NUREG-2191 and NUREG-2192 (February 2017 Draft)
Structural Comments

Comment #	Location of Change	Description of Change	Justification For Change
SLR-SRP-1	NUREG-2192 paragraph 3.5.2.2.1.3	Delete newly added wording, added since the Dec 2015 Draft of the SLR-SRP. The newly added wording states that unless pressure boundary components are subject to "local leakage rate testing" (i.e. Appendix J Type B or C testing) and IWE that further evaluation and justification from exclusion from Appendix J testing and selection of another AMP or TLAA to manage the corrosion aging effect are to be addressed and identified in the basis document.	A "local leakage rate test" is an Appendix J Type B or C test which is not applicable or possible on the containment shell or containment liner, heads, many if not most penetration sleeves and other related pressure boundary components. IWE Pressure Boundary components are not excluded from but are subject to Appendix J Type A Testing (Integrated Leakage Rate Testing) and do not require justification for their "exclusion from 10 CFR Part 50 Appendix J testing". Previous versions of GALL have relied on IWE and Appendix J testing (Type A, B, or C) together to manage these subject aging effects. The IWE code alone relies on IWE visual examination to detect degradation or aging of loss of material due to general, pitting and crevice corrosion. IWE visual examination can be supplemented if deemed warranted by the IWE Responsible Individual or Engineering evaluation with other methods in addition to visual examination. Industry OE has proven IWE visual examination (supplemented if required by the licensees engineering) to be adequate and effective to detect and manage loss of material due to corrosion. There is no need for Appendix J exclusion in this further evaluation.
SLR-SRP-2	NUREG-2192 paragraph 3.5.2.2.2.4	This February 2017 SLR SRP Draft newly added wording to these paragraphs should be removed. The Table 1 line item changes associated with the further evaluation should also receive the	The new wording also refers to paragraphs in the SLR-SRP Section 3.2 which are mechanical sections for background information and also to mechanical AMPs XI.M32 and XI.M36 for implementation which

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	and 3.5.3.2.2.4	corresponding changes.	are not appropriate and not applicable to structural supports. Such structural supports are currently managed by Structures Monitoring or the ASME Section XI, Subsection IWF AMPs regardless of the material. The further evaluations now require one-time inspections to be conducted consistent with AMP XI.M32 that would require EVT-1 or surface examinations for aluminum or stainless steel structural support members. Inspection Methods for structural support should be consistent with NUREG-2191 structural aging management programs. Revise AMP XI.M32 Table 32-1 and other sections to include a loss of material and cracking (structural components) line item that specifies VT-3 examinations (ASME Section XI Subsection IWF) or structural visual examinations (AMP XI.S6 Structures Monitoring) for the inspection method. OE does not suggest that SCC or significant Loss of Material due to pitting or crevice corrosion is problematic for structural members made from the aluminum or stainless steel materials used for structures. There is also no technical information to suggest that the Structures Monitoring or IWF AMPs are inadequate to manage the aging effects of aluminum or stainless steel structural members. Although typically the Aluminum in use for structural members is or is expected to be 6061-T6 or other excluded series which would be excluded from SCC considerations, the Aluminum type used is not always well documented or readily retrievable, especially for the in-scope switchyard structures which are not safety-related and in some cases

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			materials may have been separately procured and the construction separately managed from the rest of the plant construction. Lack of documentation for aluminum alloys may result in a conservative decision that would require aging management considerations. AMP XI.S03 (IWF) and AMP XI.S6 (Structures Monitoring) should be used for the aging management inspection methods rather than XI.M36 (External Surfaces) which is intended for mechanical components.
SLR-SRP-3	NUREG-2192, section 3.5.3.2.1.8, 2nd sentence addressing indications of ASR	Change "mismanagement/distortion" at the end of the sentence to "misalignment/distortion".	This is an editorial change that is required for consistency with other SLR-SRP sections to address an aging effect.
XI.S01-1 XI.S04-1 XI.S06-1	NUREG-2191 Vol. II. Page XI.S1-3 and XI.S-4 and XI.S1-6; Elements 3, 4, and 6	**Subject: Surface Examination of *all* pressure boundary components (including containment shells and liners) subject to cyclic loading without CLB Fatigue Analysis to be performed once per interval.** AMP XI.S1, Table 3.5-027 and AMRs II.A3/B4.CP-37 now require a surface examination of all pressure retaining components that are subject to cyclic loading but do not have a current licensing basis (CLB) fatigue analysis. This surface examination requirement is not consistent with Table 3.5-009 for pressure retaining components	Revise Table 3.5-027 to include a further evaluation that requires aging management based on a screening threshold for cyclic loading or a plant specific justification for cyclic loading applicability. The further evaluation should provide reasonable cyclic loading screening threshold values above which susceptible components would receive an augmented surface examination as part of the ASME Section XI Subsection IWE Program. Consistent with the EPRI Fatigue Management Handbook (TR-104534), a reasonable screening threshold of 200F is recommended for carbon steel cyclic loaded components (with no CLB fatigue

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		that are subject to fatigue/cyclic loading/cyclic displacement with a CLB fatigue analysis. The examination population for cyclic loaded components (no CLB fatigue analysis) is unreasonably expanded to include all containment components, regardless of material, and requires performance of an augmented surface examination. Revise Table 3.5-027 to include a further evaluation that requires aging management based on a screening threshold for cyclic loading or a plant specific justification for cyclic loading applicability. The further evaluation should provide reasonable cyclic loading screening threshold values above which susceptible components would receive an augmented surface examination as part of the ASME Section XI Subsection IWE Program. Consistent with the EPRI Fatigue Management Handbook (TR-104534), a reasonable screening threshold of 200F is recommended for carbon steel cyclic loaded components (with no CLB fatigue analysis) and a screening threshold of 270F is recommended for stainless steel and dissimilar metal weld cyclic loaded components (with no CLB fatigue analysis). OR as an alternate: Remove newly added word “Steel” from sentence addressing components that are subject to cyclic loading, and add back in the deleted words “penetration sleeves, penetration bellow, and vent line bellows and steel bellows” and delete the newly added words “(i.e., components covered by Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power	analysis) and a screening threshold of 270F is recommended for stainless steel and dissimilar metal weld cyclic loaded components (with no CLB fatigue analysis). During the 2016 Industry-NRC meetings a revision was discussed that would restore the GALL Rev 2 wording for cyclic loading with some clarification that SSC considerations for stainless steel penetration components would be addressed as a further evaluation that potentially included aging management considerations. Limiting surface examinations to penetration sleeves and dissimilar metal welds on those sleeves with cyclic load but no CLB fatigue analysis was also discussed. Requiring surface exams for all steel or stainless steel pressure boundary components including components such as the primary containment steel shell or steel liner and drywell head and all other pressure boundary components should also be restored to GALL Rev 2 wording. The GALL-SLR changes are a very significant scope increase such that the entire liner or shell and containment head and every part of the pressure boundary, if subject to cyclic load and if no CLB fatigue analysis exists, now require monitoring for cracking regardless of whether they are steel or stainless steel and regardless of plant specific or industry OE need for such examinations, or the feasibility for effective performance of the surface examination on coated surfaces, etc. The coatings on carbon steel surfaces have to be removed prior to surface examinations and then replaced following surface examinations. The term surface examination as supplemented into

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		Plants (SRP-SLR) Table 3.5-1, items 27 and 40, and corresponding GALL-SLR items; as applicable),". Similar changes to restore the GALL R2 wording on this topic are recommended in Elements 3, 4, and 6 as well as other sections of the GALL and SRP that were changed. In addition, the restrictions and limitations for using Appendix J testing should be removed. The frequency restriction of performing the surface examination once each inspection interval should also be removed to permit licensee flexibility.	scope in Element 4 means special NDE techniques such as Liquid or Dye Penetrant testing or examination; or Magnetic Particle testing or examination. Attachment 1 (page 16 and 17) and Attachment 6 (Comment 4.15) of SECY 1996-080 for the 10 CFR50.55a changes associated with ASME Section XI, Subsection IWE and Subsection IWL changes noted that use of surface examinations on stainless steel penetrations and dissimilar metal welds of penetration components was not appropriate considering that there had been no evidence of problems and the occupational dose that would be incurred could not be justified. Sometimes Appendix J testing is the most appropriate option where Type A testing is possible**.** These restrictions on the use of Appendix J testing are contrary to present code and 10 CFR50.55a requirements.
XI.S01-2	NUREG-2191 Vol. II. Page XI.S1-4 and Elements 4	**Subject: Volumetric Examinations of shell or liner components with <u>any</u> instance of inaccessible side corrosion.** The last paragraph of AMP XI.S1 requires a one-time volumetric examination of the containment metal shell or liner surfaces that are inaccessible from one side if triggered by plant specific OE. The trigger for this supplemental examination is plant-specific occurrence or recurrence of <u>any</u> instance of metal shell or liner corrosion initiated on the inaccessible side or areas, since the date of issuance of the first renewed license. Revise "any" instance to identify significant or measurable degradation from the accessible side of the shell or liner such as through wall corrosion or corrosion	The use of the words "any instance of metal shell or liner corrosion" is not reasonable, subject to varying interpretation, and does not provide a quantitative qualifier. It would be difficult at best to detect instances of "any" corrosion on the inaccessible side if that side is truly inaccessible. Similarly it is not feasible to demonstrate that there has not been any corrosion on the inaccessible side. As written, the requirement could be inferred to always require volumetric examinations, which we currently believe is not the intent. During the June 2, 2016 NRC-Industry meeting it was discussed that "any instance" be revised to identify significant or measurement of degradation from the accessible side of the shell or liner such as through wall

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		with greater than 10% wall thickness loss.	corrosion or corrosion with greater than 10% wall thickness loss. A greater than 10% wall thickness loss due to corrosion on the inaccessible side as measured from the accessible side is consistent with current ASME Section XI, Subsection IWE examinations.
SLR-SRP-7	NUREG-2192**Further Evaluation paragraph 3.5.2.2.1.3**	**Subject: IWE and Appendix J Type A (ILRT) no longer considered adequate to manage corrosion of containment pressure boundary components for Loss of material due to general, pitting and crevice corrosion.** In the first paragraph of the further evaluation delete the fourth sentence that requires justification from exclusion of Appendix J local leakage rate testing (i.e. Appendix J Type B and Type C testing). Revise the further evaluation and restore the prior evaluation for IWE aging management considerations. Aging management of containment shell or containment liner, heads and other related IWE pressure boundary components are not excluded from, but are subject to Appendix J Type A ILRT (Integrated Leakage Rate Testing) and IWE examinations.	This was not previously discussed or presented in any written document to the industry and is unnecessarily burdensome and does not appear to be technically correct or technically warranted. A "local leakage rate test" is an Appendix J Type B or C test which are not applicable or possible on the containment shell or containment liner, heads, many if not most penetration sleeves and other related pressure boundary components. IWE Pressure Boundary components are not excluded from but are subject to Appendix J Type A or ILRT (Integrated Leakage Rate Testing) and do not as stated require justification of their "exclusion from 10 CFR Part 50 Appendix J testing". Previous versions of GALL have relied on IWE and Appendix J testing (Type A, B, or C) together to manage these subject aging effects. The IWE code alone relies on IWE visual examination (which can be supplemented if deemed warranted by the IWE Responsible Individual or Engineering evaluation with other methods in addition to visual) to detect degradation or aging of loss of material due to general, pitting and crevice corrosion. Industry OE has proven IWE visual examination (supplemented if required by the licensees engineering) to be adequate and effective to detect and manage loss

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			of material due to corrosion.
Section III.B (Supports)	NUREG-2191 Vol. I. Tables (supports) B1.1, B1.2, B1.3, B2, B3, B4, and B5 Lines for aluminum, stainless steel in air, condensation: III.B1.1.T-36a/b/c III.B1.2.T-36a/b/c III.B1.3.T-36a/b/c III.B2.T-37a/b/c III.B2.T-37a/b/c III.B3.T-37a/b/c III.B4.T-37a/b/c III.B5.T-	Revise the AMPs noted in the AMR lines to be consistent with comment resolution of SLR-SRP-2.	AMPs noted in the AMR lines to be updated consistent with comment resolution of SLR-SRP-2

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	37a/b/c		