

St. Lucie SLRA: Breakout Questions

SLRA Section B2.1.28, "ASME XI, Subsection IWE" AMP
TRP: 041

Note: Breakout Questions are provided to the applicant and will be incorporated into the publicly-available audit report.

Technical Reviewer	George Wang	12/15/2021
Technical Branch Chief	Joseph Colaccino	12/20/2021
Breakout Session	<i>Date/Time</i>	<i>To be filled in by PM</i>

Applicant Staff	NRC staff
<i>To be filled out by PM during breakout</i>	

Question Number	SLRA Section	SLRA Page	Background / Issue (As applicable/needed)	Discussion Question / Request	Outcome of Discussion
1	3.5.2.2.1.3	3.5-22	<p>SRP-SLR Section 3.5.3.2.1.3 guidance says a plant-specific program is not recommended if the following, in part, are satisfied:</p> <p>1. The concrete meets the requirements of ACI 318 or ACI 349 (low water-to-cement ratio, low permeability, and adequate air entrainment) as cited in NUREG-1557 and guidance of ACI 201.2R, as applicable.</p> <p>2. Whether the concrete is monitored to ensure that it is free of penetration cracks that provide a path for water</p>	<p>1. Clarify whether the concrete meets the requirements of ACI 318 or ACI 349 (low water-to-cement ratio, low permeability, and adequate air entrainment) as cited in NUREG-1557 and guidance of ACI 201.2R, as applicable.</p> <p>2. Clarify how the concrete is monitored to ensure that it is free of penetration cracks that provide a path for water seepage to the surface of the containment shell or liner.</p>	

			<p>seepage to the surface of the containment shell or liner.</p> <p>3. Whether borated water spills and water ponding on the concrete floor are common and when detected are cleaned up or diverted to a sump in a timely manner.</p> <p>SLRA Section 3.5.2.2.1.3 lacks information of the above mentioned items.</p>	<p>3. Clarify how OE (the borated water spills and water ponding on the concrete floor) is addressed.</p> <p>4. Discuss the plan to update SLRA as necessary.</p>	
2	3.5.2.2.1.6 Table 3.5-1	3.5-25 3.5-51	<p>SLRA AMR item 3.5.1-010 in Table 3.5-1, associated with aging management of cracking due to SCC, states that the <u>ASME Section XI, Subsection IWE AMP and 10 CFR Part 50, Appendix J AMP</u> manage cracking of Type III (semi-hot) stainless steel and dissimilar metal weld penetration assemblies exposed to an uncontrolled indoor air environment. However, SLRA Section 3.5.2.2.1.6, associated with AMR item 3.5.1-010, states that cracking of SS penetration components, and any DMWs, for nine (9) penetrations per Unit will be managed by the <u>ASME Section XI, Subsection IWE AMP</u>, which includes enhancement for surface, or enhanced visual, examination to detect evidence of cracking in a representative sample of the penetrations. There is discrepancy of aging management program between AMR item 3.5.1-010 and SLRA Section 3.5.2.2.1.6.</p>	<p>1. Clarify and address the discrepancy of aging management program between AMR item 3.5.1-010 and SLRA Section 3.5.2.2.1.6, and revise SLRA as necessary</p> <p>2. Provide Unit 1 UFSAR [Figure 3.8-9] and Unit 2 UFSAR [Figure 3.8-7] on the ePortal for staff's review.</p> <p>In addition, it appears that there is an error in the following statement: "determined not to require management for containment steel in air structural components," located in SLRA Section 3.5.2.2.1.6.</p>	

			<p>SLRA Section 3.5.2.2.1.6 states that cracking due to SCC was also addressed as part of the current renewed licenses and <u>determined not to require management for containment steel in air structural components</u>. Typical details for containment piping and fuel transfer penetrations are provided in the Unit 1 UFSAR Figure 3.8-9 and Unit 2 UFSAR Figure 3.8-7.</p> <p>The staff could not locate the Unit 1 Figure 3.8-9 and Unit 2 Figure 3.8-7 in the UFSAR.</p>		
3	B.2.3.29	B-228	<p>SLRA Section B.2.3.29 Enhancement to Element 2, states that procedures will be revised that for structural bolting consisting of ASTM A325, ASTM A490, and equivalent materials, the preventive actions for storage, lubricants, and stress corrosion cracking potential discussed in Section 2 of RCSC publication "Specification for Structural Joints Using ASTM A325 or A490 Bolts," will be used.</p> <p>However, it does not appear that AMP enhancement for Element 2 includes an enhancement for bolting and coating material selection discussed in Section 2 of the RCSC publication.</p> <p>GALL-SLR report states that the preventive actions emphasize proper selection of bolting material and</p>	<ol style="list-style-type: none"> 1. Clarify what enhancements for preventive actions are needed to ensure bolting integrity. 2. Ensure the consistency of preventive actions for bolting integrity between different AMPs. 	

			lubricants, and appropriate installation torque or tension to prevent or minimize loss of bolting preload and cracking of high-strength bolting. If the structural bolting consists of ASTM A325 and/or ASTM A490 bolts (including respective equivalent twist-off type ASTM F1852 and/or ASTM F2280 bolts), the preventive actions for storage, lubricant selection, and bolting and coating material selection discussed in Section 2 of Research Council for Structural Connections publication, need to be used.		
4	B.2.3.29	B-229	<p>SLRA Section B.2.3.29 Enhancement to Element 4, states that procedures will be revised to perform periodic supplemental surface or enhanced visual examinations at intervals no greater than 10 years to detect cracking due to cyclic loading of all non-piping penetrations (hatches, electrical penetrations, etc.) that are subject to cyclic loading but have no current licensing bases fatigue analysis and are not subject to local leak rate testing.</p> <p>SLRA Section B.2.3.29 also states cracking due to cyclic loading of all non-piping penetrations (equipment hatch, personnel locks, electrical penetrations, etc.) that are subject to cyclic loading but have no current licensing bases fatigue analysis will be managed by the 10 CFR Part 50,</p>	<p>1. Clarify what AMP, or periodic supplemental surface or enhanced visual examinations are used to manage cyclic loading but have no current licensing bases fatigue analysis.</p> <p>2. Clarify whether all the dissimilar metal welds are subject to Type B local leak rate tests that are capable of detecting cracking due to SCC.</p> <p>3. Discuss the plan to update SLRA as necessary.</p>	

		<p><u>Appendix J AMP or by periodic supplemental surface or enhanced visual examinations</u> incorporated into and consistent with the frequency of this AMP.</p> <p>SLRA AMR item 3.5.1-027 in Table 3.5-1, associated with aging management of cracking due to cyclic loading (CLB fatigue analysis does not exist), claims to be consistent with NUREG-2191, and states that a fatigue analysis was not performed for the Containment Vessel and a fatigue waiver could not be located for airlock, hatch and electrical penetration assemblies. As such, the <u>ASME Section XI, Subsection IWE AMP and 10 CFR Part 50, Appendix J AMP manage cyclic loading of air lock, hatch, and electrical penetration assemblies and accessories</u>, exposed to uncontrolled indoor air.</p> <p>Based on the statements above, it is unclear what AMP, or periodic supplemental surface or enhanced visual examinations are used to manage cyclic loading but have no current licensing bases fatigue analysis.</p> <p>It is unclear whether all the dissimilar metal welds are subject to Type B local leak rate tests that are capable of detecting cracking due to SCC.</p>		
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5	B.2.3.29	B-229	<p>GALL-SLR report states that IWE-2500-1 and the requirements of 10 CFR 50.55a provide information regarding the examination categories, parts examined, and examination methods to be used to detect aging.</p> <p>SLRA Section B.2.3.29 Enhancement to Element 4, states that procedures will be revised to implement supplemental one-time surface or enhanced visual examinations, performed by qualified personnel using methods capable of detecting cracking, comprising (a) a</p>	<p>Clarify the methods used for detecting cracking and explain how they can detect cracking in steel, SS, and dissimilar metal weld pressure-retaining components that are subject to cyclic loading but have no CLB fatigue analysis.</p>	

			<p>representative sample (two) of the SS penetrations or dissimilar metal welds associated with high-temperature (temperatures above 140°F) SS piping systems in frequent use on each unit; and (b) the SS fuel transfer tube on each unit. These inspections are intended to confirm the absence of SCC aging effects.</p> <p>From the sentence cited above, with regard to methods capable of detecting Cracking, it is unclear what're the methods used and how they can detect cracking in steel, SS, and dissimilar metal weld pressure-retaining components that are subject to cyclic loading but have no CLB fatigue analysis.</p>		
6	B.2.3.29	B-229	<p>SLRA Section B.2.3.29 Enhancement to Element 4 states that if SCC is identified as a result of the supplemental one-time inspections, additional inspections will be conducted in accordance with the site's corrective action process. This will include one additional penetration with dissimilar metal welds associated with greater than 140°F SS piping systems for each Unit until cracking is no longer detected. Periodic inspection of subject penetrations with dissimilar metal welds for cracking will be added to the PSL ASME Section XI, Subsection IWE AMP if necessary, depending on the inspection results.</p>	<ol style="list-style-type: none"> 1. Clarify whether supplemental one-time inspections in this Enhancement refer to supplemental one-time surface or enhanced visual examinations, or one-time volumetric examination of metal shell surfaces if triggered by plant-specific OE, or both. 2. Clarify what type of periodic inspection of subject penetrations with dissimilar metal welds for cracking is, 	

			<p>Based on SLRA Section B.2.3.29 enhancements, there are supplemental one-time surface or enhanced visual examinations, and one-time volumetric examination of metal shell surfaces if triggered by plant-specific OE. It is unclear whether supplemental one-time inspections refer to one of them or both.</p> <p>It is also unclear what type of periodic inspection of subject penetrations with dissimilar metal welds for cracking is, and what's the inspection frequency.</p>	and what's the inspection frequency.	
7	B.2.3.29	B-229	<p>SLRA Section B.2.3.29 enhancement to Element 4, related to supplemental volumetric examination states, in part: "Procedures will be revised to specify a one-time volumetric examination of metal shell surfaces that are inaccessible from one side if triggered by plant-specific OE identified after the date of issuance of the first renewed license for each unit. If triggered, this inspection will be performed by sampling randomly selected, as well as focused, metal shell locations susceptible to corrosion that are inaccessible from one side."</p> <p>From the sentence cited above, with regard to the conduct of the supplemental volumetric examination, there is a lack of clarity of the treatment of the 2 PSL units if the triggering OE occurs in one of the units. It is not clear from the SLRA whether the triggering OE</p>	<p>1. Clarify whether each unit will be subject to the volumetric examination if the triggering OE occurs in any one unit, or will the examination be conducted in the unit in which the triggering OE occurred, or some other treatment? If not the former case, explain and provide a justification of the intended treatment of the 2 units for the one-time supplemental volumetric examination if the triggering OE occurs in any one unit.</p> <p>2. Clarify whether this supplemental volumetric examination consists of a sample of one-foot square locations that include both randomly-selected and</p>	

			<p>has occurred to date since the issuance of the first renewed license.</p> <p>GALL-SLR report states that this supplemental volumetric examination consists of a sample of one-foot square locations that include both randomly-selected and focused areas most likely to experience degradation based on OE and/or other relevant considerations such as environment.</p> <p>It is unclear whether this supplemental volumetric examination consists of a sample of one-foot square locations that include both randomly-selected and focused areas most likely to experience degradation based on OE and/or other relevant considerations such as environment.</p>	<p>focused areas most likely to experience degradation based on OE and/or other relevant considerations such as environment.</p> <p>3. Discuss the plan to update SLRA as necessary.</p>	
8	B.2.3.29	B-229	<p>SLRA Section B.2.3.29 states that acceptability of inaccessible areas of steel containment vessel is evaluated when conditions found in accessible areas indicate the presence of, or could result in, flaws or degradation in inaccessible areas. However, the staff could not locate acceptability of inaccessible areas of steel containment vessel in the procedure NDE-4.7, Revision 5, but the staff noticed that an enhancement to IWF program is provided for acceptability of</p>	<p>Clarify whether an enhancement to IWE program is needed for acceptability of inaccessible areas of steel containment vessel.</p>	

			inaccessible areas. It is unclear whether the same enhancement will be included in IWE program.		
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