Update on License Renewal Guidance Steam Generators Program

Corrosion and Steam Generator Branch, NRR/DNRL

NRC Public Meeting with
Industry Steam Generator Task Force
September 4, 2025

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Background

- SLR applications for plants with A690TT SG tubing and TS based on TSTF-577 (including conversion to STS, Rev. 5) have proposed exceptions to the 72 EFPM maximum interval between primary-side visual inspections recommended in the Steam Generators AMP in GALL-SLR, Rev. 0.
- The exceptions requested a 96 EFPM maximum interval between primary-side visual inspections consistent with the increased maximum inspection interval for A690TT SG tubing in TSTF-577.
- The TSTF-577 maximum interval between tube inspections of 96 EFPM applies ONLY to SGs with A690TT tubing.
- NRC recently published GALL-SLR, Rev. 1, that updated the guidance related to primary-side visual inspections to reflect the 96 EFPM maximum inspection interval for units with A690TT SG tubing and TS based on TSTF-577.
- Industry requested clarification on the GALL-SLR, Rev. 1, changes related to the maximum inspection interval between primary-side visual inspections and the role of exceptions.

Update on License Renewal Guidance

Subsequent License Renewal Guidance

- Revision 1 Published July 15, 2025
- GALL-SLR (NUREG-2191, Rev. 1)

  Volume 1 – ML25113A021 Volume 2 – ML25113A022
- SRP-SLR (NUREG-2192, Rev. 1, ML25113A023)
- Technical Bases for Changes (NUREG-2221, Supp. 1, ML25113A024)
- Proposed Changes Discussed in Sept. 2023 Meeting with SGTF (ML23244A175)

Initial License Renewal Guidance (No Recent Change)

- GALL (NUREG-1801, Rev. 2, ML103490041)
- SRP-LR (NUREG-1800, Rev. 2, ML103490036)
- LR-ISG-2016-01 (ML16237A383)

Primary-Side Visual Inspections
Steam Generators Program

- Aging Management Program XI.M19, Steam Generators
- The changes below in strikeout and bold text were made in Rev. 1:

In summary, the NEI 97-06 (NEI 2011-TN9268) program provides guidance on parameters to be monitored or inspected except for steam generator divider plate assemblies, tube-to-tubesheet welds, heads (channel or lower/upper heads), and tubesheets. For these latter components, visual inspections are performed at least every 72 effective full power months ~~or every third refueling outage, whichever results in more frequent inspections~~. **These inspections may be performed every 96 effective full power months for units for which the technical specifications allow for extended steam generator inspection intervals.** These inspections of the steam generator head interior surfaces including the divider plate are intended to identify signs that cracking or loss of material may be occurring (e.g., through identification of rust stains).

Clarification 1

Clarification Requested

TSTF-577 plants that have previously taken an exception on their SLR application.

Response

- An exception for this topic means the plant has been approved for a maximum interval of 96 EFPM between primary-side visual inspections, matching the maximum interval between SG tube inspections in their TSs. This is consistent with the newly issued guidance. No action is required.

Clarification 2

Clarification Requested

Clarify whether the exception discussed for A690TT SGs also applies to plants with A600TT SGs without cracking with an OA for four 18-month cycles.

Response

- No. The purpose of the exception was to align the guidance in GALL-SLR, Rev. 0 (72 EFPM maximum interval between primary-side visual inspections) with the approved TS for plants with A690TT tubing and TS based on TSTF-577 (96 EFPM maximum interval between SG tube inspections).
- The SLR exceptions and guidance update does not affect plants with A600TT SG tubing because none have tube inspection intervals greater than 72 EFPM approved in their TS.

Clarification 3

Clarification Requested

TSTF-577 plants (with A690TT SG tubing and/or A600TT SG tubing without cracking) that are in the SLR application process that have not yet taken an exception.

Response

- For TSTF-577 plants with A690TT SG tubing, the inspection intervals are now aligned, and consistency with the SLR guidance means they would have a maximum interval of 96 EFPM between tube inspections and primary-side visual inspections. There is no reason for an exception.
- For TSTF-577 plants with A600TT SG tubing, the maximum interval of 72 EFPM between primary-side visual inspections would apply because that is the maximum interval between tube inspections approved in the TS for any of these plants. No exception is needed for alignment between the TS and license renewal guidance.

Maximum Intervals for Tube and Primary-Side Visual Inspection

According to TS and GALL-SLR, Rev. 1

Tubing Material	Technical Specifications			
	TSTF-577/STS Rev. 5		TSTF-449 or TSTF-510	
	Tube Inspection	Primary Visual	Tube Inspection	Primary Visual
A690TT	96 EFPM	96 EFPM	72 EFPM	72 EFPM
A600TT	72 EFPM	72 EFPM	48 EFPM	72 EFPM
A600MA	24 EFPM	72 EFPM	24 EFPM	72 EFPM

Summary

- GALL-SLR, Rev. 1, updated the guidance related to primary-side visual inspections to reflect the 96 EFPM maximum inspection interval for units with A690TT tubing.
- The maximum interval of 96 EFPM applies to plants with a maximum interval of 96 EFPM for tube inspections in their TS. This applies only to plants with A690TT SG tubing.
- Exceptions are no longer needed for plants with A690TT tubing and TS based on TSTF-577/STS, Rev. 5.
- Plants with A690TT SG tubing and TS based on TSTF-449 or TSTF-510, and plants with A600TT SG tubing and TS based on TSTF-577/STS, Rev. 5, are aligned with the 72 EFPM maximum interval in GALL-SLR, Rev. 1.

References

- NUREG-1800, Revision 2, “Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants,” dated December 2010 (ML103490036)
- NUREG-1801, Revision 2, “Generic Aging Lessons Learned (GALL) Report,” dated December 2010 (ML103490041)
- LR-ISG-2016-01, “Changes to Aging Management Guidance for Various Steam Generator Components,” dated November 2016 (ML16237A383)
- NUREG-2191, Revision 0, “Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report,” dated July 2017 (ML17187A031 (Volume 1) and ML17187A204 (Volume 2))
- NUREG–2192, Revision 0, “Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants,” dated July 2017 (ML17188A158)
- EPRI Report 3002002850, “Steam Generator Management Program: Investigation of Crack Initiation and Propagation in the Steam Generator Channel Head Assembly”

References (continued)

- NUREG-2191, Revision 1, dated July 2025 (ML25113A021 (Volume 1), ML25113A022 (Volume 2))
- NUREG–2192, Revision 1, dated July 2025 (ML25113A023)
- NUREG–2221, Supplement 1, "Technical Bases for Changes in the Subsequent License Renewal Guidance Documents NUREG–2191, Revision 1, and NUREG–2192, Revision 1," dated July 2025 (ML25113A024)
- NRC Meeting with the Industry Steam Generator Task Force, February 22, 2024, NRC Slides (ML24051A034)
- NRC Meeting with the Industry Steam Generator Task Force, September 7, 2023, NRC Slides (ML23244A175)
- NRC Meeting with the Industry Steam Generator Task Force, October 7, 2021, NRC Slides (ML21293A118)

Abbreviations

- AMP – Aging Management Program
- EFPM – Effective Full-Power Month
- GALL – Generic Aging Lessons Learned
- ISG – Interim Staff Guidance
- LR – License Renewal
- MA – Mill Annealed
- NEI – Nuclear Energy Institute
- OA – Operational Assessment
- SG – Steam Generator
- SGTF – Steam Generator Task Force
- SLR – Subsequent License Renewal
- SRP – Standard Review Plan
- STS – Standard Technical Specifications
- TS – Technical Specifications
- TSTF – Technical Specifications Task Force
- TT – Thermally Treated

Questions