

June 13, 2006

Anthony R. Pietrangelo  
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Dear Mr. Pietrangelo:

In a letter dated May 10, 2006, you provided comments to the NRC regarding the model license amendment request (LAR) and model safety evaluation (SE) for TSTF-409, Revision 2, "Containment Spray System Completion Time Extension (CE NPSD-1045-A)." These comments were developed by the PWR Owners Group.

The NRC staff has reviewed NEI's letter and intends to make changes based in part on the comments prior to publishing the TSTF-409 consolidated line item improvement process (CLIP) Notice of Availability in the *Federal Register*. The proposed changes to the TSTF-409 model LAR and model SE are enclosed. The staff wishes to discuss these comments with the TSTF, NEI, and the PWR Owners' Group at their earliest convenience. The NRC point of contact for this issue is Eric Thomas, [ext1@nrc.gov](mailto:ext1@nrc.gov), (301) 415-6772.

Sincerely,

*/RA/*

Timothy J. Kobetz, Chief  
Technical Specifications Branch  
Division of Inspection and Regional Support  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission

Enclosure: As stated

cc: Biff Bradley, NEI

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\* see previous concurrence

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**NRC Responses to NEI and PWROG Comments on TSTF-409 *Federal Register*  
Notice for Comment (71 FR 18380, April 11, 2006)**

The NRC staff notes that, while the PWR Owners Group (PWROG) expressed a desire for NRC to withdraw the TSTF-409 CLIP *Federal Register* Notice (FRN), it also provided useful comments on how the FRN can be improved. The NRC staff's intention with this particular FRN was to provide a framework (the model LAR) that licensees could use to determine the staff's expectations with regard to PRA quality when adopting a risk-informed completion time (CT) extension in the technical specifications (TS). If licensees know the staff's expectations beforehand, the belief is that fewer requests for additional information (RAIs) will be required on plant-specific LARs.

The staff acknowledges that this particular TSTF applies to a limited number of licensees. However, the staff believes that agreeing on a reasonable set of expectations and acceptance criteria with regard to PRA quality will lead to more efficient processing of future risk-informed TSTFs (such as TSTF-446 for containment isolation valves). Therefore, the staff feels it is worthwhile to pursue resolution with the PWROG on TSTF-409. The following responses are offered to NEI's May 10, 2006, comments:

1. NEI Comment: Based on discussion with the author regarding the intent of the "Model SE," [i.e., to allow acceptance review without RAIs while satisfying the CLIP] it is recommended that additional explanatory information be included. At the very minimum, a clear preamble to the FRN should be provided that places the scope of the FRN in perspective.

NRC Response: *The following preamble will be inserted after the first sentence of the second paragraph of the FRN.*

*"Since TSTF-409 involves a risk-informed approach to extending the CT for one CSS inoperable, the NRC staff must verify that licensees who apply for this TS change have a valid, up to date PRA model that employs PRA principles to ensure that public health and safety are maintained when the CSS CT of 7 days is implemented. Therefore, the model LAR contains several conditions requiring licensees to make specific validations of the plant's PRA quality and methods. The intent of using the CLIP to adopt TSTF-409 is to eliminate the need for additional technical review and requests for additional information (RAIs) on plant-specific amendments."*

2. NEI Comment: [The FRN] should equally note that existing strategies for approval are valid and may also be used.

NRC Response: *The second to last paragraph of the FRN discusses how a licensee should proceed if it desires to deviate from the approach outlined in the CLIP. The NRC's position is that, if a licensee is going to submit an LAR that adopts TSTF-409 using the CLIP, then the plant-specific LAR should provide all the information requested in the model LAR. Any variations/deviations should be explained, and may require additional review by the staff (including issuance of RAIs). Significant variations from the CLIP methodology should be submitted as normal license amendment requests. The staff proposes to change the last sentence of second to last paragraph of the FRN*

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to read:

*“Instead, licensees desiring significant variations and/or additional changes should either submit a LAR that does not claim to adopt TSTF-409, or specifically state in their LAR that they are adopting TSTF-409 without using the CLIP.”*

*This will prevent confusion among the staff when processing an incoming LAR that does not conform to the CLIP.*

3. NEI Comment #1: The essence of the proposed CSS TS change focuses on a single CSS train. Thus, the mention of ACTION G (regarding two CSS trains out-of-service) seems unnecessary.

*NRC Response: The staff agrees with this comment. Mention of ACTION G will be removed from Section 4.1 of the model LAR.*

4. NEI Comment #2: The last paragraph of section 4.2.1 item 1 notes that “If a zero maintenance PRA model is used ...in performing these calculations, then the licensee must commit to performing no other maintenance during the extended CSS CT...”. This restriction has no technical merit. The risk of maintenance is generated as incremental risks from the baseline. The initial submittal noted that for plants with emergency grade fan coolers (most of the applicants), the actual risk increase as a result of removing a CSS out of service is very low. Furthermore, CSS have very little (if any) overlap with other systems. Because the risk important function of CSSs is to maintain the containment pressure within acceptable limits (and control sump temperature to ensure adequate NPSH for ECCS equipment – a function left out of FRN Section 3), those functions can be accommodated by the redundant CS train or the fan coolers. Furthermore, by using RG 1.177 to support low risk, the risk impact of removal of the CSS for the duration of the 7 day AOT is small. Because plants perform maintenance on a frequent basis, not allowing repair or maintenance on another system (which is likely to be of greater risk importance than the CSS) is unnecessary and likely to have worse risk. Another unusual aspect of the restriction implies that the incremental risk calculated using zero maintenance conditions is significantly different from that calculated using annualized plant-wide system out-of-service values. While the baseline PRA for zero maintenance is less than the baseline PRA value for nominal maintenance, its impact on incremental risk will be small.

*NRC Response: The staff accepts NEI’s comment in the sense that it creates a regulatory condition that is overly restrictive to plants using a zero maintenance PRA model. The staff proposes alternate wording (from RG 1.177 Section 2.3.4 #2) to the last sentence of condition 1 in Section 4.2.1 of the model LAR as follows: “If a licensee chooses to use a zero maintenance model as the base case, a statement stating so should be included in their submittal. In addition, the licensee should provide a justification of why their zero maintenance model is comparable to an average maintenance model for the proposed CT extension.”*

5. NEI Comment #3 (first paragraph): It is understood that documented quantitative external event information for the plants may be limited. However, reference to plant IPE and IPEEE and the requirements to explain the evolution of the PRA since 1988 as

identified in Section in item 4.2.1 part 2.b is unnecessary. Item 2.c requires that the peer review results be discussed along with the overall disposition of relevant F&Os and item e (which includes an overall determination of the adequacy of the plant specific PRA with respect to this application). These assessments are current and of more importance to the application. Where external events rely on IPEEE vintage information, a discussion/statement of the risk significance of the spray system in mitigating external events should be performed.

*NRC Response: The staff agrees that peer reviews of plant-specific PRA are important. However, it is equally important to have an understanding of PRA updates and upgrades since IPE and IPEEE, and since the peer reviews were conducted. Licensees who have given this information in prior submittals may incorporate the information by reference only.*

6. NEI Comment #3 (second paragraph): Section 4.2.1 item 3 requirements on consideration of fire and external events and the associated EXPECTATIONS are too restrictive and do not correspond to safety benefits. The CSS has limited risk overlap with fires or external initiating events. Challenges to power induced by tornadoes, high winds or seismic events have limited importance to the spray system and [are] more appropriate with AOTs associated with AC-power related components. It was our understanding that the intent of this restriction was to assure the regulator that the overall combined plant risk remains below a CDF of  $10^{-4}$  per year (per requirements of RG 1.174). The intent of this section should be clarified. This requirement should be reduced to providing information regarding the reasons underlying low risk associated with this system.

*NRC Response: The staff acknowledges that, for many plants, the impact of the CT extension on external event risk will be minimal. If this is the case, the licensee needs to confirm this in their submittal and explain why there is limited overlap.*

7. NEI Comment #4: Section 4.2.1 3 ACCEPTANCE CRITERIA requires “combining internal events, internal flooding, external events and shutdown PRA results.” The requirements for the combination of events should be modified to have the utility provide a technical basis for demonstrating the plant CDF to be less than  $10^{-4}$  per year or has no plant specific vulnerabilities (per SECY-88-20). Requirements for a fully quantified external events (including fire) PRA and shutdown PRA [are] beyond the state of the art. Few plants have all the above. The Fire PRA standard is just undergoing peer review and no shutdown PRA standard has been written. Methods for combining these PRA results is also not defined (particularly merging shutdown and “at power” PRA results). Instead, it should be noted that the utility may use existing external event evaluations including IPEEE results and qualitative external event assessments, where appropriate, to provide confidence that the overall plant CDF is not within RG 1.174 risk region 1.

*NRC Response: The staff is requesting that licensees provide  $\Delta$ CDF and  $\Delta$ LERF calculations for those external events for which the licensee has a PRA. For external events for which the licensee does not have a PRA, the licensee will need to confirm there are no vulnerabilities that would indicate that the total CDF is  $>10^{-4}$ /yr or the total LERF is  $>10^{-5}$ /yr. This stipulation allows the staff to ensure that plants whose  $\Delta$ CDF or  $\Delta$ LERF calculation puts them in Region II of either Figure 3 or Figure 4 of RG 1.174 are still within the RG 1.174 Section 2.2.4 acceptance guidelines for total plant risk (CDF*

and LERF).

*With regard to NEI's comments on a fully-quantified external events (including fire) PRA and shutdown PRA being beyond state of the art, the staff believes the wording in the EXPECTATIONS for Section 4.2.1 condition 3 was mis-interpreted. The wording will be revised to read "(quantitatively and/or qualitatively, as appropriate)."*

8. NEI Comment #5: EXPECTATIONS supporting 4.2.1 item 4. The TS is structured to have a revised CT. Once the new CT is adopted the old CT will disappear as a regulatory item. Thus, there is no entry into an extended CSS CT. It is simply an entry into the CT. There are no significant external event interactions and the outage is limited to a single spray train. Therefore, the Tier 2 requirement should be limited to one CSS out of service, which is already governed in the TS with a cautionary note that Maintenance rule or tier 3 guidance to not simultaneously disable both the emergency grade fan coolers and the sprays.

*NRC Response: The staff agrees that "extended CT" should not be used in the model LAR. Appropriate changes will be made here and in other sections of the FRN where appropriate.*

*The staff believes that a tier 2 justification by the licensee is warranted with regard to removing one CSS train from service due to scheduled "preventative" maintenance for the 7-day period. If there are no risk-significant configurations, or risk-significant external event conditions identified in the tier 2 evaluation, then the licensee should include a statement that there are no risk-significant configurations or external event conditions that would preclude them from using the 7-day CT.*

9. NEI Comment #6: End of [Section 4.2.1 #7]. Note that the RGs provide guidelines. Risk values are not rigid thresholds. Thus small deviations to the guidance can be and are somewhat fuzzy to allow for the mathematical uncertainties inherent in these studies.

*NRC Response: The staff agrees that RG 1.174 and 1.177 guidelines are not rigid standards, and has revised condition 7 to delete the second paragraph of the EXPECTATIONS section. This paragraph will be replaced with the following sentence: "In addition, the licensee must confirm they meet the items listed in Section 2.3.7.2 of RG 1.177."*