



Issues/NEI Steam Generator Generic Change Package

Emmett L. Murphy, (301) 415-2710
Office of Nuclear Reactor Regulation, NRC

August 29, 2001

Background

- NEI SG Generic Change Package
 - LCO: SG tube integrity shall be maintained
 - SR: Verify **performance criteria** are met in accordance with **SG program**.
 - Administrative TS: SG Tube Integrity Program
 - Licensees shall develop and implement an SG Program to ensure SG performance criteria are maintained.
 - Condition monitoring
 - Performance criteria
 - Tube repair criteria
 - Tube Methods

Background

Details of the SG program, including condition monitoring, are located out side of technical specifications. Licensees will be committing to developing these programs in accordance with:

- NEI 97-06, “Steam Generator Program Guidelines”
 - references sub-tier EPRI guideline documents

Background

- In February 2000, industry reps discussed plans for revisions to the sub-tier EPRI guidelines which would permit inspection intervals (and condition monitoring intervals) significantly beyond current industry guidelines and current regulatory requirements.
 - from 5 to as much as 22 EFPY for SGs with Alloy 600 TT or 690 TT tubing
- The staff is concerned that certain sub-tier EPRI guidelines are not sufficiently well developed to support extended inspection intervals beyond current requirements with reasonable assurance that the SG performance criteria will be maintained with no significant increase in risk.
 - Performance criteria represent “tolerable” conditions. However, tolerability is dependant on **prompt** detection.
 - Pursuant to 10 CFR 50, Appendix B, Criterion 16, condition monitoring must be capable of promptly detecting conditions adverse to quality; i.e., conditions not satisfying the performance criteria.

Issues

- The staff has reviewed certain provisions of the EPRI guidelines which are critical to effectiveness of condition monitoring in fulfilling its goals, and has identified in a number of issues in this regard.
 - Performance standards for satisfying the performance criteria
 - Treatment of NDE uncertainties in tube integrity assessments
 - Needed attributes of NDE performance demonstration to quantify NDE uncertainty
 - In situ pressure test screening criteria
 - In situ pressure test sample criteria
 - Burst and leakage models based on prior in situ results
 - Assessment of incomplete in situ test results
 - Inspection and condition monitoring intervals
- Significance of these concerns, individually or collectively, is highly dependent on the specific methodology employed to justify longer inspection intervals.
- Thus these are high priority issues from the standpoint of having an adequate justification to support extended inspection intervals beyond current restrictions.

NRC Action Plan Issues

- The staff has reviewed many of the industry responses to “NRC Action Plan Issues” stemming from NRC RIS 2000-22 and the NRC Indian Point 2 Lessons Learned Report.
 - Updated version of staff’s draft review will be attached with the staff’s summary of this meeting which will be publically available.
 - These action plan issues relate primarily to EPRI guideline documents.
 - Some of these issues overlap those discussed earlier

Potential Resolution Path

- The staff is evaluating whether it can proceed with review and approval of the generic change package pending resolution of these issues.
- The staff has concluded preliminarily that it can proceed with review and approval provided current inspection interval restrictions are essentially maintained.
 - This preliminary finding is based on the rationale that the proposed generic change package would be expected to reduce assurance of tube integrity only in cases where longer inspection intervals than currently permitted are implemented without adequate justification.

Proposed Operating Interval Restriction

Proposed Administrative Technical Specification:

5.5.9 Steam Generator Program

- d. SG Inspection Interval - Inspection intervals for SG tubing shall not exceed the maximum intervals defined in the SG Program. Revisions to these maximum operating intervals require review and approval by the NRC staff. The maximum inspection intervals may be revised to incorporate changes approved generically by the NRC subject to the limitations and conditions set forth in the staffs approving document.

Proposed Inspection Interval Restriction (to be located outside of technical specifications):

Inspection intervals shall not exceed that supported by degradation and operational assessment demonstrating reasonable assurance that all tubes will continue to satisfy the performance criteria prior to the next scheduled SG inspection. Degradation assessments shall consider the potential for the initial site-specific occurrence of potential degradation mechanisms. Operational assessments shall consider all known degradation mechanisms at the site. In addition, the following inspection intervals shall not be exceeded except as approved by NRC:

- All steam generators shall be inspected at the first refueling outage, or at the first refueling outage following steam generator replacement.
- For plants where each steam generator was found to be inspection Category C-1 (as defined in Section 3.5 of the EPRI PWR SG Examination Guidelines, Revision 5) during its most recent inspection, at least one steam generator shall be inspected each 40 calendar months (rotating basis) or two refueling outages, whichever is greater.
- For plants where any steam generator was found to be inspection Category C-2 or C-3 during its most recent inspection, all steam generators shall be inspected at the next refueling outage.