

From: [Sayoc, Emmanuel](#)
To: [Paul Aitken](#); [Eric A Blocher](#)
Cc: [Wu, Angela](#)
Subject: More Surry SLRA Draft RAIs
Date: Tuesday, April 30, 2019 2:40:00 PM
Attachments: [SCPB Scoping and Screening RAI 2.3.3.34-1.docx](#)
[041 SPS AMP RAI Containment ISI - IWE Thomas Cuadrado \(1 RAI\) 4-19-19 \(002\).docx](#)
[Draft 045 SPS AMP RAI Masonry Walls - Wang Thomas \(1 RAI\) 04-15-19.docx](#)
[046 SPS AMP RAI Structures Monitoring - Lopez Cuadrado \(1 RAI\).docx](#)
Importance: High

Paul, Eric, see draft RAIs:

2.3.3.34-1

B.2.1.29-1

B.2.1.33-1

B.2.1.34-1

Please take a look, let me know if you want a clarification call or if you want to add it to the next Supplement (due 6/7/19).

Thanks

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TRP 041: PTN ASME Section XI, Subsection IWE AMP (1 RAI)

Regulatory Basis:

Section 54.21(a)(3) of 10 CFR requires the applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function will be maintained consistent with the current licensing basis for the subsequent period of extended operation. As described in SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL-SLR Report when evaluation of the matter in the GALL-SLR Report applies to the plant. SRP-SLR Section 1.2.1 states, in part: “If a GALL-SLR Report AMP is selected to manage aging, the applicant may take one or more exceptions to specific GALL-SLR Report AMP program elements. Exceptions are portions of the GALL-SLR Report AMP that the applicant does not intend to implement, which the staff will review on a case-by-case basis. Any deviation or exception to the GALL-SLR Report AMP should be described and justified.”

DRAI B2.1.29-1

Background:

SRP-SLR Section 4.6.1 states, in part: “If a plant’s code of record requires a fatigue parameter evaluation (fatigue analysis or fatigue waiver), then this analysis may be a time-limited aging analysis (TLAA) and should be evaluated in accordance with 10 CFR 54.21(c)(1) for the subsequent period of extended operation.”

SRP-SLR Section 4.6.1.1 states, in part: “The ASME Code contains explicit requirements for fatigue parameter evaluations (fatigue analyses or fatigue waivers), which are TLAAs.”

The “detection of aging effects” program element of GALL-SLR AMP XI.S1 states: “Where feasible appropriate Appendix J leak rate tests (GALL-SLR AMP XI.S4) capable of detection of cracking may be performed or credited in lieu of the supplemental surface examination; the type of leak test determined to be appropriate is identified with the basis for components for which the option is used.”

SLRA Section B2.1.29, as amended by Change Notice 2 (SLRA supplement) dated April 2, 2019, states that the ASME Section XI, Subsection IWE AMP is an existing program that following enhancements will be consistent, with exception, to GALL-SLR Report AMP XI.S1, “ASME Section XI, Subsection IWE.” SLRA Section B2.1.29 further states that the ASME Section XI, Subsection IWE AMP takes the following exception to the “parameters monitored or inspected” and “detection of aging effects” of GALL-SLR Report (NUREG-2191) AMP XI.S1:

NUREG-2191, Section XI.S1, ASME Section XI, Subsection IWE, recommends that steel, stainless steel, dissimilar metal weld pressure-retaining components that are subject to cyclic loading but have no CLB fatigue analysis, be monitored for cracking and supplemented with surface examination (or other applicable technique) in addition to visual examination to detect cracking. With the exception of high temperature components (e.g., high temperature penetrations), carbon steel components that are subject to cyclic loading (with no CLB fatigue

analysis) are not monitored for cracking utilizing supplemental surface examinations.”

As justification for the exception, the SLRA Section B2.1.29, as amended by Change Notice 2, states the following.

The containment contains dissimilar metal welds and steel components that are subject to cyclic loading but have no CLB fatigue analysis. The containment was designed in accordance with ASME Section III, Subsection N-415.1, 1968 edition. The six conditions [fatigue waiver] in ASME Section III, Subsection N-415.1 were analyzed for the original design, initial license renewal, and subsequent license renewal to determine the need for a detailed fatigue analysis. Results of each analysis determined that a detailed fatigue analysis was not required for the containment liner due to stress fluctuations caused by temperature, pressure, and design earthquake cycles since all six conditions were shown to be satisfied.

.....The containment liner fatigue analysis in Section 4.6 concluded that components that could be subject to cyclic loading, but have no current licensing basis fatigue analysis, are subjected to an acceptable and negligible amount of fatigue. Therefore, surface examinations will not be performed except for high temperature components that are subject to cyclic loading. ...

From information in the SLRA, as amended, the proposed program exception appears to be applicable to carbon steel components of containment penetrations, hatches (personnel, equipment) and air locks, other than high temperature piping penetrations, dissimilar metal weld penetrations, and containment pressure-retaining portions of fuel transfer tube components.

Issue:

Contrary to the SLRA Change Notice statements noted above, SLRA Section 4.6.3 states: “There are no TLAAAs for containment penetrations since these were not analyzed for cyclic fatigue.” SLRA Section 3.5.2.2.1.5 also states that there are no TLAAAs for containment penetrations. Further, SLRA Section 4.6.1 provides a TLAA disposition only for the containment liner plate. Additionally, Section 13 of Calculation 11448-EA-62, Addendum 00C, “Reactor Containment Liner Fatigue Evaluation for 80-Year Plant Life, Surry Unit 1 and Unit 2,” Revision 0, notes that the conclusion therein is applicable to containment liner, mat and dome liners. The calculation does not appear to address any other containment pressure-retaining boundary components.

Based on the justification provided in the SLRA supplement for the exception, it appears that for those containment pressure-retaining boundary components subject to cyclic loading but that have no CLB fatigue analysis (i.e., no fatigue TLAA), there exists an ASME Section III, Subsection N-415.1 fatigue waiver analysis in the CLB which by definition would be a TLAA. The staff also notes that if a TLAA exists for these components, there is no need to take an exception to the GALL-SLR AMP. However, no fatigue TLAAAs were submitted in the SLRA supplement for the components to which the exception applies as stated in the justification for the exception. The NRC staff is also unable to verify how the containment liner fatigue analysis in SLRA Section 4.6 concluded that [other] components that could be subject to cyclic loading,

but have no CLB fatigue analysis, are subjected to an acceptable and negligible amount of fatigue, as claimed by Dominion.

The staff needs additional information to evaluate the adequacy of the SLRA Section B2.1.29 AMP to manage aging effects of cracking due to cyclic loading, specifically with regard to the supporting justification for the related proposed exception to the SLRA AMP.

Request:

- 1) For each containment pressure-retaining boundary component to which the program exception applies based on the fatigue waiver assessment performed as stated in the SLRA Change Notice 2, provide in SLRA Section 4.6 (and related UFSAR supplement) a summary of the fatigue waiver assessment with results, transients considered, etc., and TLAA disposition that would demonstrate how the component met, for the subsequent period of extended operation, the six criteria for fatigue waiver stipulated in ASME Code Section III, Subsection N-415.1, 1968 edition.
- 2) Alternately, if a CLB fatigue waiver analysis does not exist as stated in SLRA Change Notice 2, either:
 - provide the technical bases for the exception consistent with the fatigue waiver criteria in ASME Code Section III, Subsection N415.1, "Vessels Not Requiring Analysis for Cyclic Operation," that would demonstrate that the containment liner fatigue waiver analysis in SLRA Section 4.6.1 and its conclusion is applicable to each of the components to which the proposed program exception is intended to apply, or that the fatigue waiver criteria are individually met for each of these components;
 - OR, in lieu of the exception, credit appropriate 10 CFR 50 Appendix J Type B local leak rate tests capable of detecting cracking due to cumulative fatigue damage from cyclic loading for each of the components to which the program exception is intended to apply .

Regulatory Basis:

Regulatory Basis: 10 CFR 54.21(a)(3) requires an applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation. One of the findings that the staff must make to issue a renewed license (10 CFR 54.29(a)) is that actions have been identified and have been or will be taken with respect to managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under 10 CFR 54.21, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis. In order to complete its review and enable making a finding under 10 CFR 54.29(a), the staff requires additional information in regard to the matters described below.

D-RAI B2.1.34-1

Background:

Dominion addressed the age-related degradation of loss of material and change in material properties for wooden power poles by including a plant-specific enhancement to the “detection of aging effects” program element of the Structures Monitoring Program (SLRA Section B2.1.34) to ensure that wooden power poles are inspected on a 10-year frequency. By letter dated April 2, 2019, Dominion stated that this enhancement follows the EPRI 1010654, “Evaluation of Wood Pole Condition Assessment Tools,” recommendations for inspection cycles as described in the “Wood Pole Assessment Practices” section.

SRP-SLR Section A.1.2.3.4 recommends that the discussion for the “detection of aging effects” program element should provide, in part, justification, including codes and standards referenced, to demonstrate that the technique and frequency are adequate to detect the aging effects before a loss of intended function.

Issue:

The staff notes that the referenced EPRI document describes the ten- to fifteen-year inspection cycle as what is typically performed in North America, but it does not provide a technical bases or justification for the use of such reference as a standard. Thus, it is not clear how the vulnerability of poles to decay, based on the wooden pole locations, were considered for the proposed inspection frequency. Additional justification is needed to demonstrate the adequacy of the proposed 10-year inspection frequency for wooden poles to ensure that the aging effects can be detected before a loss of intended function.

Request:

Provide justification that would demonstrate, pursuant to 10 CFR 54.21(a)(3), that the proposed inspection frequency for wooden poles will be adequate to detect the associated aging effects before a loss of intended function.

Regulatory Basis:

Regulatory Basis: 10 CFR 54.21(a)(3) requires an applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation. One of the findings that the staff must make to issue a renewed license (10 CFR 54.29(a)) is that actions have been identified and have been or will be taken with respect to managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under 10 CFR 54.21, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis. In order to complete its review and enable making a finding under 10 CFR 54.29(a), the staff requires additional information in regard to the matters described below.

DRAFT-RAI B2.1.33-1

Background

SLRA Section B2.1.33, "Masonry Walls" states that "[T]he Masonry Walls program is an existing program that, following enhancement, will be consistent with NUREG-2191, Section XI.S5, Masonry Walls." Enhancements are revisions or additions to existing AMPs that the applicant commits to implement prior to the subsequent period of extended operation. Enhancements include, but are not limited to, those activities needed to ensure consistency with the GALL-SLR Report recommendations. Enhancements may expand, but not reduce, the scope of an AMP.

The "scope of program" element of GALL-Report AMP XI.S5 "Masonry Walls," states: "The scope includes all masonry walls identified as performing intended functions in accordance with 10 CFR 54.4."

The "acceptance criteria" element of GALL-Report AMP XI.S5 "Masonry Walls," states in part: "For each masonry wall, observed degradation.....are assessed against the evaluation basis to confirm that the degradation has not invalidated the original evaluation assumptions or impacted the capability to perform the intended functions."

Issue

The staff is unable to verify Dominion's claim of consistency of the "scope of program" and "acceptance criteria" elements of SLRA AMP B2.1.33 with the corresponding elements of GALL Report AMP XI.S5 due to the following issues:

1. SLRA Table 2.4.1-19 and SLRA Table 3.5.2-19 indicate that masonry blocks in Fire Pump House perform intended functions in accordance with 10 CFR 54.4 and requires aging management. However, during the audit the staff could not find Fire Pump House listed in Section 3.1 "Scope of Program" in Attachment 1 of the ETE-SLR-2018-1338, Revision 1, "Surry SLRA Project – Aging Management Program Evaluation Report – Masonry Walls." The staff also could not find any enhancement to the SLRA B2.1.33 AMP to include the Fire Pump House within its scope.
2. Enhancement 2 to SLRA AMP B2.1.33 attributed to the "Monitoring and Trending" program element states, in part: "...[T]he procedure will be revised to include acceptance criteria for masonry wall inspections that will be used to ensure observed

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aging effects (cracking, loss of material, or gaps between the structural steel supports and masonry walls) do not invalidate the evaluation basis of the wall or impact its intended function.” The staff notes that, in order to be consistent with the “acceptance criteria” program element of GALL-SLR AMP XI.S5, the portion of SLRA Enhancement 2 described above should apply to the “acceptance criteria” program element of SLRA AMP B2.1.33. Further, during the audit, the staff noted that Section 3.6.2 of ETE-SLR-2018-1338, Revision 1 states that acceptance criteria are specified in the plant procedure governing the inspection, but could not locate acceptance criteria for masonry walls; therefore, the staff was unable to verify consistency of the program element with that of GALL-SLR Report AMP XI.S5.

Request

1. Clarify if the Fire Pump House is within the scope of the SLRA AMP B2.1.33 “Masonry Walls.” If so, provide an enhancement to the “scope of program” element of SLRA AMP B2.1.33 to enable staff to verify Dominion’s claim of consistency with the GALL-SLR Report AMP. If not explain why masonry blocks are included in the scoping/screening and aging management review results in SLRA Tables 2.4.1-19 and 3.5.2-19 for the Fire Pump House.
2. Clarify whether Enhancement 2 or portion of it applies to the “acceptance criteria” program element. If not, justify how the “acceptance criteria” program element of the SLRA AMP will be consistent with that of the GALL-SLR AMP XI.S5. In addition, state the acceptance criteria for masonry walls to be addressed in the plant procedure as part of Enhancement 2.

REQUEST FOR ADDITIONAL INFORMATION
CONTAINMENT AND PLANT SYSTEMS BRANCH (SCPB)
SURRY POWER STATION UNITS 1 AND 2
SUBSEQUENT LICENSE RENEWAL APPLICATION (SLRA)
DOCKET NOS. 50-280 & 50-281

By application dated October 18, 2018, Virginia Electric And Power Company (Dominion Energy Virginia), the Licensee, submitted its Application for Subsequent Renewed Operating Licenses for Surry Power Station (SPS) Units 1 and 2. The Containment and Plant Systems Branch staff has reviewed the License Renewal Application and requests the following additional information to complete its review:

RAI 2.3.3.34 -1

Regulatory Basis

Regulatory Basis: 10 CFR 54.21(a)(3) requires an applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation. One of the findings that the staff must make to issue a renewed license (10 CFR 54.29(a)) is that actions have been identified and have been or will be taken with respect to managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under 10 CFR 54.21, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis. In order to complete its review and enable making a finding under 10 CFR 54.29(a), the staff requires additional information in regard to the matters described below.

10 CFR 54.4(a) “Scope” reads in part:

(a) Plant systems, structures, and components within the scope of this part are--

(1) Safety-related systems, structures, and components which are those relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49 (b)(1)) to ensure the following functions--

(i) The integrity of the reactor coolant pressure boundary;

(ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

(iii) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in § 50.34(a)(1), § 50.67(b)(2), or § 100.11 of this chapter, as applicable. ...

54.21(a) “Contents of application--technical information” reads in part:

Each application must contain the following information:

(a) An integrated plant assessment (IPA). The IPA must--

(1) For those systems, structures, and components within the scope of this part, as delineated in § 54.4, identify and list those structures and components subject to an aging management review. Structures and components subject to an aging management review shall encompass those structures and components--

(i) That perform an intended function, as described in § 54.4, without moving parts or without a change in configuration or properties. ...

Issue

During the “In-office Audit” breakout session of February 14, 2019 the staff noted that Updated Final Safety Analysis Report (UFSAR) Appendix 9C.1.2 “Features to Protect Safety Related Equipment Against Failure in the Fire Protection System” reads in part:

Fire Main Deflector

A six-inch fire protection line runs along the turbine building north wall above the mezzanine level near the ESGR opening. To prevent water from spilling into the ESGR side of the dike located at the ESGR entrance, a flow directing pipe sleeve around the six inch line directs water to either end of the dike surrounded area.

The staff noted to the Applicant that the Flood Barrier (i.e., FLB) is not identified as an Intended Function in Subsequent License Renewal Application (SLRA) Table 2.3.3-34 “Fire Protection” nor in SLRA Table 3.3.2-34 “Auxiliary Systems - Fire Protection - Aging Management Evaluation.” At the time of the discussion the Applicant concurred that two SLRA tables needed to be revised to reflect the existence of this flood barrier. The Applicant also expressed their intent to amend the SLRA accordingly.

The staff notes that the letter to the NRC dated April 2, 2019 entitled “Virginia Electric And Power Company Surry Power Station (SPS) Units 1 and 2 Supplement To Subsequent License Renewal Application Change Notice 2” (i.e., Serial No. 19-096) did not provide the needed changes to either SLRA Table 2.3.3-34 or in SLRA Table 3.3.2-34 (Reference: ADAMS Accession Number ML19095A666).

Request

Please identify where the SLRA addresses the aging management of the flow directing pipe sleeve detailed in UFSAR Appendix 9C.1.2. If not addressed elsewhere, provide a justification for not including this component type with its Intended Function of “FLB” and its associated “Environments” in an aging management program.