<br>V.D1.EP-97<br>V.D2.EP-94<br>V.D2.EP-97 |
|  | 033       | BWR/PWR     | Copper alloy, SS heat exchanger tubes exposed to closed-cycle cooling water                             | Reduction of heat transfer due to fouling                        | AMP XI.M21A, "Closed Treated Water Systems"                              | No                                    | V.A.EP-100<br>V.A.EP-96<br>V.D1.EP-96<br>V.D2.EP-96   |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>   | <b>Aging Effect/<br/>Mechanism</b>         | <b>Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)</b> | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal Item</b>                                 |
|--|-----------|-------------|--|--|--|---------------------------------------|--|
|  | 034       | BWR/PWR     | Copper alloy (>15% zinc or >8% aluminum) piping, piping components, heat exchanger components exposed to closed-cycle cooling water, treated water | Loss of material due to selective leaching | AMP XI.M33, "Selective Leaching"   | No                                    | V.A.EP-27<br>V.A.EP-37<br>V.B.EP-27<br>V.B.EP-37<br>V.D1.EP-27<br>V.D1.EP-37<br>V.D2.EP-27<br>V.D2.EP-37 |
|  | 035       | PWR         | Gray cast iron motor cooler exposed to closed-cycle cooling water, treated water   | Loss of material due to selective leaching | AMP XI.M33, "Selective Leaching"   | No                                    | V.A.E-43<br>V.D1.E-43  |
| M  | 036       | PWR         | Gray cast iron, ductile iron, malleable iron piping, piping components exposed to closed-cycle cooling water, treated water                        | Loss of material due to selective leaching | AMP XI.M33, "Selective Leaching"   | No                                    | V.D1.EP-52   |
| M  | 037       | BWR/PWR     | Gray cast iron, ductile iron, malleable iron piping, piping components exposed to soil   | Loss of material due to selective leaching | AMP XI.M33, "Selective Leaching"   | No                                    | V.B.EP-54<br>V.D1.EP-54<br>V.D2.EP-54  |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/<br/>Mechanism</b>                          | <b>Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)</b>  | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal Item</b> |
|--|-----------|-------------|---|---|---|---------------------------------------|--|
|  | 038       | BWR/PWR     | 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                                    | V.E.EP-59  |
| D  | 039       |             |   |   |   |                                       |  |
|  | 040       | BWR/PWR     | Steel external surfaces exposed to air – indoor uncontrolled, air – outdoor, condensation | Loss of material due to general, pitting, crevice corrosion | AMP XI.M36, "External Surfaces Monitoring of Mechanical Components"   | No                                    | V.E.E-44   |
| D  | 041       |             |   |   |   |                                       |  |
|  | 042       | BWR/PWR     | Aluminum piping, piping components, tanks exposed to air, condensation (external)         | Loss of material due to pitting, crevice corrosion          | AMP XI.M32, "One-Time Inspection," AMP XI.M36, "External Surfaces Monitoring of Mechanical Components," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks" | Yes (SRP-SLR Section 3.2.2.2.10)      | V.E.EP-114b<br>V.E.EP-114c<br>V.E.EP-114d                                |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/<br/>Mechanism</b>                                      | <b>Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)</b>                     | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal Item</b> |
|--|-----------|-------------|---|---|--|---------------------------------------|--|
| M  | 043       | BWR/PWR     | Elastomer piping, piping components, seals exposed to air, condensation                           | Hardening or loss of strength due to elastomer degradation              | AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" | No                                    | V.B.EP-58<br>V.A.E-427<br>V.B.E-427<br>V.D1.E-427<br>V.D2.E-427          |
| M  | 044       | BWR/PWR     | Steel piping, piping components, ducting, ducting components exposed to air – indoor uncontrolled | Loss of material due to general, pitting, crevice corrosion             | AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" | No                                    | V.A.E-29<br>V.B.E-25<br>V.D2.E-29  |
|  | 045       | PWR         | Steel encapsulation components exposed to air – indoor uncontrolled                               | Loss of material due to general, pitting, crevice corrosion             | AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" | No                                    | V.A.EP-42<br>V.C.EP-42<br>V.D1.EP-42                                     |
|  | 046       | BWR/PWR     | Steel piping, piping components exposed to condensation   | Loss of material due to general, pitting, crevice corrosion             | AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" | No                                    | V.B.E-27<br>V.D1.E-27<br>V.D2.E-27                                       |
|  | 047       | PWR         | Steel encapsulation components exposed to air with  | Loss of material due to general, pitting, crevice, boric acid corrosion | AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous                                | No                                    | V.A.EP-43<br>V.C.EP-43<br>V.D1.EP-43                                     |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism                                       | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item  |
|-------------------------------------|-----|---------|---|--|--|---------------------------------|--|
|                                     |     |         | borated water leakage   |  | Piping and Ducting Components”   |                                 |  |
| E                                   | 048 | BWR/PWR | SS, nickel-alloy piping, piping components, tanks exposed to air, condensation (internal) | 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 3.2.2.2.2) | V.A.EP-81a<br>V.A.EP-81b<br>V.A.EP-81c<br>V.A.EP-81d<br>V.D1.EP-81a<br>V.D1.EP-81b<br>V.D1.EP-81c<br>V.D1.EP-81d<br>V.D2.EP-61a<br>V.D2.EP-61b<br>V.D2.EP-61c<br>V.D2.EP-61d |
| E                                   | 049 | BWR/PWR | Steel piping, piping components exposed to lubricating oil                                | Loss of material due to general, pitting, crevice corrosion, MIC | AMP XI.M39, “Lubricating Oil Analysis,” and AMP XI.M32, “One-Time Inspection”  | No                              | V.A.EP-77<br>V.D1.EP-77<br>V.D2.EP-77  |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID   | Type    | Component  | Aging Effect/<br>Mechanism   | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)             | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item   |
|-------------------------------------|------|---------|--|--|---|--------------------------------|---|
| E                                   | 050  | BWR/PWR | Copper alloy, stainless steel 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                             | V.A.EP-76<br>V.D1.EP-76<br>V.D1.EP-80<br>V.D2.EP-76   |
|                                     | 051  | BWR/PWR | Steel, copper alloy, stainless steel 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                             | V.A.EP-75<br>V.A.EP-78<br>V.A.EP-79<br>V.D1.EP-75<br>V.D1.EP-78<br>V.D1.EP-79<br>V.D2.EP-75<br>V.D2.EP-78<br>V.D2.EP-79 |
|                                     | 052  | BWR/PWR | Steel piping, piping components 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                             | V.E.EP-111<br>V.E.EP-123  |
|                                     | 053  | BWR/PWR | SS, nickel-alloy piping, piping components, tanks, 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                             | V.E.EP-72   |
| D                                   | 053a |         |  |  |   |                                |   |
| E                                   | 054  | BWR     | SS, nickel-alloy piping, piping  | Cracking due to SCC, intergranular   | AMP XI.M7, "BWR Stress Corrosion  | No                             | V.D2.E-37   |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism                         | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended   | Generic Aging Lessons Learned for Subsequent License Renewal Item   |
|-------------------------------------|-----|---------|---|--|--|----------------------------------|---|
|                                     |     |         | components ≥4 nominal pipe size exposed to treated water >93 °C (>200 °F)         | stress corrosion cracking (IGSCC)                  | Cracking,” and AMP XI.M2, “Water Chemistry”  |                                  |   |
|                                     | 055 | BWR/PWR | Steel piping, piping components exposed to concrete                               | None   | None   | Yes (SRP-SLR Section 3.2.2.2.9)  | V.F.EP-112  |
|                                     | 056 | BWR/PWR | Aluminum piping, piping components, tanks exposed to air, condensation (internal) | Loss of material due to pitting, crevice corrosion | 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 3.2.2.2.10) | V.A.EP-3b<br>V.A.EP-3c<br>V.A.EP-3d<br>V.D1.EP-3b<br>V.D1.EP-3c<br>V.D1.EP-3d<br>V.D2.EP-3b<br>V.D2.EP-3c<br>V.D2.EP-3d |
|                                     | 057 | BWR/PWR | Copper alloy piping, piping components exposed to air, condensation, gas          | None   | None   | No                               | V.F.EP-10   |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA) | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item   |
|-------------------------------------|-----|---------|--|----------------------------|---|--------------------------------|---|
|                                     | 058 | PWR     | Copper alloy, copper alloy (>8% aluminum) piping, piping components exposed to air with borated water leakage  | None                       | None  | No                             | V.F.EP-12   |
|                                     | 059 | BWR/PWR | Galvanized steel ducting, ducting components, piping, piping components exposed to air – indoor controlled   | None                       | None  | No                             | V.F.EP-14   |
|                                     | 060 | BWR/PWR | Glass piping elements exposed to air, underground, lubricating oil, raw water, treated water, treated borated water, air with borated water leakage, condensation, gas, closed-cycle cooling water | None                       | None  | No                             | V.F.EP-15<br>V.F.EP-16<br>V.F.EP-28<br>V.F.EP-29<br>V.F.EP-30<br>V.F.EP-65<br>V.F.EP-66<br>V.F.EP-67<br>V.F.EP-68 |
| D                                   | 061 |         |  |                            |   |                                |   |
|                                     | 062 | BWR/PWR | Nickel-alloy piping, piping components   | None                       | None  | No                             | V.F.EP-115  |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism                           | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)                            | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|--|--|--|---------------------------------|---|
|                                     |     |         | exposed to air with borated water leakage  |  |  |                                 |   |
|                                     | 063 | BWR/PWR | SS piping, piping components exposed to air with borated water leakage, gas        | None   | None   | No                              | V.F.EP-19<br>V.F.EP-22  |
|                                     | 064 | BWR/PWR | Steel piping, piping components exposed to air – indoor controlled, gas            | None   | None   | No                              | V.F.EP-4<br>V.F.EP-7  |
|                                     | 065 | BWR/PWR | Metallic piping, piping components exposed to treated water, treated borated water | Wall thinning due to erosion                         | AMP XI.M17, “Flow Accelerated Corrosion”   | No                              | V.D1.E-407<br>V.D2.E-408  |
|                                     | 066 | BWR/PWR | Metallic piping, piping components, tanks exposed to raw water, waste water        | Loss of material due to recurring internal corrosion | AMP XI.M38, “Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components” | Yes (SRP-SLR Section 3.2.2.2.7) | V.A.E-400<br>V.B.E-400<br>V.C.E-400<br>V.D1.E-400<br>V.D2.E-400   |
|                                     | 067 | BWR/PWR | SS tanks (within the scope of AMP XI.M29, “Outdoor and Large                       | Cracking due to SCC                                  | AMP XI.M29, “Outdoor and Large Atmospheric Metallic Storage Tanks”                           | No                              | V.D1.E-405<br>V.D2.E-405  |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism  | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|--|---|---|--------------------------------|---|
|                                     |     |         | Atmospheric Metallic Storage Tanks") exposed to soil, concrete   |   |   |                                |   |
|                                     | 068 | BWR/PWR | Steel tanks (within the scope of AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks") exposed to soil, concrete, air, condensation                      | Loss of material due to general, pitting, crevice corrosion, MIC (soil only)  | AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks"  | No                             | V.D1.E-402<br>V.D2.E-402  |
|                                     | 069 | BWR/PWR | Insulated steel piping, piping components, tanks (within the scope of AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks") exposed to air, condensation | Loss of material due to general, pitting, crevice corrosion                   | AMP XI.M36, "External Surfaces Monitoring of Mechanical Components" or AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks" | No                             | V.E.E-403a<br>V.E.E-403b  |
|                                     | 070 | BWR/PWR | Steel, SS, aluminum tanks (within the scope of AMP XI.M29, "Outdoor and Large  | Loss of material due to general (steel only), pitting, crevice corrosion, MIC | AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks"  | No                             | V.A.E-404<br>V.D1.E-404<br>V.D2.E-404                             |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism   | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|---|--|--|--------------------------------|---|
|                                     |     |         | Atmospheric Metallic Storage Tanks”) exposed to treated water, treated borated water  | (steel, stainless steel only)  |  |                                |   |
|                                     | 071 | BWR/PWR | Insulated copper alloy (>15% zinc or >8% aluminum) piping, piping components, tanks exposed to air, condensation  | Cracking due to SCC  | AMP XI.M36, “External Surfaces Monitoring of Mechanical Components”  | No                             | V.E.E-406   |
| M                                   | 072 | BWR/PWR | Any material piping, piping components, heat exchangers, tanks with internal coatings/linings exposed to closed-cycle cooling water, raw water, treated water, treated borated water, lubricating oil, condensation | Loss of coating or lining integrity due to blistering, cracking, flaking, peeling, delamination, rusting, or physical damage; loss of material or cracking for cementitious coatings/linings | AMP XI.M42, “Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks” | No                             | V.A.E-401<br>V.B.E-401<br>V.C.E-401<br>V.D1.E-401<br>V.D2.E-401   |
|                                     | 073 | BWR/PWR | Any material piping, piping components, heat exchangers, tanks with internal  | Loss of material due to general, pitting, crevice corrosion, MIC   | AMP XI.M42, “Internal Coatings/Linings for In-Scope Piping,  | No                             | V.A.E-414<br>V.B.E-414<br>V.C.E-414                               |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism  | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|---|---|--|--------------------------------|---|
|                                     |     |         | coatings/linings exposed to closed-cycle cooling water, raw water, treated water, treated borated water, lubricating oil, condensation  |   | Piping Components, Heat Exchangers, and Tanks”   |                                | V.D1.E-414<br>V.D2.E-414  |
|                                     | 074 | BWR/PWR | Gray cast iron, ductile iron, malleable iron piping, piping components with internal coatings/linings exposed to closed-cycle cooling water, raw water, treated water, treated borated water, waste water | Loss of material due to selective leaching  | AMP XI.M42, “Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks” | No                             | V.A.E-415<br>V.B.E-415<br>V.C.E-415<br>V.D1.E-415<br>V.D2.E-415   |
| D                                   | 075 |         |   |   |  |                                |   |
|                                     | 076 | BWR/PWR | SS, steel, nickel-alloy, copper alloy closure bolting exposed to treated water, treated borated water, raw  | Loss of material due to general, pitting, crevice corrosion, MIC (steel, copper alloy in raw water, waste water only) | AMP XI.M18, “Bolting Integrity”  | No                             | V.E.E-418   |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism  | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|--|---|---|---------------------------------|---|
|                                     |     |         | water, waste water, lubricating oil  |   |   |                                 |   |
| D                                   | 077 |         |  |   |   |                                 |   |
|                                     | 078 | BWR/PWR | SS, 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                              | V.E.E-420   |
|                                     | 079 | BWR/PWR | SS closure bolting exposed to air, soil, concrete, underground                 | Cracking due to SCC   | AMP XI.M18, "Bolting Integrity"   | No                              | V.E.E-421   |
| E                                   | 080 | BWR/PWR | SS 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 3.2.2.2.4) | V.E.E-423a<br>V.E.E-423b<br>V.E.E-423c                            |
|                                     | 081 | BWR/PWR | SS, steel, aluminum, copper alloy, titanium heat exchanger tubes               | Reduction of heat transfer due to fouling                             | AMP XI.M36, "External Surfaces Monitoring of  | No                              | V.E.E-424   |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism  | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|--|---|---|---------------------------------|---|
|                                     |     |         | exposed to air, condensation   |   | Mechanical Components"  |                                 |   |
| D                                   | 083 |         |  |   |   |                                 |   |
| D                                   | 084 |         |  |   |   |                                 |   |
| D                                   | 085 |         |  |   |   |                                 |   |
| D                                   | 086 |         |  |   |   |                                 |   |
|                                     | 087 | BWR/PWR | Nonmetallic thermal insulation exposed to air, condensation                  | Reduced thermal insulation resistance due to moisture intrusion                     | AMP XI.M36, "External Surfaces Monitoring of Mechanical Components" | No                              | V.E.E-422   |
| D                                   | 089 |         |  |   |   |                                 |   |
|                                     | 090 | BWR/PWR | Steel components exposed to treated water, treated borated water, raw water  | Long-term loss of material due to general corrosion                                 | AMP XI.M32, "One Time Inspection"                                   | No                              | V.A.E-434<br>V.B.E-434<br>V.C.E-434<br>V.D1.E-434<br>V.D2.E-434   |
|                                     | 091 | BWR/PWR | SS piping, piping components exposed to concrete                             | None  | None  | Yes (SRP-SLR Section 3.2.2.2.9) | V.F.EP-20   |
| D                                   | 092 |         |  |   |   |                                 |   |
| D                                   | 095 |         |  |   |   |                                 |   |
|                                     | 096 | BWR/PWR | Steel, SS piping, piping components exposed to raw water (for components not | Loss of material due to general (steel only), pitting, crevice corrosion, MIC; flow | AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous       | No                              | V.D1.E-439<br>V.D2.E-440  |

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**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism                         | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|---|--|---|---------------------------------|---|
|                                     |     |         | covered by NRC GL 89-13)  | blockage due to fouling                            | Piping and Ducting Components”  |                                 |   |
| D                                   | 097 |         |   |  |   |                                 |   |
|                                     | 098 | BWR/PWR | Copper alloy (>15% zinc or >8% aluminium) piping, piping components exposed to soil | Loss of material due to selective leaching         | AMP XI.M33, “Selective Leaching”  | No                              | V.D1.E-441<br>V.D2.E-441  |
|                                     | 099 | BWR/PWR | SS, nickel-alloy tanks exposed to air, condensation                                 | Loss of material due to pitting, crevice corrosion | AMP XI.M32, “One Time Inspection,” AMP XI.M36, “External Surfaces Monitoring of Mechanical Components,” 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 3.2.2.2.2) | V.E.E-442a<br>V.E.E-442b<br>V.E.E-442c<br>V.E.E-442d              |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item  |
|-------------------------------------|-----|---------|---|----------------------------|--|---------------------------------|--|
|                                     | 100 | BWR/PWR | Aluminum piping, piping components, tanks exposed to air, condensation (internal), raw water, waste water | Cracking due to SCC        | 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 3.2.2.2.8) | V.A.E-443b<br>V.A.E-443c<br>V.A.E-443d<br>V.B.E-443b<br>V.B.E-443c<br>V.B.E-443d<br>V.D1.E-443b<br>V.D1.E-443c<br>V.D1.E-443d<br>V.D2.E-443b<br>V.D2.E-443c<br>V.D2.E-443d |
|                                     | 101 | BWR/PWR | Aluminum piping, piping components, tanks exposed to air, condensation (external)                         | Cracking due to SCC        | AMP XI.M32, "One Time Inspection," AMP XI.M36, "External Surfaces Monitoring of Mechanical Components," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks"                          | Yes (SRP-SLR Section 3.2.2.2.8) | V.E.E-444b<br>V.E.E-444c<br>V.E.E-444d   |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism                         | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item                      |
|-------------------------------------|-----|---------|--|--|--|---------------------------------|--|
|                                     | 102 | BWR/PWR | Aluminum tanks (within the scope of AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks") exposed to air, condensation, soil, concrete, raw water, waste water | Cracking due to SCC                                | AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks," AMP XI.M32, "One-Time Inspection," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks" | Yes (SRP-SLR Section 3.2.2.2.8) | V.D1.E-445a<br>V.D1.E-445b<br>V.D1.E-445c<br>V.D2.E-445a<br>V.D2.E-445b<br>V.D2.E-445c |
|                                     | 103 | BWR/PWR | SS tanks (within the scope of AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks") exposed to air, condensation   | Cracking due to SCC                                | AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks," AMP XI.M32, "One Time Inspection," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks" | Yes (SRP-SLR Section 3.2.2.2.4) | V.D1.E-446a<br>V.D1.E-446b<br>V.D1.E-446c<br>V.D2.E-446a<br>V.D2.E-446b<br>V.D2.E-446c |
|                                     | 104 | BWR/PWR | Aluminum tanks (within the scope of AMP XI.M29,  | Loss of material due to pitting, crevice corrosion | AMP XI.M29, "Outdoor and Large   | No                              | V.D1.E-447<br>V.D2.E-447   |



**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism                         | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended   | Generic Aging Lessons Learned for Subsequent License Renewal Item                      |
|-------------------------------------|-----|---------|--|--|--|----------------------------------|--|
|                                     |     |         | "Outdoor and Large Atmospheric Metallic Storage Tanks") exposed to soil, concrete  |  | Atmospheric Metallic Storage Tanks"  |                                  |  |
|                                     | 105 | BWR/PWR | Aluminum tanks (within the scope of AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks") exposed to air, condensation         | Loss of material due to pitting, crevice corrosion | AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks," AMP XI.M32, "One Time Inspection," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks" | Yes (SRP-SLR Section 3.2.2.2.10) | V.D1.E-448a<br>V.D1.E-448b<br>V.D1.E-448c<br>V.D2.E-448a<br>V.D2.E-448b<br>V.D2.E-448c |
| N                                   | 106 | BWR/PWR | SS, nickel alloy tanks (within the scope of AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks") exposed to air, condensation | Loss of material due to pitting, crevice corrosion | AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks," AMP XI.M32, "One Time Inspection," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components,                             | Yes (SRP-SLR Section 3.2.2.2.2)  | V.D1.E-449a<br>V.D1.E-449b<br>V.D1.E-449c<br>V.D2.E-449a<br>V.D2.E-449b<br>V.D2.E-449c |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism                         | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|--|--|---|---------------------------------|---|
|                                     |     |         |  |  | Heat Exchangers, and Tanks”   |                                 |   |
|                                     | 107 | BWR/PWR | Insulated SS, nickel-alloy piping, piping components, tanks exposed to air, condensation | 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.M36, “External Surfaces Monitoring of Mechanical Components,” or AMP XI.M42, “Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks” | Yes (SRP-SLR Section 3.2.2.2.2) | V.E.E-450a<br>V.E.E-450b<br>V.E.E-450c<br>V.E.E-450d              |
|                                     | 108 | BWR/PWR | Insulated SS piping, piping components, tanks exposed to air, condensation               | Cracking due to SCC                                | AMP XI.M29, “Outdoor and Large Atmospheric Metallic Storage Tanks,” AMP XI.M32, “One-Time Inspection,” AMP XI.M36, “External Surfaces Monitoring  | Yes (SRP-SLR Section 3.2.2.2.4) | V.E.E-451a<br>V.E.E-451b<br>V.E.E-451c<br>V.E.E-451d              |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended  | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|--|----------------------------|---|---------------------------------|---|
|                                     |     |         |  |                            | of Mechanical Components,” or AMP XI.M42, “Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks”  |                                 |   |
|                                     | 109 | BWR/PWR | Insulated aluminum piping, piping components, tanks exposed to air, condensation | Cracking due to SCC        | AMP XI.M29, “Outdoor and Large Atmospheric Metallic Storage Tanks,” AMP XI.M32, “One Time Inspection,” AMP XI.M36, “External Surfaces Monitoring of Mechanical Components,” or AMP XI.M42, “Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks” | Yes (SRP-SLR Section 3.2.2.2.8) | V.E.E-452a<br>V.E.E-452b<br>V.E.E-452c<br>V.E.E-452d              |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism                         | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended   | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|--|--|---|----------------------------------|---|
|                                     | 110 | BWR/PWR | Aluminum 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 3.2.2.2.8)  | V.E.E-453a<br>V.E.E-453b<br>V.E.E-453c                            |
|                                     | 111 | BWR/PWR | Aluminum 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 3.2.2.2.10) | V.E.E-454a<br>V.E.E-454b<br>V.E.E-454c                            |
|                                     | 112 | BWR/PWR | 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   | Yes (SRP-SLR Section 3.2.2.2.2)  | V.E.E-455a<br>V.E.E-455b<br>V.E.E-455c                            |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism                                     | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|---|--|---|--------------------------------|---|
|                                     |     |         |   |  | and Tanks,” or AMP XI.M42, “Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks” |                                |   |
| D                                   | 113 |         |   |  |   |                                |   |
|                                     | 114 | BWR/PWR | SS, nickel-alloy piping, piping components exposed to treated water >60 °C (>140 °F)  | Cracking due to SCC  | AMP XI.M2, “Water Chemistry,” and AMP XI.M32, “One-Time Inspection”   | No                             | V.B.E-457<br>V.C.E-457<br>V.D2.E-457                              |
|                                     | 115 | BWR/PWR | Titanium heat exchanger tubes exposed to treated water  | Cracking due to SCC, reduction of heat transfer due to fouling | AMP XI.M2, “Water Chemistry,” and AMP XI.M32, “One-Time Inspection”   | No                             | V.A.E-458<br>V.D1.E-458<br>V.D2.E-458                             |
| E                                   | 116 | BWR/PWR | Titanium ([ASTM] Grades 1, 2, 7, 9, 11, or 12) heat exchanger components other than tubes, piping, piping components exposed to treated water | None   | None  | No                             | V.F.E-459   |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component  | Aging Effect/<br>Mechanism                                     | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended   | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|--|--|---|----------------------------------|---|
|                                     | 117 | BWR/PWR | Titanium heat exchanger tubes exposed to closed-cycle cooling water  | Cracking due to SCC, reduction of heat transfer due to fouling | AMP XI.M21A, "Closed Treated Water Systems"   | No                               | V.A.E-460<br>V.D1.E-460<br>V.D2.E-460                             |
|                                     | 118 | BWR/PWR | Titanium (ASTM Grades 1, 2, 7, 9, 11, or 12) heat exchanger components other than tubes, piping, piping components exposed to closed-cycle cooling water | None   | None  | No                               | V.F.E-461   |
| E                                   | 119 | BWR/PWR | Insulated aluminum piping, piping components, tanks exposed to air, condensation   | 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.M36, "External Surfaces Monitoring of Mechanical Components," or AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, | Yes (SRP-SLR Section 3.2.2.2.10) | V.E.E-462a<br>V.E.E-462b<br>V.E.E-462c<br>V.E.E-462d              |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism                         | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)  | Further Evaluation Recommended   | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|---|--|--|----------------------------------|---|
|                                     |     |         |   |  | Heat Exchangers, and Tanks”  |                                  |   |
|                                     | 120 | BWR/PWR | Aluminum piping, piping components, tanks exposed to soil, concrete         | Loss of material due to pitting, crevice corrosion | AMP XI.M41, “Buried and Underground Piping and Tanks”  | No                               | V.E.E-463   |
|                                     | 121 | BWR/PWR | 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 3.2.2.2.10) | V.E.E-464a<br>V.E.E-464b<br>V.E.E-464c<br>V.E.E-464d              |
|                                     | 122 | BWR/PWR | Elastomer piping, piping components, seals exposed to air                   | Loss of material due to wear                       | AMP XI.M36, “External Surfaces Monitoring of   | No                               | V.E.E-465   |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism   | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)                            | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item |
|-------------------------------------|-----|---------|---|--|--|--------------------------------|---|
|                                     |     |         |   |  | Mechanical Components"   |                                |   |
|                                     | 123 | BWR/PWR | Elastomer piping, piping components, seals exposed to air   | Loss of material due to wear   | AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" | No                             | V.A.E-466<br>V.B.E-466<br>V.C.E-466<br>V.D1.E-466<br>V.D2.E-466   |
|                                     | 124 | BWR/PWR | Aluminum piping, piping components, tanks exposed to air with borated water leakage                                 | None   | None   | No                             | V.F.E-467   |
|                                     | 125 | BWR/PWR | Steel 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                             | V.E.E-468   |
|                                     | 126 | BWR/PWR | Titanium, super austenitic piping, piping components, tanks, closure bolting exposed to soil, concrete, underground | Loss of material due to pitting, crevice corrosion, MIC (except for titanium; soil environment only) | AMP XI.M41, "Buried and Underground Piping and Tanks"  | No                             | V.E.E-469   |
|                                     | 127 | BWR/PWR | Copper alloy piping, piping components exposed to concrete  | None   | None   | No                             | V.F.E-470   |



**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| <b>New, Modified, Deleted, Edited Item</b> | <b>ID</b> | <b>Type</b> | <b>Component</b>  | <b>Aging Effect/<br/>Mechanism</b>   | <b>Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)</b>                     | <b>Further Evaluation Recommended</b> | <b>Generic Aging Lessons Learned for Subsequent License Renewal Item</b> |
|--|-----------|-------------|---|--|--|---------------------------------------|--|
|  | 128       | BWR/PWR     | Copper alloy piping, piping components exposed to soil, underground         | Loss of material due to general, pitting, crevice corrosion, MIC (soil only) | AMP XI.M41, "Buried and Underground Piping and Tanks"  | No                                    | V.E.E-471  |
|  | 129       | BWR/PWR     | Stainless steel tanks exposed to soil, concrete                             | Loss of material due to pitting, crevice corrosion, MIC (soil only)          | AMP XI.M29, "Outdoor and Large Atmospheric Metallic Storage Tanks"                           | No                                    | V.D1.E-472<br>V.D2.E-472   |
|  | 130       | BWR/PWR     | Steel heat exchanger components exposed to lubricating oil                  | Loss of material due to general, pitting, crevice corrosion, MIC             | AMP XI.M39, "Lubricating Oil Analysis," and AMP XI.M32, "One Time Inspection"                | No                                    | V.A.E-473<br>V.D1.E-473<br>V.D2.E-473                                    |
|  | 131       | BWR/PWR     | Aluminum piping, piping components exposed to raw water                     | Flow blockage due to fouling   | AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" | No                                    | V.A.E-474<br>V.B.E-474<br>V.D1.E-474<br>V.D2.E-474                       |
| M  | 132       | BWR/PWR     | Titanium (ASTM Grades 3, 4, or 5) heat exchanger tubes exposed to raw water | Cracking due to SCC, flow blockage due to fouling                            | AMP XI.M20, "Open Cycle Cooling Water System"  | No                                    | V.A.E-475<br>V.D1.E-475<br>V.D2.E-475                                    |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism  | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)   | Further Evaluation Recommended | Generic Aging Lessons Learned for Subsequent License Renewal Item    |
|-------------------------------------|-----|---------|---|---|---|--------------------------------|--|
|                                     | 133 | BWR/PWR | Titanium piping, piping components, heat exchanger components exposed to raw water  | Cracking due to SCC, flow blockage due to fouling   | AMP XI.M20, "Open Cycle Cooling Water System"   | No                             | V.B.E-476<br>V.C.E-476<br>V.D2.E-476                                 |
| M                                   | 134 | BWR/PWR | Polymeric piping, piping components, ducting, ducting components, seals exposed to air, condensation, raw water, raw water (potable), treated water, waste water, underground, concrete, soil | Hardening or loss of strength due to polymeric degradation; loss of material due to peeling, delamination, wear; cracking or blistering due to exposure to ultraviolet light, ozone, radiation, or chemical attack; flow blockage due to fouling (Inspection of Internal Surfaces only) | AMP XI.M36, "External Surfaces Monitoring of Mechanical Components," AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" | No                             | V.A.E-477b<br>V.B.E-477b<br>V.D1.E-477b<br>V.D2.E-477b<br>V.E.E-477a |

**Table 3.2-1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the Generic Aging Lessons Learned for Subsequent License Renewal Report (Continued)**

| New, Modified, Deleted, Edited Item | ID  | Type    | Component   | Aging Effect/<br>Mechanism   | Aging Management Program (AMP)/Time-Limited Aging Analyses (TLAA)                        | Further Evaluation Recommended   | Generic Aging Lessons Learned for Subsequent License Renewal Item            |
|-------------------------------------|-----|---------|---|------------------------------|--|----------------------------------|--|
| N                                   | 135 | BWR/PWR | Steel, stainless steel or nickel-alloy ASME Code Class 2 small-bore piping, and piping components with reflective metal insulation exposed to air | Loss of material due to wear | Plant-specific or existing aging management program if loss of material is not mitigated | Yes (SRP-SLR Section 3.2.2.2.11) | V.A.E-457<br>V.B.E-457<br>V.C.E-457<br>V.D1.E-457<br>V.D2.E-457<br>V.E.E-457 |

AMP = aging management program; BWR = boiling water reactor; CASS = cast austenitic stainless steel; HPSI = high-pressure safety injection; IGSCC = intergranular stress corrosion cracking; MIC = microbiologically-induced corrosion; PWR = pressurized water reactor; SCC = stress corrosion cracking; SRP-SLR = Standard Review Plan for Review of Subsequent License Renewal; SS = stainless steel; TLAA = Time-Limited Aging Analyses.

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3.2-54