

**Oconee SLRA: Breakout Questions**  
SLRA Section B2.1.33, “Structures Monitoring”  
AMP: B2.1.33 | TRP: 46

Question Number	SLRA Section	SLRA Page	Background / Issue (As applicable/needed)	Discussion Question / Request
1	B2.1.33	B - 223	<p>The <i>Scope of Program</i> element in GALL-SLR XI.S6 recommends that the scope of the program includes all SCs, component supports, and structural commodities in the scope of license renewal that are not covered by other structural aging management programs (AMPs).</p> <p>However, the staff noted the following inconsistencies regarding what structures and components were included in scope of the AMP:</p> <ul style="list-style-type: none"> <li>SLRA Sections 2.4.7.2 and 3.5.2.1.8 identifies the “Essential Siphon Vacuum Building” and associated components as within the scope of SLR. However, they are not included in the attachment 1 list of the procedure, SD-EG-ONS-1214, Rev. 2. It is not clear how the existing AMP addresses them. No enhancement was included in the SLRA to add this structure and its components to the scope of the AMP.</li> <li>SLRA Sections 2.4.7 and 2.4.8 identify several structures, components, and commodities (aside from buildings) that are identified as within the scope of SLR. However, it is not clear how the existing AMP specifies them as within scope (Att. 1 list and/or Section 5.5), and no SLRA enhancement was included in the SLRA to ensure that these structures, components and commodities are added to the scope of the AMP for SLR. SLRA</li> </ul>	<p><b><u>Scope of Program:</u></b></p> <ul style="list-style-type: none"> <li>Clarify where the existing AMP specifies/considers the “Essential Siphon Vacuum Building” as within the scope of the program to ensure that it is monitored/inspected during SPEO.</li> <li>Clarify where the existing AMP specifies the following components: “trenches,” “piping supports” (including the associated Class 1 piping and from RCS components), “line supports,” “vibration isolation elements,” “aluminum components,” “trash rack filters,” “wear plates,” “liners,” “sump,” “sliding surfaces,” “drains/curbs,” “piles,” etc. as within the scope of the program to ensure that it is monitored/inspected during SPEO.</li> <li>Clarify where the existing AMP specifies/considers the “trash racks associated with water control structures” as within the scope of the program to ensure that it is monitored/inspected during SPEO. Note: this may have been addresses during the</li> </ul>

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			<p>Tables 3.5.2-X also includes other components that are considered within the scope of the AMP but were not specified.</p> <ul style="list-style-type: none"> <li>• Procedure SD-EG-ONS-1214, Rev 2, states this procedure is applicable to the structures and structural components identified in attachment 1. However, the attachment 1 list in the procedure does not include all structures and structural components within the scope of SLR.</li> <li>• The AMP Basis document claims that "trash racks associated with water control structures" are already within the scope of the water-controlled structures AMP (i.e., the SMP AMP). However, it is not clear where it was specified as within scope by the existing program.</li> </ul>	breakout session of the Water Control Structure AMP.
2	B2.1.33	B - 223	<p>The GALL-SLR XI.S6 recommends</p> <ul style="list-style-type: none"> <li>• that steel bracing and edge supports associated with masonry walls be inspected for deflection or distortion, loose bolts, and loss of material due to corrosion.</li> <li>• the monitoring of concrete degradation around anchor bolts which may result in reduced concrete anchor capacity.</li> <li>• that conditions indicative of loss of preload be monitored or inspected for bolting connections.</li> </ul> <p>However, the staff noted the following inconsistencies regarding the parameters to</p>	<p><b>Parameters Monitored or Inspected:</b></p> <ul style="list-style-type: none"> <li>• Clarify what parameter are monitored or inspected by the AMP for <u>supports and bracings associated with masonry walls</u>?</li> <li>• Clarify how the current program addresses the monitoring/inspection of reduction in concrete anchor capacity due to concrete degradation.</li> </ul>

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			<p>be monitored or inspected for the following components:</p> <ul style="list-style-type: none"> <li>• SLRA enhancement No 2 adds supports and bracings associated with masonry wall components to the scope of the AMP. However, the existing AMP does not seem to address the parameters to be monitored or inspected for these components, and the SLRA does not provide an enhancement to ensure consistency with the GALL-SLR Report.</li> <li>• It is noted that the AMP basis document states that monitoring/inspection of reduction in concrete capacity due to concrete degradation is already addressed by the existing program under Section 5.5. #3. However, after reviewing the existing program, it is not clear how the program addresses it in a manner that is consistent with the GALL-SLR Report recommendation.</li> <li>• It is noted that the AMP basis document states that the monitoring of loss of preload in bolting is already addressed by the AMP under Section 5.5. #3. Still, it is not clear how the existing program addresses it in a manner that is consistent with the GALL-SLR Report recommendation.</li> </ul>	<ul style="list-style-type: none"> <li>• Clarify how the current program addresses the monitoring of loss of preload in bolting.</li> </ul>
3	B2.1.33	B - 222	<p>The <i>Detection of Aging Effects</i> program element in GALL-SLR XI.S6 recommends, in part:</p>	<p><b><u>Inspection Frequency:</u></b></p> <ul style="list-style-type: none"> <li>• Clarify what provision in the existing AMP provides for more frequent inspections</li> </ul>

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			<ul style="list-style-type: none"> <li>that the program includes provision for more frequent inspections based on an evaluation of the observed degradations,</li> <li>in general, that all structures be monitored on an interval not to exceed 5 years,</li> <li>inspection frequency to depend on safety significance and the condition of the structure as specified in NRC RG 1.130.</li> </ul> <p>However, the staff noted the following inconsistencies regarding inspection frequencies:</p> <ul style="list-style-type: none"> <li>The SLRA AMP description states that "[t]here are provision [in the AMP] for more frequent inspections when conditions are observed that have potential for impacting an intended function." However, based on the staff's review of the existing AMP and the AMP basis document, it is not clear where that provision is.</li> <li>The existing AMP includes a provision that allows for increasing the inspection frequency to a 10 year interval (AMP Section 5.1.2). However, additional clarification is needed on how this generic provision is consistent with the GALL-SLR report recommendation and why this was not address (if applicable) as an exemption.</li> </ul>	<p>based on observed degradations?</p> <ul style="list-style-type: none"> <li>Describe how the current AMP provision that allows for an increase to a 10 year inspection frequency (Section 5.1.2) is used and/or applied at the site. <ul style="list-style-type: none"> <li>Is there any limitation or restriction to ensure consistency with the GALL-SLR Report?</li> <li>How is it consistent with the GALL-Report recommendation and with applicable codes and standards?</li> </ul> </li> <li>Besides the fiber reinforced polymer walls, list what other structures within the scope of the Structures Monitoring Program are managed using a longer inspection interval (i.e., an interval longer than once every 5-years). <ul style="list-style-type: none"> <li>Clarify at what frequency the Borated Water Storage Tank (BWST) support anchors bolts are inspected, and why?</li> </ul> </li> </ul>
4	B2.1.33	B - 224 B - 225	The <i>Detection of Aging Effects</i> program element in GALL-SLR XI.S6 recommends for sites with nonaggressive groundwater/soil that the program "evaluat[es] the acceptability of	<p><b><u>Inaccessible Areas:</u></b></p> <ul style="list-style-type: none"> <li>Clarify how the existing AMP addresses or ensures that the <u>acceptability of an</u></li> </ul>

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			<p>inaccessible areas when condition exists in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible area." It also recommends for plants with an aggressive groundwater/soil environment and/or where concrete structural element have experienced degradation, to provide a plant-specific AMP accounting for the extend of the degradation experienced.</p> <p>However, the staff noted the following inconsistencies regarding the aging management of inaccessible areas:</p> <ul style="list-style-type: none"> <li>It is not clear how the existing AMP addresses or ensures that the <u>acceptability of an inaccessible areas is evaluated</u> once the conditions of a representative accessible area may indicate the presence of, or result in, degradation to such inaccessible areas. The staff noted that SLRA enhancements no. 3.d and 9e seems to provide a similar approach, but only after the focused inspection was established once an aggressive groundwater/soil is identified.</li> </ul> <p>It is noted that this GALL-SLR Report recommendation is intended for inaccessible structures/components that are normally not exposed to an aggressive groundwater/soil environment.</p> <ul style="list-style-type: none"> <li>SLRA Enhancements No. 3.d and 9.e proposes focused inspections of representative, accessible (leading indicator) structural elements only when</li> </ul>	<p><u>inaccessible areas is evaluated</u> once the conditions of a representative accessible area may indicate the presence of, or result in, degradation to such inaccessible areas? (as recommended by the GALL-SLR Report)</p> <ul style="list-style-type: none"> <li>Clarify how "perform[ing] focused inspections of representative, accessible (leading indicator) structural elements..." (SLRA Enhancements No. 3.d and 9.e) will be sufficient to ensure that structural elements <u>already being exposed to an aggressive groundwater/soil</u> will maintain its intended function? Aren't inspecting representative, accessible (leading indicators) structural elements, already part of the routine inspections performed for inaccessible areas at the site?</li> <li>Clarify how the SLRA statements: "if aggressive groundwater <u>and</u> soil are identified" (SLRA enhancements 3.d and 9.e) is consistent with the GALL-SLR Report recommendation.</li> </ul>
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			<p>an aggressive groundwater/soil is identified.</p> <ul style="list-style-type: none"> <li>SLRA enhancements 3.d and 9.e seeks to take action only when "aggressive groundwater <u>and</u> soil is identified" when the term "groundwater/soil" used by the GALL-SLR Report should be the same as "groundwater and/or soil" since either will represent an aggressive environment.</li> <li>Both enhancements, SLRA Enhancement No. 3 and 9, appear to provide the same requirements for inaccessible structures when they are exposed to an aggressive groundwater/soil environment.</li> </ul>	<ul style="list-style-type: none"> <li>Clarify the difference between SLRA Enhancement No. 3 and 9.</li> </ul>
5	B2.1.33	B - 222	<p>During the on-site audit, it was noted that most of the structures' envelope is covered by siding material on the exterior, therefore making the exterior of the structural elements inaccessible for inspection. However, it is not clear how the existing program manage these inaccessible portion/areas, beyond just the inspection of the siding condition. or how degradation of the inaccessible areas is monitored, and what actions are in place to ensure that no significant degradation is occurring.</p> <p>SMP Section 5.2 addresses inaccessible areas in term of underground structural elements. However, it does not appear to include similar provision to adequately manage the inaccessible areas above the ground elevation (e.g., covered by siding)</p>	<p><b><u>Inaccessible Areas:</u></b>  Clarify how the existing AMP addresses or ensures that the <u>acceptability of an inaccessible areas is evaluated</u> once the conditions of a representative accessible area may indicate the presence of, or result in, degradation to such inaccessible areas (beyond just leakage or aggressive groundwater exposure)?</p> <p>Are there any provisions in place, through site maintenance procedures, to have engineering inspect the structures when siding is removed or those inaccessible areas are made accessible during plant operations activities (similar to and beyond just excavations)?</p>

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				Will the opportunistic inspection for conditions of inaccessible above grade structures when made accessible, be included in the FSAR supplement description?
6	B2.1.33	B - 226	<p>The <i>Monitoring and Trending</i> program element in GALL-SLR XI.S6 recommends that, where practical, identified degradation be projected until the next scheduled inspection, and results be evaluated against acceptance criteria to confirm that the timing of subsequent inspections will maintain the components' intended functions throughout the subsequent period of extended operation based on the projected rate of degradation.</p> <p>However, it is not clear how the existing AMP is consistent with this GALL-SLR Report Recommendation.</p>	<p><b>Monitoring and Trending:</b></p> <ul style="list-style-type: none"> <li>Clarify how the existing AMP is consistent with the specified GALL-SLR Report recommendation for monitoring and trending.</li> </ul>
7	B2.1.33	B - 226	<p>For <i>Monitoring and trending</i>, the GALL-SLR Report recommends that results be evaluated against acceptance criteria to confirm that the timing of subsequent inspections will maintain the components' intended functions throughout the subsequent period of extended operation based on the projected rate of degradation.</p> <p>In Report No. OSC-7019, CCW Intake and Discharge Structure Inspection report, the staff noted that the report documents the current degradation (based on UT readings) for the steel sheet piles at the CCW structure. The report included an evaluation that concluded</p>	<p><b>Monitoring and Trending:</b></p> <p>For the sheet piles components, clarify the following:</p> <ul style="list-style-type: none"> <li>How the projections in Report No. OSC-7019 were evaluated or considered for SPEO? Will they remain acceptable during SPEO?</li> <li>Are there any actions being taken to control the corrosion degradation rate and extend the life beyond the initial license renewal period into SPEO?</li> </ul>

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			<p>the ongoing degradation to be acceptable until 2021 (i.e., prior to SPEO).</p> <p>As stated in the report, losses over 1/32" can be expected by 2021 timeframe based on the current corrosion rate that was estimated to be at 2.2 mil/yr. The staff notes that considering this degradation rate, areas of the structure could be seeing a total loss of ~0.0644" (&gt; 1/32") by the beginning of the SPEO.</p>	<ul style="list-style-type: none"> <li>In general, describe the purpose and intended function of these sheet piles</li> </ul>
8	B2.1.33	B - 226	<p>The <i>Acceptance Criteria</i> program element in GALL-SLR XI.S6 recommends, in part, that</p> <ul style="list-style-type: none"> <li>Structural sealants be considered as acceptable if the observed loss of material, cracking, and hardening will not result in <u>loss of sealing</u>.</li> <li>Elastomeric vibration isolation elements be considered as acceptable if there is no loss of material, cracking, or hardening that could lead to <u>the reduction or</u> loss of isolation function.</li> </ul> <p>However, the staff noted the following inconsistencies regarding these criteria when compared to the SLRA Enhancement No. 12:</p> <ul style="list-style-type: none"> <li>The enhancement for structural sealant seems to imply that the acceptance criteria should not lead to loss of isolation or support function as opposed to loss of sealing.</li> <li>The enhancement for elastomeric pads and vibration isolation elements seems to imply that the acceptance criteria should not lead to <u>loss</u> of isolation or support function without considering <u>reduction</u> as recommended by the GALL-SLR Report.</li> </ul>	<p><b>Acceptance Criteria:</b>  Clarify how the existing AMP and proposed enhancements will be consistent with the specified GALL-SLR Report recommendation for the acceptance criteria of structural sealants and elastomeric vibration isolation elements.</p>



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9	B2.1.33		<p>The <i>Acceptance Criteria</i> program element in GALL-SLR XI.S6 recommends, in part, inspection results are evaluated by qualified engineering personnel based on acceptance criteria selected for each structure/aging effect to ensure that the need for corrective actions is identified before loss of intended functions.</p> <p>SLRA Enhancement No. 8 includes a provision to address the acceptance criteria for concrete element by following the criteria provided in Chapter 5 of ACI 349.3R. However, after reviewing the AMP procedure, it is not clear what acceptance criteria is followed or used during the inspections of steel elements? The staff notes that the existing program specified the different aging effects associated that will be looked for steel elements during the visual inspections, however the procedure is not clear on what criteria needs to be followed to determine if an observed degradation in structural steel elements is found acceptable or if additional evaluation/corrective action is necessary.</p>	<p><b>Acceptance Criteria:</b>  For the inspection of structural steel element within the scope of the program, clarify what acceptance criteria is used (e.g., is already established by the existing program) for determining the need of corrective actions (or need of further evaluation) before loss of intended functions.</p>
10	B2.1.33	B - 222	<p>During the in-office audit, the staff reviewed the groundwater/soil chemistry examples results provided in the audit portal. Although the results provided chemistry characteristics (like pH and other), the staff was unable to find the results for <u>Chlorides</u> and Sulfates to understand the site specific determination as aggressive or non-aggressive.</p>	<p><b>Site Water Chemistry:</b>  Clarify where the groundwater/soil chemistry examples indicating the results for Chlorides and Sulfates are located and provide the results.</p>
11	Table 3.3.1	3 - 472	<p>SLTA Table I items 3.3-1, 111 states that the line item is not applicable because structural steel is treated as a Civil / Structural commodity and addressed in Section 3.5. The</p>	<p>Clarify which Section 3.5 line items were used to address loss of material due to pitting, crevice</p>

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			associated NUREG-2191 aging items are not used.	corrosion for structural steel in the new fuel storage.
12	Table 3.5.2-23	3 - 1455	The SLRA table identified the aging effects of "loss of sealing" for the cork used as seismic gap filler material. However, it is not clear if all the associated aging effects were properly identified for this material/component. The staff also noted that the existing structures monitoring program does not currently manage "loss of sealing" for seismic joints.	<ul style="list-style-type: none"> <li>Describe the function of the Seismic GAP filler Material.</li> <li>Clarify if loss of sealing is the only applicable aging effect or other may apply as well (e.g. loss of material)</li> <li>Does an enhancement exist to ensure that the "loss of sealing" aging effects is managed by the AMP?</li> </ul>
13	Table 3.5.2-22	3 - 1449	The SLRA table identified steel wear plate in components supports to be managed for loss of material by the structures monitoring program. However, the existing program does not appear to include this component and aging effect within the scope of the AMP to be managed, or what acceptance criteria will be used to adequately manage the aging effects.	<ul style="list-style-type: none"> <li>Clarify how the existing program will adequately manage this material/components and aging effects if currently it is not part of the scope.</li> <li>Clarify how the existing AMP (visual inspection, inspection frequency, etc.) will be sufficient to adequately manage the aging effects for this component.</li> </ul>