

June 3, 2005

Mr. Biff Bradley
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Dear Mr. Bradley:

The Nuclear Regulatory Commission (NRC) staff has continued its review of the Industry Implementation Guidance for Risk Management Technical Specifications (RMTS) Initiative 7a, Allowance for Non-Technical Specification Barrier Degradation on Supported System Operability (TSTF-427), dated March 2005, and associated RAIs and responses. Enclosed are staff requests for Industry to clarify their responses to prior RAIs, and to provide additional information relevant to the RMTS 7a Initiative. Upon review and resolution of the RAIs, it is expected that a revised Industry Implementation Guidance document will be submitted.

We are prepared to meet with you to further discuss these comments and RAIs to ensure that progress continues on RMTS Initiative 7a.

Please contact me at (301) 415-1187 or e-mail trt@nrc.gov if you have any questions or need further information on these proposed changes.

Sincerely,

/RA/

T. R. Tjader, Senior Reactor Engineer
Technical Specifications Section
Reactor Operations Branch
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

Enclosures: As stated

cc: w/encl: See next page

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RAI REVIEWS

General RAIs

1. General RAI #1 suggested limiting applicability of TS 3.0.9 such that at least one train of the impacted system was fully OPERABLE with no degraded barriers. In response, the specific portions of the guidance which implement the intent of this restriction were referenced, and no further changes were identified. The only identified exception permits multiple trains to be impacted, but for separate initiating events. The staff notes that the TS 3.0.9 wording itself specifically requires operability of the redundant train. However, on page 11, item 2, an exception to this requirement based on the ICDP with one of the trains assumed unavailable being within the NUMARC 93-01 guidelines is provided. This could be interpreted to allow multiple barriers out of service on both trains of a two train system for the same initiator, or to allow unavailable barriers on one train, with the other train inoperable for maintenance. A clarification of this item is requested.
2. General RAI #2 requested additional guidance regarding emergent conditions when TS 3.0.9 is in use. In response, it was stated that the guidance for 10CFR50.65 (a)(4), endorsed by Regulatory Guide 1.182, was adequate for assessing the risk impacts of emergent conditions, and that TS 3.0.9 was adequately addressed by this guidance. However, the methodology for assessing risk of barriers does not consider the integrated configuration risk, and does not address emergent failures of the operable train. Therefore, the methodology itself does not address plant risk quantitatively in an integrated fashion. With regards to the (a)(4) program, since the barriers within the scope of this proposed change need not be in the plant PRA model, the quantitative risk assessment would not necessarily identify the impact of emergent conditions, and would rely solely upon a qualitative understanding of the interaction of barrier status with overall plant status. The staff suggests the methodology be changed such that the quantitative assessment considers the actual plant configuration (see RAI #3), and include provisions to reassess the quantitative risk when emergent conditions occur.
3. General RAI #3 questioned addressing barrier risk separately from total plant configuration risk in the quantitative assessment. In response, it was stated that NUMARC 93-01 addresses total configuration risk, and that implementation of this initiative would require a commitment to this guidance. However, the RAI was identifying that the barrier risk is treated separately from configuration risk and the thresholds from NUMARC 93-01 were applied separately. NUMARC 93-01, section 11.3.7, specifically identifies that the risk significance of components changes with the configuration, but the methodology does not address these changes. The process has no provision to quantitatively evaluate the status of barriers along with the overall plant configuration. The staff suggests the methodology be changed such that the quantitative assessment considers the actual plant configuration, for example, by assessing the applicable risk achievement worth for impacted components using the actual plant configuration during barrier removal.
4. General RAI #4 requested guidance for treating external events. In response, it was identified that no guidance was needed. The staff has additional comments on this item. If the particular initiating event for which the barrier(s) provides protection is not in the model

(i.e., an external event), then the internal events RAW may not reflect the true risk importance of the component. The staff suggests that the methodology should allow only one barrier to be unavailable if the PRA model does not include an initiator for which that one barrier provides a protective function.

5. General RAI #7 requested identification of the safety benefits of this initiative. In response, it was stated (in part) that implementation of this initiative would not increase the number or length of barrier outages. The staff suggests that implementation of this initiative could better focus plant maintenance and configuration control on safety-significant items, rather than the LCO time restrained removal and restoration of low risk significant barriers, for example.

Specific RAIs

1. Specific RAI #1 requested clarification as to how the proposed guidelines regarding PRA model sophistication and resulting plant-specific limitations on the use of TS 3.0.9 would be implemented. In response, it was stated that the specific wording was identical to another RITS document, and that the intent was not to limit applicability, and that existing risk assessment tools are adequate. The guideline specifically states that the level of sophistication of the plant PRA model and tools directly affects the utility of TS 3.0.9. It further states that “the process provided in this implementation guidance document allows a plant to use its existing risk assessment tools to determine if the LCO 3.0.9 allowance is acceptable for use.” However, in no part of the guideline is there anything which implements these statements. The staff suggests that if the PRA does not model an initiating event, then TS 3.0.9 should not be used for multiple barrier removal when the unmodeled initiator is impacted, for example.
2. Specific RAI #3 took exception to the conclusion that high pressure injection (HPCI, RCIC and HPCS) was functionally redundant to ADS and low pressure injection for BWRs. Since BWR standard TS relate operability of HPCI and RCIC, application of TS 3.0.9 should retain that relationship. Further, the separate, diverse methods should be consistent with the design and licensing bases, rather than additional methods used in the PRA (i.e., containment venting may be a PRA alternative to suppression pool cooling, but should not be used to justify barrier removal). Please revise the guidelines.
3. Specific RAI #11 requested clarification on the guidance regarding when RAW values can be added. In response, additional clarifications were provided.

It is stated that RAW values can be added when “no dependencies exist between the systems”. RAW values can only be correctly added when the two items considered do not and cannot occur in the same cutset. The degree of dependency which exists is not relevant. For example, the turbine-driven AFW pump and main feedwater pumps are independent means of achieving secondary side heat removal, there are no dependencies. However, failures of these components can occur in the same cutset, and it is not possible to add the RAW values. Further, a diesel generator may have a dependency on the service water pump; however, it is not possible for the same cutset to have both items, since failure of one component results in failure of the other due to a dependency. In this case, it would be appropriate to add the RAW values.

The staff suggests that the guidelines could require combinations of components impacted by barriers to be requantified in order to directly calculate the risk achievement worth for the configuration (see General RAI #3), avoiding the need for the operator to determine if adding risk achievement worth values is applicable.

4. Specific RAI #13 requested documentation requirements for use of TS 3.0.9. In response, no documentation requirements were proposed. The staff suggests that documentation is appropriate to assess performance for this risk-informed, performance based application, both for self-assessment by the licensee, and for regulatory oversight. This is especially important, for example, when complex configurations are required to facilitate maintenance, when emergent conditions occur, when risk management actions are used to justify the barrier outage time, or when multiple safety trains are impacted by one or more barriers. The following information would allow proper oversight: what barriers are removed, what the assumed impacts are, the applicable calculations, the applicable risk management actions, the calculated allowed time, and the times of barrier removal and restoration to show that the 30 day limit was met. Additional consideration is therefore requested
5. NEW SPECIFIC RAI #18 – In Section 3.0 of TSTF-427, in the Executive Summary of the guidelines, and in the proposed STS bases, reference is made that the supported system remains operable with its barrier removed/degraded under TS 3.0.9. However, since the definition of operability is not changed, it is not clear how to interpret operability once TS 3.0.9 is in effect. It would seem that the component(s) are inoperable, but TS 3.0.9 allows up to a 30-day period to not implement the required TS actions. The staff suggests that the guidelines be reviewed and clarified, as well as the TS and bases, if appropriate.
6. NEW SPECIFIC RAI #19 – In Section 4.0 of TSTF-427, and in the proposed STS bases, the definition of “barrier” is circular, in that it refers to “installed barriers” and “other barriers”. Please correct to eliminate this concern. In addition, “insulation” is identified as a barrier. The staff suggests that insulation is most likely in place for personnel hazard concerns, or to assure the system heat loss/gain is within assumed design limits, rather than for protection against particular initiating events, and so TS 3.0.9 would not apply.
7. NEW SPECIFIC RAI #20 – In Section 4.0, the inclusion of LOCAs but exclusion of HELBs inside containment seems inconsistent and should be discussed or corrected. Further, the external event “high winds” is included in the draft guidelines but not in TSTF-427, and no generic initiator frequency is provided to justify inclusion. Please clarify and correct as necessary.
8. NEW SPECIFIC RAI #21 – Several items in TSTF-427 page 7 need to be clarified:
 - a. It is stated that because maintenance unavailabilities of barriers are controlled under 10 CFR 50.65(a)(4), then the failure probability of remaining train(s) would be approximately 1 E-2. The staff notes that unavailability of redundant components may exceed 1 E-2.
 - b. It is stated that because maintenance unavailability for redundant train(s) is controlled, the RAW values are conservative. It is noted that if redundant train maintenance is set to zero (controlled), then the relative importance of the remaining basic events increase, and so the RAW values would increase above the values of the baseline PRA model which is used. Therefore, it is not clear that the RAW values are in fact conservative because of this control.

- c. It is stated that recovery of equipment damaged by the initiating event would continue to be applicable. The staff does not agree with assessing equipment repair and recovery when using the PRA model to assess the risk importance of having that equipment out of service or degraded.
 - d. It is stated that “all plants have a conditional early containment failure probability of less than 0.1”. No basis is provided for this statement.
9. NEW SPECIFIC RAI #22 – The proposed revised STS bases identify that fire protection barriers are controlled by 10 CFR 50 Appendix R; not all plants are subject to this requirement, so it is not generically applicable.
10. NEW SPECIFIC RAI #23 – In Section 6.2 of the guidelines, second paragraph requires clarification:
- a. What “following general aspects” are referred to? A bulleted or numbered list of items would be expected.
 - b. Is the flowchart used in all cases, or is the explanatory paragraph for item 1 intended to replace the flowchart assessment?
 - c. The paragraph explaining item 1 seems to identify a quantified calculation to determine an allowed outage time for barrier removal which is “conservative”. However, nothing in the LCO itself implies that the 30 day period is potentially less than 30 days, and it is not clear why a separate risk assessment which does not consider the actual plant configuration would always be conservative.
 - d. The paragraph explaining item 2 identifies various aspects of the barriers dependency to be “considered”, but except for the last item where there are identified dependencies between systems, no specific action is identified. What is the intent of this part of the guideline?
 - e. The second numbered list of this section identifies general guidance for planned barrier removal. Item 1 is conservative, since if the risk of having a train completely out of service is acceptable, then it is irrelevant how many barriers are removed. However, it is not clear why item 2 is reasonable guidance to maintain low risk. If one train could be removed from service and be within risk guidelines of NUMARC 93-01, why is it assumed that degrading the second train with multiple removed barriers would not result in a higher risk configuration?
11. NEW SPECIFIC RAI #24 – In the implementing steps for the flowchart of the guideline, there is reference to the risk assessment “not support removal of the barrier from service without declaring the supported system inoperable” (step 8), and to the risk assessment and risk management actions “not support the maximum 30-day allowed time period” (also step 8). However, the barrier risk calculation is completed in step 7c, and since barriers would not be in the PRA model and the supported components would not be considered non-functional, it is not clear how the (a)(4) assessment of step 8 could calculate a quantitative allowed outage time. The staff believes that this guidance, and that of step 9 which provides the ICDP and ILERP limits, should be applied in step 7c.

Further, the guideline does not state what ICPD/ILERP limit applies to calculating the acceptability of the 30-day allowance. The staff suggests that pre-planned barrier removal should be quantitatively assessed against the lower limit, with the upper limit applying to emergent conditions. The (a)(4) assessment of steps 8 and 9 would not be affected.

12. NEW SPECIFIC RAI #25 – In step 7c, the last three sentences require clarification as to what is intended:

“While the licensee is not limited by the example in the technical justification, it is prudent to use the plant baseline CDF and LERF in conjunction with the RAW value and initiating event frequency previously evaluated to gain any insights from the combination of actual plant data on the resultant ICDP and ILERP values. The results should be factored into the risk management actions as necessary.

This review should be performed whether or not the PRA considers internal events only, or internal and external events.

What actual plant data is being referenced? What combination is being referred to? What results are being referred to? How are they to be factored into risk management actions? What determines if this is necessary? What review is being referred to? Why is the scope of the PRA with regards to external events mentioned?