

## Oconee SLRA: Breakout Questions

SLRA Section B2.1.9, "Bolting Integrity"

AMP: B2.1.9 | TRP: 18

Question Number	SLRA Section	SLRA Page	Background / Issue (As applicable/needed)	Discussion Question / Request
1	B2.1.9	B - 86	<p>SLRA Section B2.1.9, "Bolting Integrity," states that the AMP is an existing condition monitoring program which manages loss of preload, cracking, and loss of material related to closure bolting on pressure-retaining components.</p> <p>However, based on review of documents on the portal, it is not clear if the existing program already manages leakage for systems where leakage is difficult to detect, or if leakage for these systems will be managed through updates to an existing procedure. Based on the documentation on the portal, it appears a new procedure will be developed.</p>	<p><b>Program Description:</b></p> <ul style="list-style-type: none"><li>Clarify/confirm that the bolting integrity AMP is an existing program, except for managing the sampling and direct inspection for piping systems that are difficult to detect leakage.</li><li>Explain/discuss how management of leakage for systems where leakage is difficult to detect is being addressed as an enhancement or via a completely new.</li></ul>
2	B2.1.9	B - 88	<p>The GALL-SLR Report AMP XI.M18 recommends that selection of bolting material and the use of lubricants and sealants <u>is in accordance with</u> the guidelines of EPRI Reports 1015336 and 1015337 and the additional recommendations of NUREG-1339 to prevent or mitigate stress corrosion cracking (SCC).</p> <ul style="list-style-type: none"><li>SLRA Enhancement No. 1 seeks to "revise applicable procedure and specifications to <u>include reference to</u> EPRI Report 1015336, EPRI Report 1015337, and NUREG-1339, as appropriate."</li></ul> <p>However, it is not clear how just including the references will ensure that adequate preventive actions are implemented within</p>	<p><b>Preventive Actions:</b></p> <ul style="list-style-type: none"><li>Clarify how the enhancement will be consistent with the GALL-SLR Report AMP recommendation to ensure that selection of bolting material and the use of lubricants and sealants are in accordance with the provided guidance and not just a reference.</li><li>Clarify how the program will be consistent with the GALL-SLR report AMP recommendation to ensure that molybdenum disulfide</li></ul>

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			<p>the procedures. The staff notes that the intent of the recommended preventive actions in GALL-SLR Report XI.M18 is to implement within the procedures the specified preventive or mitigative actions from these guidelines.</p> <ul style="list-style-type: none"><li>The GALL-SLR Report emphasizes the industry guidance recommendation to restrict the use of molybdenum disulfide (MoS<sub>2</sub>) as a lubricant since it has been shown to be a potential contributor to SCC.  However, no restriction was identified in the program for its use. The staff noted that the AMP recommends the use of Loctite N-5000 or <u>equivalent</u> for lubrication, but no restriction on MoS<sub>2</sub> was identified. The staff also noted some procedure markup addressing this, but no enhancement in the SLRA has been provided.</li><li>The GALL-SLR Report recommends including preventive actions which limits the use of bolting material to those with an actual measured yield strength less than 150 ksi.  However, it is not clear whether the AMP already considers this as a preventive action or if an exception was made since the staff couldn't verify it within the provided references.</li></ul>	(MoS <sub>2</sub> ) is not used as a lubricant. <ul style="list-style-type: none"><li>Clarify where the existing program includes preventive measures to ensure that bolting material with an actual measured yield strength of less than 150 ksi is being used.</li></ul>
3	B2.1.9	B - 86	<ul style="list-style-type: none"><li>The GALL-SLR Report AMP XI.M18 recommends monitoring for crack</li></ul>	<b>Detection of Aging Effects:</b>

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			<p>initiation, loss of preload, or loss of material as bolting degradation that may result in leakage from the mating surfaces or joint connections of pressure boundary components.</p> <p>However, it is not clear where Oconee implements these inspection criteria in their existing procedures.</p> <ul style="list-style-type: none"><li>The GALL-SLR Report AMP recommends the SLRA to state how the aging effects associated with closure bolting of components that are not normally pressurized will be managed.</li></ul> <p>However, it is not clear where this is addressed in the SLRA and/or how Oconee will address this concern.</p>	<ul style="list-style-type: none"><li>Clarify how/where the existing program ensures that degradation of pressure boundary closure bolting due to crack initiation, loss of preload, or loss of material that may result in leakage from the mating surfaces or joint connections of pressure boundary components is being detected during inspections.</li><li>Clarify how/where the existing program ensures that closure bolting of components that are not normally pressurized will be managed (e.g., checking the torque to the extent that the closure bolting is not loose) during the inspections.</li></ul>
4	B2.1.9	B - 88	<p>The GALL-SLR Report AMP XI.M18 recommends the inspections results be evaluated and, when practical, degradations be projected until the next scheduled inspection to ensure that components' intended function will be maintained throughout the SPEO.</p> <p>The staff noted AD-MN-ALL-0006 generally addresses this within the procedure for general leakages. However, it is not clear how Oconee addresses this for closure bolting in locations that preclude detection of joint</p>	<p><b>Monitoring and Trending:</b></p> <ul style="list-style-type: none"><li>Clarify how the GALL-SLR report AMP recommendation related to projection of inspection results to the next inspection is addressed by the existing AMP or how it will be addressed.</li></ul>

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			leakage, or where the piping systems contain air or gas for which leakage is difficult to detect.	
5	B2.1.9	B - 88	<p>The GALL-SLR Report AMP XI.M18, Corrective Action program element recommends, for sampling-based inspections, to conduct additional inspections <u>if one of the inspections</u> does not meet the acceptance criteria.</p> <ul style="list-style-type: none"><li>SLRA AMP Enhancement No. 5 seems to imply that additional inspections will be performed when sample-based inspections, in general, not meet the acceptance criteria. Therefore, it is not clear if the procedure will implement this additional inspection <u>for each</u> inspection that did not meet the acceptance criteria.</li></ul> <p>It is noted that the proposed draft procedure (Section 8.1) states that "for each "unsat" inspection result..." However, it is not stated as clearly in the SLRA enhancement that is being evaluated.</p> <p>The GALL-SLR Report AMP also seeks to ensure that, at multi-unit sites, the additional inspections include inspections at all of the units with the same material, environment, and aging effect combination.</p> <ul style="list-style-type: none"><li>SLRA Enhancement No. 5 will enhance the AMP to ensure that "<u>additional inspections of similar bolting</u> will be performed at all three units..."</li></ul>	<p><b>Corrective Actions:</b></p> <ul style="list-style-type: none"><li>Clarify if the intent of this enhancement is to implement additional inspections for each inspection that did not meet the acceptance criteria or a more general approach of once when any sample-based inspection as a whole does not meet the acceptance criteria. Enhancement may need to be clarified, as necessary.</li><li>Clarify if "inspections of similar bolting" (enhancement No. 5) is intended to be bolting in other units having the same material, environment, and aging effect combination.</li></ul>

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6	A2.9	A-10	<p>The FSAR Supplement states, in part, that closure bolting on pressure-retaining components and mechanical bolting that are submerged or closure bolting on pressure-retaining components located in piping systems that contain air or gas is <u>inspected by alternate means</u>, ..." However, it is not clear why the testing by alternate means was omitted. It is noted that enhancement No. 4 includes the use of other testing methods (e.g., soap bubble testing) to detect cracking for this system.</p>	<p><b>FSAR Supplement:</b></p> <ul style="list-style-type: none"><li>• Clarify why "<u>testing</u> by alternate means" (e.g., "inspected or tested") was not included as part of the FSAR supplement summary description.</li></ul>
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