

Oconee SLRA: Breakout Questions

SLRA Section 3.5.2.2, "Further Evaluation of Aging Management as Recommended by NUREG-2192"
TRP: 074, Concrete

| Question Number | SLRA Section | SLRA Page | Background / Issue (As applicable/needed) | Discussion Question / Request |
|-----------------|--------------|-----------|--|--|
| 1 | 3.5.2.2.1.2 | 3-1306 | <p>SRP-SLR Section 3.5.3.2.1.2 guidance says that the reviewer ensures that the aging effects associated with the cooling system are being properly managed or temperatures are being monitored to identify a problem with the cooling system if an active cooling system is relied upon to maintain acceptable temperatures. If the temperature limits are exceeded, the reviewer reviews the technical basis provided by the applicant to justify the higher temperature.</p> <p>The FE Section 3.5.2.2.1.2 indicates that the main steam penetrations rely on cooling fans and stacks to main acceptable temperature, and a review of ONS OE reflects that localized concrete temperatures at the main steam penetrations have marginally exceeded 200°F areas around the penetrations due to limitations of air movement.</p> <p>The FE Section 3.5.2.2.1.2 also states that volumetric nondestructive concrete testing was performed to address the exposure to elevated temperature concern.</p> | <ol style="list-style-type: none">1. Explain how aging effects associated with the cooling fans and stacks system are being probably managed or temperatures are being monitored to identify a problem with the cooling and stacks system.2. Clarify the actual temperature of concrete around the penetration due to limitations of air movement.3. Provide volumetric nondestructive concrete testing technical basis and its results on the portal. |

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| 2 | 3.5.2.2.1.7 3.5.2.2.2.1.1 3.5.2.2.2.3.1 | 3-1311 3-1313 3-1315 | <p>SRP-SLR Sections 3.5.3.2.1.7, 3.5.3.2.2.1.1, and 3.5.3.2.2.3.1 guidance say a plant-specific program is not necessary if the concrete was constructed with air content of 3 to 8 percent. However, the associated FE Sections do not provide information on the air content of concrete for Groups 1-3, 5,6 and 7-9 structures.</p> <p>FE Sections state that review of plant OE has not identified any aging effects related to freeze-thaw in accessible areas. However, OE indicates “exposed aggregate with up to 1” profile near water level in the south face of discharge structure. Cracking with leachate possibly indicating impending spall due to freeze-thaw or rebar corrosion”. (Ref: CCW Intake and discharge Structures, and Underwater Weir, 5 year civil/structural inspection, July, 2017, Calculation # OSC-7019)</p> | <p>1. Provide air content of concrete for Groups 1-3, 5,6 and 7-9 structures.</p> <p>2. Clarify the discrepancy between FE Sections and OE.</p> <p>3. Discuss plans to update the SLRA to address the above.</p> |
| 3 | Table 3.5.1-042 Table 3.5.2-20 Table 3.5.2-21 | 3-1335 3-1438 3-1441 | <p>AMR item 3.5.1-042 claims to be consistent with NUREG-2191, and manages Loss of material (spalling, scaling) and cracking due to freeze-thaw.</p> <p>However, Table 2 items associated with item 3.5.1-042 in Tables 3.5.2-20 and 3.5.2-21 cite note I, stating “Aging effect in NUREG-2191 for this component, material, and environment is not applicable.” In addition, the staff noted that other Table 2 items associated with</p> | <p>Clarify the discrepancy between Table 2 items.</p> <p>Revise SLRA as necessary.</p> |

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| | | | item 3.5.1-042 are applicable, and consistent with NUREG-2191. | |
| 4 | 3.5.2.2.2.1.4 3.5.2.2.2.3.3 | 3-1313 3-1317 | <p>SRP-SLR guidance says a plant-specific program is not required for the reinforced concrete exposed to flowing water if evaluation determined that the observed leaching of calcium hydroxide and carbonation in accessible has no impact on the intended function of the concrete structure.</p> <p>The associated SLRA FE Sections state that review of plant OE has not identified aging effects related to increase in porosity and permeability due to leaching of calcium hydroxide and carbonation.</p> <p>However, the staff identified the following:</p> <p>1. Calcium leaching was identified in the hallway oriented from northeast to southeast at elevation +600 at Keowee Hydro Station(reference: Table 1 in Keowee Hydro Station 5 year civil/structural inspection, Oct. 2007) .</p> <p>2. OE item 6 in Inspection of Water-Control Structures AMP states that the piers and walls have some pattern cracking and efflorescence; however, the concrete looks to be structurally sound and serviceable.</p> | <p>1. Clarify the discrepancy between FE Sections and OE. Revise SLRA as necessary.</p> <p>2. Evaluate whether the observed leaching of calcium hydroxide and carbonation in accessible areas has any impact on the intended function of the concrete structure.</p> |

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| | | | <p>3. Crack and leaching along ceiling N71 and P71 all long beam and ceiling connection, also crack and leaching noted on the north wall (5yr civil/structural inspection of the auxiliary building, 01830000).</p> <p>4. Calcium leaching was identified on the basement wall of the Keowee powerhouse during our onsite audit walkdown.</p> | |
| 5 | 3.5.2.2.2.2 | 3-1315 | <p>SRP-SLR Section 3.5.3.2.2.2 guidance says the reviewer reviews the technical basis provided by the applicant to justify the higher temperature if the temperature limit is exceeded.</p> <p>The FE Section 3.5.2.2.2.2 states the spent fuel pools have an actual operating limit of 205°F (abnormal case).</p> <p>The FE Section 3.5.2.2.2.2 also mentions analyses performed to ensure the seismic and structural integrity of the pool liner, supporting concrete, and fuel racks, and an analysis performed to determine the maximum concrete temperature of the primary shield wall.</p> | <p>1. Provide, on the portal, analyses (design assumptions and results) performed for the seismic and structural integrity of the pool liner, SFP and fuel racks at the operating limit of 205°F.</p> <p>2. Provide, on the portal, the analysis demonstrating the maximum temperature of the primary shield wall.</p> |