Amendment 15, LRA Updates

Enclosure 2 Summary Table

Affected LRA Section	LRA Page
Table 3.5-1	3.5-35
Table 3.5.2-1	3.5-63
Table A4-1, item 5	A-37
Section B2.1.8	B-34, B-35, B-36, and B-37

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Revision to Table 3.5-1 to show item 27 is consistent with NUREG-1801.

Table 3.5-1 (page 3.5-35) is revised as follows (deleted text shown in strikethrough and new text is shown underlined):

Table 3.5-1 Summary of Aging Management Programs in Chapters II and III of NUREG-1801 for Containments, Structures, and Component Supports (Continued)

Item Number	Component Type	Aging Effect / Mechanism	Aging Management Program	Further Evaluation Recommended	Discussion
3.5.1.027	Penetration sleeves; penetration bellows, Steel elements: torus; vent line; vent header; vent line bellows; downcomers, Suppression pool shell	Cracking due to cyclic loading (CLB fatigue analysis does not exist)	ASME Section XI, Subsection IWE (B2.1.26) and 10 CFR Part 50, Appendix J (B2.1.29)	No	Consistent with NUREG-1801.~~Not applicable. Fatigue of metal components is a TLAA, evaluated in accordance with 10 CFR 54.21(c), so the applicable NUREG-1801 lines were not used.~~ ~~See further evaluation in Section 3.5.2.2.1.5.~~

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Revision to Table 3.5.2-1 to add AMR line for evaluation of Cracking due to cyclic loading on mechanical penetrations.

Table 3.5.2-1 (page 3.5-63) is revised as follows (new text is shown underlined):

Table 3.5.2-1 Containments, Structures, and Component Supports – Summary of Aging Management Evaluation - Reactor Building (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Item	Table 1 Item	Notes
Penetrations Mechanical	SH, SLD, SPB, SS	Stainless Steel; Dissimilar Metal Welds	Plant Indoor Air (Structural) (Ext)	Cracking	ASME Section XI, Subsection IWE (B2.1.26) and 10 CFR Part 50, Appendix J (B2.1.29)	II.A3.CP-37	3.5.1.027	A

Table A4-1 License Renewal Commitments

Item #	Commitment	LRA Section	Implementation Schedule
5	Enhance the Bolting Integrity program procedures to: • reference NUREG-1339 and EPRI NP-5769 to meet the NUREG-1801 recommendations (Completed LRA Amendment 1) • include bolting in the list of items to be inspected during walkdowns (Completed LRA Amendment 15).	B2.1.8	Prior to the period of extended operation

B2.1.8 Bolting Integrity

Program Description

The Bolting Integrity program manages cracking, loss of material and loss of preload for pressure retaining bolting. The program includes preload control, selection of bolting material, use of lubricants/sealants, and performance of periodic inspections for indication of aging effects.

The general practices that are established in this program are consistent with the recommendations, as delineated in NUREG-1339, *Resolution of Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants*, and EPRI NP-5769, *Degradation and Failure of Bolting in Nuclear Power Plants*, Volume 1 and 2 with the exception noted in NUREG-1339 for safety-related bolting. In addition to the inspection activities noted above, the Bolting Integrity program includes activities for preload control, material selection and control, and use of lubricants/sealants as delineated in EPRI TR-104213, *Bolted Joint Maintenance and Applications Guide*.

ASME Section XI Inservice Inspection, Subsections IWB, IWC and IWD program (B2.1.1) supplements the Bolting Integrity program to manage cracking, loss of preload, and loss of material by providing the requirements for inservice inspection of ASME Class 1, 2, and 3 safety-related pressure retaining bolting. Examinations are currently performed in accordance with the ASME Section XI, 1998 Edition with the 2000 Addenda, per the ISI program plan. As required by 10 CFR 50.55a(g)(4)(ii), the Callaway ISI Program is updated during each successive 120-month inspection interval to comply with the requirements of the latest edition of the Code specified twelve months before the start of the inspection interval. Callaway will use the ASME Code Edition consistent with the provisions of 10 CFR 50.55a during the period of extended operation. The extent and schedule of the inspections is in accordance with IWB-2500-1, IWC-2500-1 and IWD-2500-1 and assures that detection of leakage or fastener degradation occurs prior to loss of system or component intended functions. Bolting associated with Class 1 vessel, valve and pump flanged joints receive visual (VT-1) inspection. For other pressure retaining bolting, routine observations identify any leakage before the leakage becomes excessive.

Inspection activities for bolting in a submerged environment are performed in conjunction with associated component maintenance activities. Inspection activities for bolting in buried and underground applications is performed in conjunction with inspection activities for the Buried and Underground Piping and Tanks (B2.1.25) program due to the restricted accessibility to these locations.

The integrity of non-ASME Class 1, 2, 3 system and component bolted joints is evaluated by detection of visible leakage during maintenance or routine observation

such as system walkdowns. Inspection activities for non-ASME Class 1, 2, or 3 bolting in a submerged environment are performed in conjunction with associated component maintenance activities.

The Corrective Action Program is used to document and manage those locations where leakage was identified during routine observations including engineering walkdowns and equipment maintenance activities. Based on the severity of the leak and the potential to impact plant operations, nuclear or industrial safety, a leak may be repaired immediately, scheduled for repair, or monitored for change. If the leak rate changes (increases, decreases or stops), the monitoring frequency is re-evaluated and may be revised.

High strength bolts (actual yield strength ≥150 ksi) are not used on pressure retaining bolted joints within the scope of the Bolting Integrity program.

Procurement controls and installation practices, defined in plant procedures, include preventive measures to ensure that only approved lubricants, sealants, and proper torque are applied.

Safety-related and nonsafety-related structural bolting is managed by the following programs:

(a) ASME Section XI, Subsection IWE program (B2.1.26) provides the requirements for inspection of structural bolting.

(b) ASME Section XI, Subsection IWF program (B2.1.28) provides the requirements for inservice inspection of safety-related component support bolting.

(c) Structures Monitoring program (B2.1.31) monitors the condition of structures and structural supports that are within the scope of license renewal.

(d) RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants program (B2.1.32) provides the requirements for inspection of water control structures associated with emergency cooling water systems.

(e) Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems program (B2.1.12) provides the requirements for inspection of handling systems within the scope of license renewal.

Reactor pressure vessel head closure studs are not included in the Bolting Integrity program. The Reactor Head Closure Stud Bolting program (B2.1.3) provides the requirements for inspection of the reactor vessel head closure studs.

NUREG-1801 Consistency

The Bolting Integrity program is an existing program that~~, following enhancement, will be~~ is consistent with NUREG-1801, Section XI.M18, *Bolting Integrity*.

Exceptions to NUREG-1801

None

Enhancements

None

~~Prior to the period of extended operation, the following enhancements will be implemented in the following program elements:~~

~~*Scope of the Program (Element 1), Parameters Monitored or Inspected (Element 3),and Detection of Aging Effects (Element 4)*~~

~~Procedures will be enhanced to include bolting in the list of items to be inspected during walkdowns.~~

Operating Experience

The following discussion of operating experience provides objective evidence that the Bolting Integrity program will be effective in ensuring that intended functions are maintained consistent with the current licensing basis for the period of extended operation.

1. The Bolting Integrity program incorporates the applicable industry experience on bolting issues into the program. Actions taken include confirmatory testing/analysis or inspections. Also included are the addition of procedures of inspection, material procurement and verification processes.

2. A review of plant operating experience identified issues with corrosion, missing or loose bolts, inadequate thread engagement, and improper bolt applications. Identified concerns were corrected or evaluated to be accepted as-is. No generic bolting failure issues or trends have been identified. There is no documented case of cracking of pressure retaining bolting due to stress corrosion cracking. .

The operating experience of the Bolting Integrity program shows that the program effectively monitors and trends the aging effects of cracking, loss of material, and loss of preload on pressure retaining bolting and takes appropriate corrective action prior to loss of intended function. Occurrences that would be identified under the Bolting Integrity

program will be evaluated to ensure there is no significant impact to safe operation of the plant and corrective actions will be taken to prevent recurrence. Guidance for re-evaluation, repair, or replacement is provided for locations where aging is found. There is confidence that the continued implementation of the Bolting Integrity program will effectively identify aging prior to loss of intended function.

Conclusion

The continued implementation of the Bolting Integrity program~~, following enhancement,~~ provides reasonable assurance that aging effects will be managed such that the systems and components within the scope of this program will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.