

From: [Sayoc, Emmanuel](#)
To: [Paul Aitken](#); [Eric A Blocher](#)
Cc: [Wu, Angela](#)
Subject: Draft RAIs for Surry Review
Date: Monday, May 13, 2019 11:31:00 AM
Attachments: [001 Surry SLRA TRP 1 RAI AMP ERO.docx](#)
[002 Surry AMR RAI Gardner Yoder.docx](#)
[026 Fire Protection - Surry - RAIs Huynh Holston.docx](#)
[061 Surr SLRA - RAI for AMP B3.2 Neutron Fluence Monitoring AMP Dijamco JMedoff Rev3 05-07-2019.docx](#)
Importance: High

Paul, Eric

Attached are the Draft RAIs as follow. We will schedule calls for these soon.

Thanks

manny

TRP	RAI Number	Issue	Branch	Reviewer
2	3.1.2.1.Y-1	Water Chemistry	MCCB	Gardner
26	B.2.1.15-1	Fire Protection	MCCB	Holston, Huynh
26	B.2.1.15-2	Fire Protection	MCCB	Holston, Huynh
1	B.2.1.1-1	ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program	MPHB	Tsao
1	B.2.1.1-2	ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program	MPHB	Tsao
1	B.2.1.1-3	ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program	MPHB	Tsao
1	B.2.1.1-4	ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program	MPHB	Tsao
1	B.2.1.1-5	ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program	MPHB	Tsao

61	B.3.2-1	X.M2 "Neutron Fluence Monitoring"	MVIB	Dijamco
-----------	----------------	--	-------------	----------------

Emmanuel "Manny" Sayoc
Safety Project Manager
NRR/DLR
301-415-4084

SURRY UNITS 1 AND 2
SUBSEQUENT LICENSE RENEWAL APPLICATION
REQUEST FOR ADDITIONAL INFORMATION
AGING MANAGEMENT PROGRAM
TRP 1 ASME SECTION XI IWB, IWC AND IWD

Questions below are related to TRP 1 Aging Management Program (AMP) B2.1.1, *ASME Section XI IWB, IWC and IWD* in Surry Units 1 and 2 Subsequent License Renewal Application (SLRA). Questions related to items in the aging management review (AMR) that are associated with AMP B2.1.1 are also included.

Regulatory Basis

Section 54.21(a)(3) of Title 10 of the *Code of Federal Regulation* (10 CFR) 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 the 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 § 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 (CLB).

As described in the SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing NUREG-2191, Rev. 0, "Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report," dated July 2017. 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.

RAI-B.2.1.1-1TRP1-4

Background

Surry SLRA AMP B2.1.1, *ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD* program is an existing condition monitoring program that manages cracking, loss of fracture toughness, and loss of material. The program consists of periodic volumetric, surface, and/or visual examination and leakage tests of ASME Class 1, 2, and 3 pressure-retaining components, including welds, pump casings, valve bodies, integral attachments, and pressure-retaining bolting for assessment, identification of signs of degradation, and establishment of corrective actions.

Issue

Item 1 in the Operating Experience Summary section of Surry SLRA AMP B2.1.1, *ASME Section XI Inservice Inspection IWB, IWC, and IWD*, identifies an embedded indication detected in a Unit 2 reactor vessel inlet nozzle-to-shell weld region that has remained in service. The applicant stated that it performed a flaw evaluation to show that the indication is acceptable for continuing plant operation.

Request

(a) Discuss whether the flaw evaluation was performed for a time period to the end of subsequent license renewal period (i.e., 80 years). If yes, discuss whether the final flaw/indication size at the end of 80 years is less than the allowable flaw size. If the flaw evaluation was not performed to the end of 80 years, provide justification. (b) Discuss whether this indication was analyzed as part of the Time Limited Aging Analysis. If not, provide justification. (c) The ASME Code, Section XI, IWB/C/D-2000 requires successive examinations for the flaws that remain in service and are dispositioned by a flaw evaluation. Discuss whether the three successive examinations have been performed on the Unit 2 reactor vessel inlet nozzle-to-shell weld region.

RAI- B.2.1.1-2TRP1-2

Background

The ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD aging management program implements the required component examination schedule in accordance with ASME Code, Section XI, Subsection IWB-2400, IWC-2400 or IWD-2400 and examination categories, applicable components, examination methods, acceptance standards, and frequency of examination as specified in ASME Code, Section XI Tables IWB-2500-1, IWC-2500-1, and IWD-2500-1 for Class 1, 2, and 3 components, respectively

Issue

Item 11 in the Operating Experience Summary section of Surry SLRA AMP B2.1.1, ASME Section XI Inservice Inspection IWB, IWC, and IWD, states that "...due to corrective actions, the Augmented Inspection Activities AMA was updated to reflect a "visual" examination requirement, not a certified "VT-2", when performing the High Energy Line Walkdown outside of Containment. A "visual" examination was required in the original Technical Specifications..." The staff notes that various sections of the ASME Code, Section XI, such as IWA-2000 and IWA-5000, specify and define the VT-2 examination.

Request

Discuss what the plant personnel will be looking for in a visual examination during the high energy line walkdown outside of containment in lieu of a certified VT-2 examination. Discuss why a visual examination is performed in lieu of a certified VT-2 examination. Discuss whether the visual examination is as effective as a VT-2 examination in detecting leakage.

RAI- B.2.1.1-3TRP1-3

Background

Table 3.1.2-3 of the Surry SLRA provides aging management evaluation of reactor vessel, internals, and reactor coolant system. This table identifies the affected components, their intended functions, their material, and environment. The table also identifies the aging effect requiring management, associated aging management programs, and corresponding items in GALL-SLR, NUREG-2191.

Table 3.2.2-1 of the Surry SLR application provides aging management evaluation of the containment spray system. Table 3.2.2-2 provides aging management evaluation of the recirculation spray system. Table 3.2.2-3 provides aging management evaluation of the residual heat removal system. Table 3.2.2-4 provides aging management evaluation of the safety injection system.

Issue

Table 3.1.2-3, page 3-98, of Surry SLRA identifies piping and piping components that are fabricated with “Steel”. However, in the “steel” row, AMP B2.1.1 is not identified as an aging management program. The NRC staff understands that “steel” refers to carbon steel piping. ASME Code Class 1, 2 or 3 carbon steel piping is periodically inspected for cracking or loss of material based on the inspection requirements of the ASME Code, Section XI.

Request

Explain why AMP B2.1.1 in Surry SLRA is not identified to manage “steel” piping and piping components. This question applies to the same components in Tables 3.2.2-1, 3.2.2-2, 3.2.2-3, and 3.2.2-4.

RAI- B.2.1.1-4TRP1-4

Background

Surry SLRA Section 3.1.2.2.2 discusses degradation of loss of material due to general, pitting and crevice corrosion and the associated aging management programs.

Issue

In Surry SLRA Section 3.1.2.2.2, Dominion stated that the One-Time Inspection program, AMP B2.1.20, will use magnetic particle testing to inspect the continuous circumferential transition cone closure weld on each steam generator (minimum 25 percent examination coverage of each weld) prior to the subsequent period of extended operation.

Request

Discuss whether the magnetic particle testing will achieve 100 percent or essentially 100 percent examination coverage of the circumferential transition cone closure weld on each steam generator. Discuss the technical basis for the minimum 25 percent examination coverage of each weld.

RAI- B.2.1.1-5TRP1-5

Background

Table 3.1.1 of the Surry SLRA provides aging management evaluation of reactor vessel, internals, and reactor coolant system. This table identifies the affected components, their intended functions, their material, and environment. The table also identifies the aging effect requiring management, associated aging management programs, and corresponding items in GALL-SLR, NUREG-2191.

Issue

Surry SLRA Table 3.1.1, Item 3.1.1-032 is related to stainless steel, nickel alloy, or cast austenitic stainless steel (CASS) reactor vessel internals, core support structure (not already referenced as ASME Section XI Examination Category B-N-3 core support structure components in MRP-227-A), exposed to reactor coolant and neutron flux. The degradation is cracking and loss of material due to wear. Dominion stated that this item is not applicable and the associated aging items in NUREG-2191 are not used.

Request

[Provide justification for why this item is not applicable for Surry and](#) discuss why the associated aging items in NUREG-2191, Table 3.1-1, ID 034 are not used.

Surry TRP 002 AMR RAIs - Gardner

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.

RAI 3.1.2.1.Y-1

Background: In its SLRA, Section B2.1.2, "Water Chemistry," the applicant claimed consistency with the GALL-SLR Report for the AMP XI.M2, "Water Chemistry." The SLRA items 3.1.1-081 and 3.1.1-082 state that the stainless steel and nickel alloy pressurizer spray head exposed to reactor coolant are not applicable. The SLRA also states that the pressurizer spray head are not within the scope of subsequent license renewal.

GALL-SLR Report item RP-40, and RP-41 recommends that cracking be managed as an aging effect for nickel alloy and stainless steel pressurizer spray head exposed to reactor coolant.

Issue:

A basis has not been provided for why the pressurizer spray head exposed to reactor coolant are not within the scope of subsequent license renewal.

Request:

State the basis for why stainless steel and nickel alloy pressurizers spray head exposed to reactor coolant are not within the scope of subsequent license renewal. Additionally, provide information on how cracking due to stress corrosion cracking will be managed so that the intended function will be maintained for the subsequent period of extended operation.

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.

RAI B2.1.15-1

Background

SLRA Section B2.1.15 states that the Fire Protection program is consistent with GALL-SLR Report AMP XI.M26, "Fire Protection," with no exceptions or enhancements. GALL-SLR Report AMP XI.M26, "Fire Protection" states that the Fire Protection program manages the effects of loss of material and cracking for fire damper assemblies, among other components. The recommended description in GALL-SLR Report Table XI-01 states that the Fire Protection program requires periodic visual inspection of fire damper assemblies, among other components. GALL-SLR Report Item A-789 (SLRA Table 3.3-1, item 3.3.1-255) identifies the aging effects as "[l]oss of material due to general, pitting, crevice corrosion; cracking due to SCC; hardening, loss of strength, shrinkage due to elastomer degradation."

SLRA Section A1.15, "Fire Protection" and B2.1.15, "Fire Protection" both use the term "fire damper housing." The AMR items in Table 3.3.2-29, "Auxiliary Systems – Ventilation – Aging Management Evaluation," that cite Table 3.3.1, Item 3.3.1-255 identify only the "housing" as a component with aging effects requiring management. In addition, these items cite plant-specific note 3, which states: "[t]his row is applicable to fire dampers. Cracking, hardening and loss of strength, and shrinkage are not aging effects requiring management for steel fire dampers exposed to indoor air."

Issue

The term "fire damper assembly" includes both the frame and the damper as evidenced by the aging effects requiring management as cited in item A-789. For example, hardening and loss of strength would not be applicable aging effects if the intent of the GALL-SLR Report were to only manage aging effects associated with housings, which are typically constructed of steel materials. Whereas "fire damper housing" includes just the frame, as evidenced by plant-specific note No. 3. Plant-specific note 3 is not consistent with GALL-SLR Report item A-789. The SLRA lacks a basis for why aging effects will only be managed for the housing versus the damper assembly.

Request

1. State the basis for why the aging effects cited in GALL-SLR Report Item A-789 are not applicable to portions of the fire damper assembly other than the housing.
 2. Explain the discrepancy between plant-specific note 3 and the aging effects requiring for "Fire damper (housing)" line item in Table 3.3.2-29.
-

RAI B2.1.15-2

Background

SLRA Section B2.1.15 states that the Fire Protection program is consistent with GALL-SLR Report AMP XI.M26, "Fire Protection," with no exceptions or enhancements.

The monitoring and trending program element GALL-SLR Report AMP XI.M26 recommends, in part, that results of inspections are trended to provide for timely detection of aging effects and, where identified degradation is projected until the next inspection. In addition, results are evaluated against acceptance criteria to confirm that the timing of subsequent inspections will maintain the components' intended functions.

The acceptance criteria program element in GALL-SLR Report AMP XI.M26 recommends specific acceptance criteria for indications of degradation on fire protection components. Examples include, no visual indications (outside those allowed by approved penetration seal configurations) of cracking, separation of seals from walls and components, separation of layers of material, or ruptures or punctures of seals and no significant indications of cracking and loss of material of fire barrier walls, ceilings.

The corrective actions program element in GALL-SLR Report AMP XI.M26 recommends that, the scope of inspection is expanded to include additional penetration seals in accordance with the plant's approved fire protection program should any sign of degradation be detected within the sample of inspected penetration seals. The program element also recommends adjusting inspection frequencies in the event that projected inspection results will not meet acceptance criteria prior to the next scheduled inspection.

Issue

Based on the staff's review of plant-specific procedures associated with fire protection, the recommendations cited in the three program elements cited above are not included. SLRA Section B2.1.15 does not include enhancements to incorporate these recommendations. The SLRA does not include a basis for why these recommendations have not been addressed.

Request

Identify the procedures that address the monitoring and trending, acceptance criteria, and corrective actions program elements as described in GALL Report AMP XI.M26 or state the basis as to why the Fire Protection Program is consistent with AMP XI.M26 as-is.

TRP 61 – Request for Additional Information for SLRA B3.2 “Neutron Fluence Monitoring” AMP – David Dijamco

RAI B3.2-1

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. Additionally, 10 CFR 54.21(d) states, “[t]he [U]FSAR supplement for the facility must contain a summary description of the programs and activities for managing the effects of aging...”

To complete its review, enable making a finding under 10 CFR 54.29(a), and ensure that the UFSAR contains an adequate summary of programs for managing the effects of aging, the staff requires additional information regarding the matters described below.

Background

The GALL-SLR Report aging management program (AMP) X.M2 “Neutron Fluence Monitoring” states that the scope of the program includes reactor pressure vessel (RPV) and reactor vessel internals (RVI) components. Subsequent license renewal application (SLRA) Section B3.2 “Neutron Fluence Monitoring” describes the applicant’s AMP for monitoring neutron fluence of RPV and RVI components. The applicant states that the neutron fluence monitoring program in SLRA Section B3.2 is an existing program consistent with the program elements defined in the GALL-SLR Report AMP X.M2. The applicant summarized the AMP in the UFSAR supplement in SLRA Section A2.2 “Neutron Fluence Monitoring.”

Issue

1. During the audit of SLRA AMP B3.2, the staff noted that in five program elements (“scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” and “monitoring and trending”), the applicant indicated that it would not be performing neutron fluence monitoring of RVI components. Additionally, the staff noted that the applicant did not identify this aspect of SLRA AMP B3.2 as an exception to the corresponding program elements in GALL-SLR AMP X.M2.
2. In SLRA Table C2.2-1, the applicant provided the neutron fluence ranges for RVI component-specific locations analyzed in the MRP-227 program gap analysis. However, these cited 80-year fluence ranges are based only on EPRI’s generic expert panel analysis for the components and the listed ranges do not represent Surry-specific values for the component locations at 68 EFPY. The staff is unable to verify that the site-specific neutron fluence values for the referenced RVI components are within the ranges cited for the components in the gap analysis because: (a) the SLRA does not include any Surry-specific fluences for the components at 68 EFPY, and (b) SLRA AMP B3.2 has yet to credit any neutron fluence monitoring activities for achieving this objective as part of SLRA AMP B3.2.

Request

1. Explain why an exception for not performing neutron fluence monitoring of RVI components for the subject program elements has not been identified and justified in SLRA AMP B3.2. Similarly, explain why there is no description in SLRA UFSAR Supplement Section A2.2 of the exception for not performing neutron fluence monitoring of RVI components for the subject program elements.
2. Explain how confirmation of neutron fluence levels will be performed for Surry-specific RVI components to verify that the neutron fluence values for the components will be within the component-specific ranges listed in Footnote "a" of SLRA Table C2.2-1.