

March 22, 2001

MEMORANDUM TO: William H. Bateman, Chief  
Materials and Chemical Engineering Branch  
Division of Engineering, NRR

FROM: Edmund J. Sullivan, Chief */ra/*  
Component Integrity and Chemical Engineering Section  
Materials and Chemical Engineering Branch  
Division of Engineering, NRR

SUBJECT: SUMMARY OF FEBRUARY 28, 2001 MEETING WITH THE NUCLEAR  
ENERGY INSTITUTE REGARDING NEI 97-06 AND OTHER STEAM  
GENERATOR ISSUES

On February 28, 2001, staff of the Nuclear Regulatory Commission (NRC) met with representatives of the Nuclear Energy Institute (NEI) and industry at the NRC's offices in Rockville, Maryland. The purpose of the meeting was to discuss NRC comments on the December 11, 2000, NEI 97-06 Steam Generator Generic Change Package (SG-GCP), to discuss a protocol for NEI and NRC to interact on technical issues related to industry actions in response to the NRC Indian Point 2 (IP2) lessons learned report and other technical issues, and to discuss input from NRC on prioritization of the issues noted above. Attachment 1 is a list of those attending the meeting.

Ted Sullivan, NRC, began the meeting with remarks related to the recently concluded Steam Generator Workshop in Bethesda, MD, the February 16, 2001, NRC/NEI Senior Management Meeting, and the NRC steam generator action plan.

Bob Tjader, NRC, led a discussion on his comments (Attachment 2) on the latest NEI 97-06 SG-GCP. These comments dealt with resolving certain proposed changes to the SG surveillance requirements (SR) contained in Section 3.4 of the Technical Specifications (TS). Specifically discussed were SR 3.4.13.1 and 3.4.13.2. NRC noted that proposed SR 3.4.13.2 was limited to verifying that primary to secondary leakage was within technical specification limits but no longer requires that steam generator tube integrity be verified in accordance with the performance criteria described in the Steam Generator Program. Mr. Tjader commented that the intent was to have steam generator operability maintained by meeting the performance criteria as defined in the SG Program. Jim Riley, NEI, led a discussion on the limitations of using primary-to-secondary leakage as a basis for determining SG operability. After the discussion, NEI indicated that they would look into the possibility of addressing this issue through inspection interval requirements located somewhere in the technical specifications as a

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way to address the staff's concerns regarding ensuring that tube integrity is satisfied for the operating interval between steam generator inspections. Since the meeting the staff has developed the set of comments in Attachment 3 which supersede the comments discussed during the meeting.

Because of the differences between industry guidelines and the standards that the staff uses to review industry-submitted alternate repair criteria, industry representatives discussed concerns related to modifying the NEI 97-06 SG-GCP given that NRC may elect to have headquarters staff or inspection staff review the operational assessments. Emmett Murphy indicated that it may be appropriate for the staff to develop a policy-type statement, possibly to be contained in the safety evaluation on the SG-GCP. This statement would articulate when and under what special circumstances the staff would elect to perform a more in-depth review of operational assessments as opposed to the normal mode of gathering information on examinations performed and on conditioning monitoring assessments.

The staff discussed the benefit of having a protocol for addressing technical issues that require NRC and industry interaction. The purpose of the protocol would be to provide a defined mechanism for resolving technical issues that industry is working on (e.g., IP2 lessons learned recommendations) and other technical issues that exist and will continue to arise after the NRC review of NEI 97-06. NRC staff recommended the mechanism include the following activities: 1) list the issues; 2) prioritize issues; 3) interface between NEI and NRC on issues; 4) work issues and track issue resolution; and 4) close out issues. To list issues, there needs to be controls for how actions get added. The database should be maintained by one entity, probably NEI, with access to the information in the database for the NRC. In order to prioritize the issues, characteristics such as timing, safety significance, etc. must be examined. As the issues are worked by NRC and NEI staff, the issue resolution will need to be tracked and future actions noted. During the resolution process, the NRC and NEI staff will have regular working level meetings to resolve the issues, as well as exchange correspondence. When the issues are resolved to the satisfaction of both parties, the issues will be formally closed out. Based on the significance of issue, the NRC will have to determine whether NRC staff approval is necessary to close out the issue. The protocol will also need to specify the appropriate way for the issue resolution to be documented.

The staff discussed an alternative process for resolution if issues remained unresolved after the process discussed above. The process is regulatory analysis to justify NRC generic action or no further NRC generic action. It was stated that the NRC staff recognizes that there is a dichotomy that exists between what we explicitly endorse and what we do not, e.g., alternate repair criteria and industry guidelines. When the industry submits an alternative repair criteria or other license action to the staff, the staff is required to establish an adequate health and safety finding. However, the staff has a higher hurdle to go over in defending any new regulatory requirements it develops and imposes on industry. As noted above for imposition of requirements, the staff has to perform a regulatory analysis in accordance with 10 CFR 50.109 to justify imposition of a new requirement.

Regarding the list of technical issues discussed above in the context of a protocol, NEI requested that NRC provide input on its view of priority of the issues in the issues matrix which was discussed at the NRC/NEI meeting held on December 20, 2000. The NRC agreed to annotate this matrix by identifying the items as high, medium, or low priority.

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Items for the next meeting include further discussion of the issues discussed during this meeting, in particular the staff's concerns with the SG-GCP and the status of industry actions in response the recommendations of the IP2 lessons learned report. The NRC staff and NEI also agreed to hold a teleconference March 12, 2001, and set the date for the next meeting during this call.

Attachments: As stated

cc: Jim Riley, NEI

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cc: Jim Riley, NEI

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**ATTENDEES**  
**STEAM GENERATOR MEETING**  
**FEBRUARY 28, 2001**

<b>NAME</b>	<b>ORGANIZATION</b>
Jim Riley	Nuclear Energy Institute
R F Keating	Westinghouse
Dan Mayes	Duke Power
Rick Mullins	Southern Co.
Lane Haye	SERCH Licensing/Bechtel
David Goetcheus	TVA
Kevin Sweeney	APS
Deann Raleigh	LIS, Scientech
Jeff Fleck	Framatome-ANP
Mike Schoppman	NEI
Bob Exner	PG&E
Gary Whiteman	Westinghouse
Gary Elder	Westinghouse
Jenny Weil	McGraw Hill
Gary Beyers	FPL
Mati Merilo	EPRI
Helen Cothrin	TVA
Jack Parry	Con Edison
Ted Sullivan	NRR/DE/EMCB
Emmett Murphy	NRR/DE/EMCB
Cheryl Khan	NRR/DE/EMCB
Joseph Birmingham	NRR/DRIP/RGEB
Bob Tjader	NRR/DRIP/RTSB
Stephanie Coffin	NRR/DE/EMCB
Rick Ennis	NRR/DLPM/LPD1
Louise Lund	NRR/DE/EMCB

**COMMENTS ON INDUSTRY STEAM GENERATOR PROGRAM  
GENERIC CHANGE PACKAGE SUBMITTAL OF 12/11/00**

1) Surveillance Requirement (SR) 3.4.13.2 is now, in the latest proposal, limited to verifying that primary to secondary leakage is within limits specified in the operational leakage performance criterion of the steam generator (SG) program, and no longer requires steam generator tube integrity be in accordance with the SG program. The purpose of this SR is to ensure SG operability, as described in the Standard Technical Specifications (STS) Bases and the prior submittal Bases. This SR should still ensure SG operability, it meets Criterion 2 of 10 CFR 50.36(c)(2)(ii) for inclusion in the Technical Specifications, and therefore this change is unacceptable; revert to prior submittal SR and associated Bases wording.

2) SR 3.4.13.1 has a note added that states this SR is not applicable to primary to secondary leakage; this is unnecessary and should be removed. In addition, the proposed Bases for this SR states that primary to secondary leakage may be checked more frequently than 72 hours (the frequency of this SR), to ensure adequate protection against rapidly increasing SG tube leaks. So, the SR is not applicable to primary to secondary leakage because (normally) such leakage cannot be measured, yet it may be necessary to check more frequently than normal to catch rapidly increasing primary to secondary leakage. Sounds like we need to provide a mechanism in the Technical Specifications (TS)/SR for an increased SR frequency if primary to secondary leakage were to increase.

3) The SG are operable when they meet the requirements of the Performance Criteria. This is evident from the Technical Requirements Manual (TRM) Required Actions and Bases discussions. It is a fact whether it is stated in the SG Program or not, so to avoid any potential confusion, this should be explicitly stated in the SG Program. Recommend changing the second sentence of the SG Program to state, "SG operability is maintained by meeting the Performance Criteria as defined in the SG Program."

4) In some ways the new TRM is an improvement. The following additional changes to the TRM, SG Program and TS are proposed to further the improvements:

- (a) The TRM SR(s) should (and do) directly relate to the Performance Criteria to confirm SG operability. In turn, the TRM Condition statements should completely address failures to meet the Performance Criteria. Recommend the following be added to the TRM Condition A:

"OR

Condition Monitoring (Operational?) Assessment of SG tube integrity is not within limits specified in SG Program."

- (b) As stated in the SG Program, the Condition Monitoring Assessment is to "confirm the Performance Criteria are met," and should not be limited to being performed "prior to plugging or repair of tubes." It is also done post maintenance to confirm operability; the TRM Bases refer to this post maintenance/repair assessment as a "tube integrity assessment," which is a Condition Monitoring (Operational?) Assessment of SG tube integrity.

- (c) The proposed "SR B" is a subset of "SR A," and perhaps need not be stated. However, recognizing the need for an explicit post maintenance/repair analysis requirement, recommend adding to SR B, after the words "exceed the," the words: "Condition Monitoring Assessment of SG tube limits or the".
- (d) Recommend a Completion Time of "[7] days" for the TRM Condition A Required Action [a time adequate to perform the determination/assessment specified in the Required Action]. The Completion Time of, "In accordance with [the licensee's Corrective Action Program]" does not make sense.
- (e) The TRM notification and reporting Required Actions are no longer included; why? Since 10 CFR 50.72 and 10 CFR 50.73 are not explicitly clear that reports would be required for an inoperable SG, it was previously thought prudent to include explicit reference to 10 CFR 50.72 and 10 CFR 50.73.
- (f) Recommend adding an explicit TS 3.4.13 Condition for SG inoperability, that requires shutdown. This will preclude a 3.0.3 entry and avoid confusion.

## COMMENTS

Note: "Baseline" generic change package (GCP) refers to version that was tentatively agreed to on October 5, 1999. "Revised" GCP refers to the version submitted on December 11, 2000.

### TS SR 3.4.13.1 and Associated BASES

Revised GCP adds a note to surveillance requirement (SR) 3.4.13.1 (regarding RCS water inventory balance) stating that this SR is not applicable to p - s leakage. Our concern is that this change is unnecessary and may create the mis-impression that p - s leakage need not be surveyed. We think it is preferable not to make this change, even if p - s leakage as low as 150 gpd cannot be accurately measured with an RCS water inventory balance as is stated in the SR 3.4.13.1 BASES section in the revised GCP. We suggest that the BASES section be modified as follows:

*Primary-to-secondary leakage as low as 150 gpd cannot be measured accurately by an RCS water inventory balance. Primary to secondary leakage is monitored in accordance with the SG Program, consistent with guidelines in NEI 97-06.*

### TS SR 3.4.13.2 and associated BASES

SR 3.4.13.2 in the baseline GCP requires that SG tube integrity be verified as being in accordance with the performance criteria described in the SG Program. The "SG Program" is defined in the Admin Tech Spec, Section 5.5.9. The Admin Tech Spec states that a SG program shall be established and implemented such as to ensure the performance criteria are met.

This surveillance requirement essentially ties SG operability to meeting the performance criteria. This performance-based requirement is analogous to the surveillance requirement in current tech specs which requires that SG tube integrity be verified to be in accordance with SG Tube Surveillance program defined elsewhere in the tech specs. The SG Tube Surveillance Program embodies a prescriptive approach for ensuring that tubes retain adequate structural and leakage integrity, consistent with the plant licensing basis.

The surveillance requirement in the baseline GCP and in the current STS meet Criterion 2 of 10 CFR 50.36(c)(2)(ii) in that they are intended to ensure that the necessary level of quality.

SR 3.4.13.2 in the revised GCP would be limited to verifying that operational p - s leakage is in accordance with the operational leakage performance criterion. The revised GCP effectively decouples SG operability from meeting the structural and accident leakage performance criteria. This backs off from the intent of current STS requirements and the baseline GCP, is contrary to Criterion 2 of 10 CFR 50.36(c)(2)(ii), and is not acceptable to NRC staff. We recommend reverting to the baseline GPC wording.

The SR 3.4.13.2 BASES, first paragraph, in the revised GPC, should revert to the wording in the baseline GPC. The SR 3.4.13.2 Bases, 2<sup>nd</sup> paragraph, in the revised GPC, should be moved to the SR 3.4.13.1 BASES section.



#### TS 5.5.9, Steam Generator Program

The revised GCP adds the following words to the end of the 1<sup>st</sup> paragraph: "The Program shall include: "We believe these words could be misinterpreted to mean that the listed items (e.g., condition monitoring assessment, performance criteria, and tube repair criteria and repair methods) are the SG Program. This would be inconsistent with NEI 97-06 and with licensee commitments to the NRC to implement programs consistent with NEI 97-06. The first paragraph of TS 5.5.9 should revert to the wording in the baseline GCP.

#### TRM x.y, LCO, 1<sup>st</sup> Sentence

The 1<sup>st</sup> sentence in the baseline GCP states that each steam generator shall meet primary to secondary pressure boundary integrity performance criteria during modes 1, 2, 3, and 4. In the revised GCP, the words "modes 1, 2, 3, and 4 have been deleted and replaced with the words "by plugging or repairing tubes that exceed the repair criteria during SG inspections." This incorrectly equates the plugging of defective tubes to ensuring that the performance criteria are being met between inspections. This is inconsistent with NEI 97-06 and with licensee commitments to the NRC to implement programs consistent with NEI 97-06. The 1<sup>st</sup> sentence should revert to the wording of the baseline GCP.

#### TRM x.y, Contingency Measures

The revised GCP deletes the following items from contingency measures identified in baseline GCP:

- Condition A from baseline version (i.e., does not meet repair criteria) has been deleted. Needs to be restored consistent with staff comments above that TRM LCO words should revert to baseline wording.
- Condition B from baseline version (i.e., does not meet performance criteria i or ii): Investigation of causal factors and performance of corrective measures and reporting requirements pertaining to these items have been deleted; root cause evaluation in report to NRC has been deleted; applicability of 50.72 and 50.73 has been deleted. These items should be restored.
- Condition C from baseline version (i.e., failure to implement required plugging or repair): Reporting requirements for root cause evaluation and corrective actions taken have been deleted; applicability of 50.72 and 50.73 has been deleted. These items should be restored.

In summary, the words under Contingency Measures should revert to the baseline wording agreed to in 1999.

#### TRM x.y, Verification Requirements

Verification requirements should revert to the baseline version, consistent with the baseline words in TS SR 3.4.13.2.

### TRM, Definition of "Limiting Design Basis Accident"

Definition should be revised to state that the limiting accident from a structural standpoint is that which results in the minimum margin to burst. This may or may not correspond to the accident with the maximum pressure differential across the tubes.

### TRM Bases, Background

1<sup>st</sup> sentence; add the words "during modes 1 through 4" to end of sentence, consistent with baseline TRM LCO statement.

Add the following sentence to end of 1<sup>st</sup> paragraph; "The SG Program has been developed consistent with NEI 97-06 and TS 5.5.9.

Third paragraph should be revised consistent with NEI 97-06. The staff notes that operational leakage can be surveyed during modes 1 through 4 relative to the operational leakage criterion. In addition, an operational assessment is performed in accordance with the SG program/NEI 97-06 to ensure that the structural and accident leakage performance criteria are met throughout the period prior to the next scheduled SG inspection. Plugging or repair of tubing exceeding the repair limit is not adequate to ensure that the performance criteria will be maintained for the period extending to the next scheduled inspection.

### TRM Bases, LCO

1<sup>st</sup> paragraph needs to be revised consistent with earlier comments. The same comment applies to the discussion under "A. Performance Criteria". In fact, the whole TRM bases should be revised as necessary consistent with earlier comments.

Definition of limiting accident needs to be revised consistent with earlier comments.

Sub-heading "Tube Yield" should be deleted since subsequent discussion includes burst considerations under faulted conditions.

It is stated in the context of the operational leakage criterion that operational leakage is measured at standard temperature and pressure conditions, i.e., zero degrees C and atmospheric pressure. Confirm that this is correct. Cite historical documentation supporting the interpretation that the TS 3.4.13 "RCS Operational Leakage" LCO applies to RCS leakage under standard conditions.