



NUCLEAR ENERGY INSTITUTE

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Rules and Directives Branch  
Office of Administration  
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**SUBJECT:** Proposed Generic Communication; Requirements for  
Steam Generator Tube Inspections (68 Fed. Reg. 25909)

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On May 14, 2003, the NRC issued for public comment a proposed generic letter on steam generator tube inspections. NEI<sup>1</sup> appreciates the opportunity to review and comment on the draft document.

In general we believe that the generic letter is not necessary and will serve to distract NRC and industry resources from the completion of the steam generator program generic technical specification changes (TSTF-449). The requirements included in TSTF-449 address many of the staff concerns expressed in the proposed generic letter.

Since the early 1990's, the staff and industry recognized that standard plant Technical Specifications (TS) were outdated and did not explicitly assure steam generator tube integrity. At that time the industry began to work collectively through EPRI to improve steam generator tube examinations and increase assurance that tubes would not fail in service. The industry, often in consultation with the staff, continued to monitor steam generator performance and to develop guidelines. These efforts culminated in the unanimous industry acceptance in 1999 of NEI 97-06, Steam Generator Program Guidelines. Industry efforts to supplement

<sup>1</sup> NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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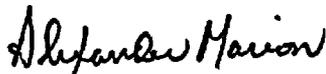
steam generator TS have been very successful in improving overall steam generator safety performance.

One of the results of this work is the development of a generic license change package that provides a regulatory framework for implementation of NEI 97-06 and at the same time corrects the technical specification ambiguities that are addressed in the proposed generic letter. This package was submitted to the NRC in March of this year.

Should the NRC decide to proceed with the publication of the generic letter, we would like the staff to consider the following. One of the purposes of the proposed generic letter is to promulgate the NRC's position with respect to licensee compliance with plant technical specification requirements in conjunction with 10 CFR 50 Appendix B regarding steam generator tube inspection practices. We have reviewed the contents of the proposed generic letter and have identified a number of areas that are ambiguous or require further clarification to ensure proper licensee response. Our comments are presented in the enclosure.

If you have any questions regarding this mater, please contact Jim Riley at 202-739-8137, [jhr@nei.org](mailto:jhr@nei.org) or me at 202-739-8080, [am@nei.org](mailto:am@nei.org).

Sincerely,



Alexander Marion

Enclosure

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**Enclosure**

**Comments on Proposed Generic  
Communication;  
Requirements for Steam Generator Tube  
Inspections**

# Comments on Proposed Generic Communication

## Applicability of the Generic Communication

The proposed generic letter (GL) is not clear with respect to its applicability to new steam generators (e.g., alloy 600 TT or alloy 690TT tubing) or for locations other than those described in the background section of the generic letter. Discussions among licensees reveal significant ambiguity with respect to the requested information. This ambiguity likely results from interpreting existing technical specification requirements that the NRC has indicated are outdated and by themselves do not ensure that steam generator tube integrity is maintained. Details regarding these ambiguities are discussed below in other comments.

## SG Reporting Requirements

The proposed generic letter states:

*"In 2002, the staff learned of several instances in which licensees were not fully implementing inspection methods capable of detecting circumferentially oriented cracks at all locations where the potential for such cracks exists..."*

This statement may create the erroneous impression that the staff was unaware of industry's inspection practices prior to 2002, and that this letter is a result of new information rather than a change in the staff's position.

In fact, steam generator inspection activities (with results) have been routinely provided to the staff in required inspection reports, site visits by regional inspectors, outage phone calls, and utility meetings / conferences with NRC staff.

## Impediment to Implementation of the Industry's Proposed Generic Technical Specifications

We believe that this GL would not provide the NRC, or licensees, with any new information or insights about SG tube inspections. Completing the actions requested in the GL would only serve to confirm the already well-known limitations of existing technical specification requirements. If this GL is issued, it would divert NRC and industry resources from initiatives already underway to address many of the GL's issues. It is our understanding that much of the information requested by the generic letter has already been voluntarily submitted by affected licensees in accordance with an NEI letter dated February 4, 2003. The NRC and industry should focus on moving quickly towards a solution on the proposed generic technical specifications and other technical issues.

## Qualified Techniques

The proposed generic letter refers to use of qualified inspection techniques, but does not provide any guidance on what standards should be used to establish qualification and implies that the tube repair limit should be used to determine adequate detection capability. Consistent responses will not be possible without a

# Comments on Proposed Generic Communication

sufficient understanding of “qualified technique”. We believe that the methods and standards referenced in NEI 97-06 are acceptable for determining qualification and detection capability in accordance with 10 CFR 50 Appendix B. In these standards, adequate detection is tied to tube integrity and not to plant specific repair limits.

## Steam Generator Inspection Scope

Item 1 of the requested information in the proposed generic letter does not recognize the use of the degradation assessment to determine if a plant is in compliance with the technical specifications and the NRC’s position. Instead, information item 1 appears to define the staff’s position as follows:

*“This assessment should also address whether the tube inspection practices ensured that the tube plugging or repair limits were implemented for the entire length of tubing required to be inspected per the TS (i.e., discuss whether the techniques employed during the tube inspections ensured flaws could be detected such that the plugging or repair limits could be implemented)”.*

The parenthetical phrase implies that all degradation is detectable at the repair limit. No mention is made of the potential for degradation or the probability of detection at the repair limit.

We believe that the degradation assessment as defined in NEI 97-06 and its referenced EPRI Guidelines is the appropriate method for determining the scope of inspection. This approach is proposed in the SG program generic technical specification changes (TSTF-449).

## Potential Degradation

The proposed GL is ambiguous regarding the implementation of the Staff’s position for new generation steam generators (e.g., Alloy 600TT, Alloy 690TT) or for locations other than described in the background section of the GL. The Staff’s position is that pending a license amendment clarifying the inspection approach to be followed, licensees are required to employ inspection methods capable of detecting all flaw types which may potentially be present at locations which are required to be inspected pursuant to the Technical Specifications. The proposed Generic Letter should provide clarification on the meaning of “may potentially be present” with regard to TS and 10CFR50 Appendix B compliance. For example, the GL should be clarified for newer generation steam generators where circumferential degradation has not been identified, and guidance should be defined for all steam generators upon the identification by the industry of a form of degradation that may or may not be plant or SG design specific. While circumferential cracking within the tubesheet is considered a potential degradation mechanism for the plants referred to in the GL, the likelihood of such degradation is significantly lower in newer SGs due to tubing material differences and fabrication improvements leading

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to lower residual stress conditions. Similarly, the presence of u-bend cracking in one design does not necessarily indicate a similar degradation problem in all bend regions.

We believe that the degradation assessment as defined in NEI 97-06 and its referenced EPRI Guidelines is the appropriate method for identifying potential degradation and determining the scope of inspection. This approach is proposed in the SG program generic technical specification changes (TSTF-449).

## Sampling of Tubes

Current technical specifications allow for sampling and expanded sampling when tube degradation is detected or suspected. The GL, as written, implies that all (100%) of a region or steam generator with potential degradation must be inspected with a qualified probe to ensure 10CFR 50 Appendix B is satisfied and that the requirements of the TS with respect to repair limits are met. It should be clear in the GL that use of sampling plans is acceptable for determining the inspection scope for potential damage mechanisms and determining the extent of condition when tube degradation is identified. This should include sampling of a partial length of the tube.

The proposed GL does not present a clear position on inspection sampling. It should be the intent of the generic letter to allow:

- a. performance of a sample in accordance with industry guidance or the technical specifications (e.g., 20% sample) to determine if degradation is occurring, and
- b. critical area inspections as defined by the EPRI PWR SG Examination Guidelines.

We believe that the degradation assessment as defined in NEI 97-06 and its referenced EPRI Guidelines is the appropriate method for determining appropriate sampling methodologies.

## Interference with Technological Improvements

The proposed GL undermines a stated objective of GL 95-05, "Voltage Based Repair Criteria for Westinghouse Steam Generator Tubes Affected by Outside Diameter Stress Corrosion Cracking." GL 95-05 indicates that:

*This action [GL 95-05] should not be construed to discourage licensees from using better or further refined data acquisition techniques, eddy current technology, and eddy current data analysis techniques as they become available. The Staff strongly encourages the industry to continue its efforts to improve the nondestructive examination (NDE) of steam generator tubes and continues to believe that inspection methods*

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*and repair criteria based on physical dimensions (e.g., length and depth) of defects are the most desirable when they can be achieved.*

The proposed generic letter can be interpreted to construe that new techniques (e.g., plus point versus bobbin probes) are de-facto methods of compliance would have the unintended consequence of discouraging future refinements in technology. In the past, utilities have invested, and encouraged vendors to invest considerable resources for the development of advanced technologies which are better able to detect and size steam generator tube flaws. Improved inspection techniques are often slower and more expensive (in addition to the development cost) to implement, but can provide additional information that is useful in characterizing particular defects. These methods are typically used as needed to support tube integrity assessments.

There would be little incentive to fund continued improvements if the use of such improvements could be interpreted as technical specification requirements resulting in higher cost inspections with indeterminate safety significance.

## Applicability of the General Design Criteria

The proposed GL correctly notes that the GDC do not apply to older commercial reactors licensed before Appendix A to 10 CFR 50, pointing out that similar requirements exist in their licensing basis. If this GL is issued, it should be revised to take these pre-GDC plants into full consideration and explicitly permit the use of plant-specific licensing basis in lieu of the GDC.

## Use of Engineering Judgment

The proposed generic letter seems to promulgate different positions with respect to the use of engineering judgment. In the background section, the generic letter implies that the use of engineering judgment in determining scope is appropriate whereas in the discussion section the generic letter identifies staff concerns with licensee analyses to limit inspection scope. The generic letter does not clearly define the conditions under which engineering judgment may be appropriate in determining inspection scope and probe usage. A clearer statement of the Staff's position should be developed which addresses the limits of engineering judgment and the need for NRC approval.

We believe that the degradation assessment as defined in NEI 97-06 and its referenced EPRI Guidelines is the appropriate engineering method for determining the scope of inspection and selection of NDE techniques. This approach is proposed in the SG program generic technical specification changes.

Additional confusion with respect to the question of engineering judgment arises in the context of a Staff question as to whether an analysis of SG tube integrity within the tubesheet constitutes a change in the "method of evaluation" in accordance with

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the evaluation requirements of 10CFR50.59. Per the regulation, if the activity represents a change/departure from the method of evaluation described in the UFSAR, then NRC approval is required. The GL discusses the original design basis of the tube-to-tubesheet joint and the tube-to-tubesheet weld as meeting ASME Section III and, as such, the original ASME Design Report constituting a "method of evaluation" for the design basis. Industry concurs with this statement. However, the analysis of tube integrity for inservice, degraded steam generator tubing is not covered under ASME Section III. Furthermore, ASME Section III does not address, or have requirements for mechanical joints such as the tube-to-tubesheet joint. As an appurtenance, only the tube-to-tubesheet weld is addressed in the ASME Section III Code Report. The tubing within the tubesheet is treated the same as the remainder of the entire tube length. Additionally, the TS definition of the tube inspection does not mention the tube-to-tubesheet weld and inservice inspection of the weld is excluded per ASME Section XI.

As such, the analyses performed with respect to determining the inspection scope for supplementary exams are based on tube integrity requirements that confirm that structural and leakage integrity is assured per 10 CFR 50 Appendix A, General Design Criteria (GDCs) 14 and 32. For these analyses, the guidance with respect to safety margins is derived from Draft Regulatory Guide 1.121, Draft Regulatory Guide DG-1074 and NEI 97-06. Consideration is given to probability of detection (POD), NDE sizing capability and error, flaw growth rate, burst and leakage resistance. These analyses and the associated analysis parameters are not identified in ASME Section III, ASME Section XI or in the UFSAR, and therefore would not constitute a change/departure in the method of evaluation. These assessments and consequential NDE inspection plans are performed for multiple areas of the steam generator (e.g., U-bends, sludge pile, dents/dings etc.) and are performed in accordance with 10CFR50 Appendix B. For these type of assessments a license amendment pursuant to 10CFR 50.59 is not needed nor is it applicable.

It is therefore recommended that the proposed GL be revised to reflect that such assessments are not covered by the "method of evaluation" requirements of 10 CFR 50.59 and that requested information item 3 be revised accordingly.

## Generic Letter Response Time

The reporting time frame proposed in the GL is too short and not commensurate with the implications of the described condition. In previous generic communications of similar steam generator issues (GLs 95-03 and 97-05), response times of 60 and 90 days respectively were provided. A more appropriate response time of 90 days for this GL would avoid the need for evaluating and processing multiple extension requests, and still achieve the Staff's objective of determining the adequacy of licensee inspection programs.

# Comments on Proposed Generic Communication

## Backfit Analysis

The proposed generic letter states that a backfit analysis is not necessary because the letter only transmits an information request for verifying compliance. This statement is consistent with information request number 1, but is not consistent with information request numbers 2 and 3 which require a safety assessment, corrective actions and a possible technical specification amendment when the NRC's generic letter position is not met. Industry suggests that if information requests 2 and 3 are retained in the final generic letter, either the statement in the backfit analysis should be changed to account for the actions required by items 2 and 3, or a backfit analysis should be performed.