Oconee SLRA: Breakout Questions

SLRA Section B2.1.30, "ASME Section XI, Subsection IWF"
(Related SLRA Sections: A2.30, Table A6.0-1, Item 30, AMR Item 3.5.1-086)
TRP: 43

Question Number	SLRA Section	SLRA Page	Background / Issue (As applicable/needed)	Discussion Question / Request
1	B2.1.30, A2.30	B-209, B-210 A-32	*Clarify consistency of "scope of program" element:* SLRA states that the ASME XI, Subsection IWF AMP is an existing condition monitoring program …… for supports of Class 1, 2, and 3 piping components. The staff notes that, contrary to the "scope of program" element of the GALL-SLR AMP XI.S3, supports of Class MC components are not included in the scope of the SLRA IWF AMP. SLRA also states: "ONS *ASME Section XI, Subsection IWF* AMP is an existing program that will be consistent with the ten elements of AMP XI.S3, *ASME Section XI, Subsection IWF*, specified in NUREG-2191 (GALL-SLR) with enhancements ..." SLR-ONS-AMPR-XI.S3, Rev. 2, "ASME Section XI, Subsection IWF AMP Evaluation Report," Section 3.2.a (on page 3 of 41) states: *"ONS does not contain any [Class] MC component supports."* Also, Section 4.1 (on page 7 of 41) of this document states: "*There are no Class MC components at ONS. The*	a) Does ONS have (i) Class MC components (e.g., piping penetrations) and (ii) Class MC component supports in any of its 3 units? b) If so, clarify why are Class MC component supports not included in the IWF AMP? If they exist, state how the Class MC support components will be adequately managed for aging effects during the SPEO as required by 10 CFR 54.21(c)(1)(3)? c) Explain what is meant by the phrase "The scope of program *includes mechanical connections to pressure retaining components* and…." d) If Class MC component support exist at ONS, justify the exception to the GALL-SLR AMP XI.S3 with regard

			scope of the program includes mechanical connections to pressure retaining components and building structures, weld connections to building structures, weld and mechanical connections at intermediate joints in multi-connected integral and nonintegral supports, …" However, the SLRA does not state why Class MC component supports are not included in the scope of the SLRA B2.1.30 program nor takes exception to the GALL-SLR AMP XI.S3.	to Class MC supports being not included in the scope of the IWF AMP. OR Confirm that ONS does not have Class MC component supports in any of its three units and, therefore, there are no Class MC component supports within the scope of the SLRA B2.1.30 AMP.
2	B2.1.30	B-209, B-210	*Clarify consistency of "scope of program," "parameters monitored or inspected," and "detection of aging effects" program elements:* The "scope of program" element of GALL-SLR XI.S3 AMP includes, among other support components, vibration isolation elements. There are related provisions for elastomeric or polymeric vibration isolation elements in "parameters monitored or inspected" and "detection of aging effects" program elements of XI.S3. SLR-ONS-AMPR-XI.S3, Rev. 2, "ASME Section XI, Subsection IWF AMP Evaluation Report," Section 4.1 (on page 7 of 41) states, in part: *"Supports within the scope of ASME Section XI,*	a) Discuss why vibration isolation elements are not included within the scope of the SLRA B2.1.30 AMP. b) If this is the case, confirm that the piping and component supports within the scope of the SLRA B2.1.30 AMP do not include elastomeric or polymeric vibration isolation elements at any of the three ONS Units.

			Subsection IWF do not have elastomeric vibration elements at ONS." Section 4.3 "Parameters Monitored or Inspected" element, paragraph (a) of SLR-ONS-AMPR-XI.S3, Rev. 2, states: *"No supports were identified within the scope of the ASME Section XI, Subsection IWF AMP, which have elastomeric vibration elements at ONS."* However, the SLRA does not state why vibration isolation elements are not included in the scope of the SLRA B2.1.30 program nor takes exception to the GALL-SLR AMP XI.S3.	
3	B2.1.30, A2.30, Table A6.0-1	B-210, A-33, A-96	*Clarify consistency of "preventive actions" element:* SLRA enhancement 2 and corresponding SLR Commitment 30.2 in Table A6.0-1 states: *"Procedures will be revised to specify that for structural bolting consisting of ASTM A325, ASTMF1852, and/or ASTM A490, the preventative actions for storage, lubricants, and stress corrosion cracking potential discussed in Section 2 of RCSC ……. will be used."* This enhancement does not include ASTM F2280 (twist-off equivalent of A490 bolts), which is included in the "preventive actions" program element of GALL-SLR AMP XI.S3.	a) Has ONS used or plan to use in the future ASTM F2280 bolts (twist-off equivalent of A490 bolts)? b) If so, discuss if the related "preventive actions" program element enhancement (and SLR Commitment 30.2)) will be modified to also include ASTM F2280 bolts consistent with corresponding GALL-SLR program element?

				c) If not, confirm that ASTM F2280 bolts have not and will not be used at ONS, and therefore not included in preventive actions program enhancement (SLR Commitment 30.2)
4	B2.1.30, A2.30, Table A6.0-1	B-210, A-33, A-96	*Consistency and adequacy of "detection of aging effects" element:* The "detection of aging effects" program element of GALL-SLR AMP XI.S3 states: "For ***all high-strength bolting*** [actual measured yield strength greater than or equal to 150 ksi (1,034 MPa)] in sizes greater than 1 inch nominal diameter (including ASTM A490 and equivalent ASTM F2280), volumetric examination comparable to that of ASME Code Section XI, Table IWB-2500-1, Examination Category B-G-1 should be performed at least once per interval to detect cracking in addition to the VT-3 examination. The sample of high-strength bolts subject to volumetric examination should be determined on a plant-specific basis such that the program can provide reasonable assurance that SCC is not occurring for the entire population of high-strength bolts." Enhancement 5 (SLR Commitment 30.5 in Table A6.0-1) to Element 4 of SLRA B2.1.30 AMP states,: *"Procedures will be revised to specify that,* ***for NSSS***	a) Discuss or justify how SLRA enhancement 5 (SLR Commitment 30.5 in Table A6.0-1) is consistent with the corresponding GALL-SLR program element which recommends ***all*** high-strength bolting greater than 1 inch diameter in the scope of the IWF program to be sampled for volumetric examination, whereas the enhancement requires high strength bolting (greater than 1 inch diameter) only in ***NSSS component supports*** to be sampled for volumetric examination. b) Noting that supports in the scope of the IWF program include Class 1, 2, 3 piping supports and supports

			***component supports**, high strength bolting greater than one inch nominal diameter, volumetric examination comparable to that of ASME Code, Section XI, Table IWB-2500-1, Examination Category B-G-1 will be performed to detect cracking in addition to VT-3 examination. In each 10 year period during the SPEO, a representative sample of bolts will be inspected. **The sample of high strength bolting greater than one inch nominal diameter subject to volumetric examination will consist of 17 bolts per unit.** The sample shall include the bolting that is most susceptible to age-related degradation (i.e., based on time in service, aggressive environment, etc)."* Section 4.4.d of SLR-ONS-AMPR-XI.S3 (on page 16 of 41) states, in part: *"**Forty-eight** ASTM A490 bolts, 2 inch diameter, are used for attachment of the replacement steam generator support pedestals to the floor. **Ninety-six** ASTM A490, 2 ½ inch diameter, are used for attachment of the reactor vessel support skirt to the reactor pedestal…… ….**The sample of high strength bolting materials subject to volumetric examination will be seventeen of the bolts used for each unit.** The sample population will provide reasonable assurance that SCC is not occurring for*	other than piping supports, clarify how the sampling of high strength bolting (greater than 1" diameter) from NSSS component supports can be considered representative for volumetric examination of the entire population of such high strength bolting? <u>OR</u> Confirm that high strength bolting greater than 1" diameter exists only in NSSS component supports at ONS. c) Discuss the sampling criteria and bases that was used to arrive at sample size of 17 bolts per unit and justify how it is sufficient to provide reasonable assurance that SCC is not occurring in the entire population of HS bolting at each ONS unit. Include discussion of multiple units, similarity or not of operating conditions and environment, potential differences between the units, and operating experience related to SCC.

			the entire population of high-strength bolting." Section 4.3.c of SLR-ONS-AMPR-XI.S3 (on page 13 of 41) states, in part: *"Plant specific operating experience has not identified cracking or SCC for high strength bolting used at ONS."* SLRA Section B2.1.30, on page B-209, states, in part: "The sample will be 20% of the population (for a material/environment combination) up to a maximum of 17 bolts. <u>Issue</u>: It is not clear how sampling only from NSSS HS bolting is consistent with the GALL-SLR AMP XI.S3 and is representative of the entire population of HS bolting greater than 1 in diameter that are within the scope of the IWF AMP. Also, it is not clear what criteria was used in arriving at a sample size of 17 HS bolts per unit and how it provides reasonable assurance that SCC is not occurring for the entire population of high-strength bolting. Also, the SLRA does not include any discussion of plant operating experience related to SCC for susceptible components in scope of the IWF AMP.	d) Discuss and confirm if there was any plant-specific operating experience at ONS of SCC in susceptible components in the scope of the IWF AMP.
5	B2.1.30, A2.30,	B-210, A-33, A-96	*<u>Clarify consistency of "preventive actions" element regarding lubricants using</u>*	

	Table A6.0-1		*molybdenum disulfide and others containing sulfur:* The "preventive actions" program element of GALL-SLR AMP XI.S3 states: "Operating experience and laboratory examinations show that the use of molybdenum disulfide (MoS_2) as a lubricant is a potential contributor to stress corrosion cracking (SCC), especially when applied to high-strength bolting. Thus, molybdenum disulfide and other lubricants containing sulfur should not be used." Section 4.2.a of SLR-ONS-AMPR-XI.S3, Rev. 2, Preventive Actions, on page 10 of 41 states: *"The use of molybdenum disulfide as a lubricant on bolting is prohibited at Oconee as specified in the PCMG. Station procedures specify the use of thread lubricants, such a Loctite N-5000, that have low levels of halogens and sulfur to minimize the potential for SCC. (Reference: AD-EN-ALL-0045, PCMG Manual Section 1.10.7)."* Section 4.2.c of SLR-ONS-AMPR-XI.S3, Rev. 2, on page 10/11 of 41 states in part*: "The ONS ASME Section XI, Subsection IWF AMP consists of ASTM A490 bolting for the reactor vessel anchor studs and the replacement steam generator anchor studs. Bolting material selection is governed through the design change procedures and design specifications for the plant. The use of lubricants and*	a) Clarify if lubricants using ***molybdenum disulfide and others containing sulfur*** have been or will be used at ONS. If these lubricants have not been used in the past and will not be used in the future at ONS, how is this controlled or accomplished in the implementing procedures, and can you provide a confirmatory statement to that effect in the SLRA. b) If the use of such lubricants is prohibited only in the future, the applicant's plan not to use molybdenum disulfide or other lubricants containing sulfur appears to be not adequately described, and the timing of the first volumetric examination at 10 year interval during the SPEP (per SLRA enhancement 5) may not be adequate for managing aging effect of SCC in bolting that may have used molybdenum disulfide lubricant in the past or prior to entering the SPEO.

			sealants is controlled by the Nuclear Chemical Control process through the PCMG and by station maintenance procedures. Station procedures specify the use of thread lubricants and sealants…." Section 1.10.7 of the Power Chemistry Material Guide (PCMG) Program, Rev 31, states in part*: "The PCMG program controls chemical content of consumables to preclude initiation of stress corrosion cracking of austenitic stainless steel, and prescribes contaminant limits for thread lubricants and sealants, which are approved for use.* *NOTE: Molybdenum Disulfide containing materials are restricted from use on bolting materials."* SLRA B2.1.30 does not provide a discussion on the use of molybdenum disulfide lubricants or other lubricants containing sulfur at ONS. While the PCMG note above only restricts use of molybdenum disulfide materials at ONS, the possibility exists that Molybdenum disulfide lubricant may have been used at ONS in the past or may be used in the future. Also, the PCMG does not mention or prohibit other lubricants containing sulfur.	Since volumetric examinations per the enhancement 5 (SLR Commitment 30.5 in Table A6.0-1) are planned for some time into the SPEO (could be almost 10 years), discuss whether and how the aging effect of cracking due to SCC will be detected for the population of HS bolts such that this aging effect can be managed from the start of the SPEO prior to loss of intended function. c) Discuss how the program will assess the adequacy of the HS bolting sample to inspect for cracking due to SCC when additional HS bolts are installed.

			Therefore, for the period of time between the start of the SPEO and when the volumetric examinations per SLRA B2.1.30 enhancement 5 (discussed in Q4 above) are performed, it is not clear how the aging effect of cracking due to SCC will be detected prior to a loss of intended function.	
6	B2.1.30,	B-211, B-212	*Clarify SLRA B2.1.30 Operating Experience (OE) as it relates to how aging effects (e.g., loss of material due to corrosion, boric acid corrosion, wear of lubrite pads, etc) have been effectively managed* SLRA B2.1.30 on page B-211 states, in part: "Based on a broad search of pertinent Oconee OE, the following examples provide objective evidence that the *ASME Section XI, Subsection IWF* AMP will continue to be effective in managing aging effects for SSCs within the scope of the program so that intended functions will be maintained consistent with the CLB for the SPEO." However, the supporting examples described therein (spacer missing, pipe support gaps out of tolerance or gap due to missing shim, pipe clamp found overtightened, discrepancies in as-built condition) in the SLRA seem to relate to as-found conditions that are non-conforming to construction drawings/specifications, and do not	a) Discuss few examples of OE at ONS that show objective evidence of effective management of aging effects such as loss of material or degradation due to corrosion, boric acid corrosion/wastage or boron leakage, loss of preload due to loosening, SCC, wear or change in properties of lubrite pads, etc., of safety-significant component and piping supports within the scope of the IWF AMP. If there were no OE of such aging effects identified on ONS IWF support components, can you provide a confirmatory statement to that effect? b) General Question to Site IWF Program Owner: What is the most significant OE identified during the last 10-

			appear to reflect examples of OE that provide objective evidence of effectively addressing aging effects (such as loss of material due to corrosion or boric acid corrosion/wastage or boron deposits, SCC, loss of preload, wear or change in properties of lubrite pads, etc. which the IWF AMP is expected to manage.	year interval on piping and component supports in the scope of the IWF AMP, and how was it addressed to conclusion in the corrective action program? c) The OPEX Long Description Report includes several ARs that identified boric acid leakage or boron leakage with target components including adjacent piping supports and component supports. Explain what actions (or corrective actions) are taken at the site when boric acid or boron leakage are found on piping supports and component supports within the scope of the IWF AMP, and the process of determining those actions.
7	Table 3.5.1, item 3.5.1-086	3-1346	*Issue with Table 3.5.1 AMR item* 3.5.1-86 *non-applicability claim*: The "Discussion" column for item 3.5.1-86 states: "***Not applicable.*** ONS has no in-scope stainless steel structural bolting exposed to air-outdoor that is managed by the *ASME Section XI, Subsection IWF* (B2.1.30) program in Containments, Structures, and Component Supports. The associated NUREG-2191 aging items are	a) Justify the non-applicability claim for item 3.5.1-086, given that it applies to steel or galvanized steel material, and not stainless steel. If determined to be an error, how do you propose to correct it?

			not used." Contrary to the above SLRA statement, GALL-SLR AMR items III.B1.1.TP-235, III.B1.2.TP-235, and III.B1.3.TP-235 that correspond to SRP-SLR Table 3.5-1 item 086 is for "steel; galvanized steel" material and not "stainless steel" material.	b) Clarify whether the determination for SLRA item 3.5.1-086 is "not applicable" or "not used." If it is "not used," state the alternate AMR item that is used in lieu of item 3.5.1-086.