

**OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3 (ONS)
SUBSEQUENT LICENSE RENEWAL APPLICATION (SLRA)
REQUESTS FOR ADDITIONAL INFORMATION (RAIs)**

RAI Set #4 - SECOND ROUND RAIs

SAFETY REVIEW

RAI B2.1.10-2a

Regulatory Basis:

Section 54.21(a)(3) of Title 10 of the *Code of Federal Regulations* (10 CFR) requires an applicant to demonstrate that the effects of aging for each structure and component identified in 10 CFR 54.21(a)(1) 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 U.S. Nuclear Regulatory Commission (NRC) 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.

Background:

The NRC staff made the following observations while reviewing Oconee Subsequent License Renewal Application (SLRA) Table 3.1.2-4 in the response to Request for Additional Information (RAI) B2.1.10-2, dated February 14, 2022:

1. SLRA Table 3.1.2-4, dated June 7, 2021 (ADAMS Package Accession No. ML21158A193), cited AMR item 3.4.1-014 for managing loss of material of the auxiliary feedwater nozzle inlet header exposed internally to treated water by the One-Time Inspection and Water Chemistry programs. While not shown as a change in the response to RAI B2.1.10-2, SLRA Table 3.1.2-4 now cites AMR item 3.1.1-014 for managing loss of material of the auxiliary feedwater nozzle inlet header exposed internally to treated water by the One-Time Inspection and Water Chemistry programs.
2. SLRA Supplement 1, dated October 28, 2021 (ADAMS Accession No. ML21302A208), revised SLRA Table 3.1.2-4 by adding Plant Specific Note 1 that states, "The environment of Treated Water is equal to the environment of Secondary Feedwater for the Tube Support Plate Assembly (support rods)," for managing loss of material of the tube support plate assembly (support rods) exposed externally to treated water by the Steam Generators and Water Chemistry programs (no GALL-SLR AMR item identified). The response to RAI B2.1.10-2 revised SLRA Table 3.1.2-4 by citing AMR item 3.1.1-071 (IV.D1.RP-226) and Industry Standard Note C for managing loss of material of the tube support plate assembly (support rods) exposed externally to treated water by the Steam Generators and Water Chemistry programs. SLRA Table 3.1.2-4 no longer cites Plant Specific Note 1 for managing loss of material of the tube support plate assembly (support rods) exposed externally to treated water by the Steam Generators and Water Chemistry programs.

SLRA Table 3.1.1, dated June 7, 2021 (ADAMS Package Accession No. ML21158A193), states that AMR item 3.1.1-071 is “Not applicable to ONS steam generators. The associated NUREG-2191 aging items are not used.” However, SLRA Table 3.1.2-4 was revised in Supplement 3 dated December 15, 2021 (ADAMS Accession No. ML21349A005), and in the response to RAI B2.1.10-2 to cite AMR items 3.1.1-071 (IV.D1.RP-226) and 3.1.1-071 (IV.D1.RP-384). It does not appear that SLRA Table 3.1.1 has been updated to reflect that AMR item 3.1.1-071 is now being used.

3. The response to RAI B2.1.10-2 revised SLRA Table 3.1.2-4 by citing Industry Standard Note C for AMR item 3.1.1-072 cited for managing loss of material of the steel tubesheet exposed externally to secondary feedwater by the Water Chemistry program. While not shown as a change in the response to RAI B2.1.10-2, SLRA Table 3.1.2-4 now states that the tubesheet material is stainless steel.
4. SLRA Supplement 3 dated December 15, 2021 (ADAMS Accession No. ML21349A005), revised SLRA Table 3.1.2-4 by citing AMR item 3.1.1-002 for managing cumulative fatigue damage of tube-to-tubesheet welds exposed externally to secondary feedwater. While not shown as a change in the response to RAI B2.1.10-2, SLRA Table 3.1.2-4 now does not cite AMR item 3.1.1-002 for managing cumulative fatigue damage of tube-to-tubesheet welds exposed externally to secondary feedwater.

Issues:

1. AMR item 3.1.1-014 in Volume 1 of NUREG-2191, “Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report” (ADAMS Accession No. ML17187A031), manages loss of fracture toughness due to neutron irradiation embrittlement by the Reactor Vessel Material Surveillance and Neutron Fluence Monitoring programs. Therefore, it is unclear to the staff why this AMR item is now cited for managing loss of material of the auxiliary feedwater nozzle inlet header exposed internally to treated water by the One-Time Inspection and Water Chemistry programs.
2. The environments for GALL-SLR AMR item 3.1.1-071 (IV.D1.RP-226) are secondary feedwater or steam. Therefore, it appears that Plant Specific Note 1 would still apply and may have been inadvertently deleted in the response to RAI B2.1.10-2. In addition, it appears that SLRA Table 3.1.1 has not been updated to reflect that AMR item 3.1.1-071 is now being used.
3. The material for GALL-SLR AMR item 3.1.1-072 (IV.D2.RP-162) is steel. In addition, the staff’s understanding is that the tubesheets are steel with nickel alloy cladding. Therefore, it is unclear why SLRA Table 3.1.2-4 now states that the tubesheet material exposed externally to secondary feedwater is stainless steel.
4. AMR item 3.1.1-002 in the GALL-SLR Report (ADAMS Accession No. ML17187A031), manages cumulative fatigue damage of nickel alloy tubes and sleeves exposed to reactor coolant, secondary feedwater, and steam. Therefore, it appears that AMR item 3.1.1-002 would still apply and may have been inadvertently deleted in the response to RAI B2.1.10-2.

Requests:

1. Discuss why AMR item 3.1.1-014 is cited for managing loss of material of the auxiliary feedwater nozzle inlet header exposed internally to treated water by the One-Time Inspection and Water Chemistry programs. Alternatively, revise SLRA Table 3.1.2-4 to cite the appropriate AMR item.
2. Discuss the removal of the citation to Plant Specific Note 1 for managing loss of material of the tube support plate assembly (support rods) exposed externally to treated water by the Steam Generators and Water Chemistry programs. Alternatively, revise SLRA Table 3.1.2-4 to cite Plant Specific Note 1.
3. Discuss changing the tubesheet material exposed externally to secondary feedwater from steel to stainless steel in SLRA Table 3.1.2-4. Alternatively, revise SLRA Table 3.1.2-4 to state that the tubesheet material exposed externally to secondary feedwater is steel.
4. Discuss removing the citation to AMR item 3.1.1-002 for managing cumulative fatigue damage of tube-to-tubesheet welds exposed externally to secondary feedwater. Alternatively, revise SLRA Table 3.1.2-4 to cite AMR item 3.1.1-002.

RAI B2.1.8-2a

Regulatory Basis:

Section 54.21(a)(3) of Title 10 of the *Code of Federal Regulations* (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 U.S. Nuclear Regulatory Commission (NRC) 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.

Background:

Aging Management Review (AMR) item 3.4.1-060 in Volume 1 of NUREG-2191, "Generic Aging Lessons Learned for subsequent License Renewal (GALL-SLR) Report" (ADAMS Accession No. ML17187A031), manages wall thinning due to erosion of metallic piping and piping components exposed to treated water by the Flow-Accelerated Corrosion (FAC) program.

Oconee Subsequent License Renewal Application (SLRA) Table 3.4.2-1, dated June 7, 2021 (ADAMS Package Accession No. ML21158A193), cites GALL-SLR AMR item 3.4.1-060 for managing wall thinning of stainless steel main condenser tubes exposed to treated water by the FAC program.

However, the response to Request for Additional Information (RAI) B2.1.8-2, dated February 14, 2022, states that “The ONS [Oconee Nuclear Station] Flow-Accelerated Corrosion AMP [Aging Management Program] is not designed to manage erosion of heat exchanger tubes.”

Issue:

Even though the response to RAI B2.1.8-2 states that the ONS FAC program is not designed to manage wall thinning due to erosion of heat exchanger tubes, SLRA Table 3.4.2-1 cites GALL-SLR AMR item 3.4.1-060 for managing wall thinning of stainless steel main condenser tubes by the FAC program. It is unclear to the NRC staff if the ONS FAC program is designed to manage wall thinning due to erosion of main condenser tubes.

Request:

Discuss whether the ONS FAC program is designed to manage wall thinning due to erosion of main condenser tubes. If not, discuss which program will manage wall thinning due to erosion of the main condenser tubes and why the program is capable of managing wall thinning due to erosion of the main condenser tubes. In addition, revise SLRA Table 3.4.2-1, if appropriate.

RAI B2.1.16-2a

Regulatory Basis:

Section 54.21(a)(3) of Title 10 of the *Code of Federal Regulations* (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 U.S. Nuclear Regulatory Commission (NRC) 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.

Background:

Oconee Subsequent License Renewal Application (SLRA) Supplement 2, dated November 11, 2021 (ADAMS Accession No. ML21315A012), revised SLRA Section B2.1.16 and SLRA Table A6.0-1 by revising Enhancements 3, 6, and 9 to the Fire Water System program. In addition, SLRA Supplement 2 revised the implementation schedule for the Fire Water System program in SLRA Table A6.0-1.

In response to Request for Additional Information (RAI) B2.1.16-2, dated February 14, 2022, the applicant revised Enhancement 5 to the Fire Water System program, including the related commitment in SLRA Table A6.0-1. However, the NRC staff noted that the changes to Enhancement 6 and the implementation schedule for the Fire Water System program made in SLRA Supplement 2 do not appear in SLRA Table A6.0-1 in the response to RAI B2.1.16-2.

Issue:

The NRC staff has concerns regarding whether previous changes to SLRA Table A6.0-1 are still in effect because the latest version of SLRA Table A6.0-1 in the response to RAI B2.1.16-2 does not include previous changes to the table for the Fire Water System program.

Request:

Discuss the apparent omission of the changes to Enhancement 6 and to the implementation schedule for the Fire Water System program (made in SLRA Supplement 2) from the recent response to RAI B2.1.16-2. Include information for how changes to the commitment table (and specifically the implementation schedule) are being tracked to ensure appropriate version control. In addition, confirm that previous changes made to the Fire Water System program that are not reflected in the latest version of SLRA Table A6.0-1 are still in effect and provide SLRA Table A6.0-1 in its latest form.