February 14, 2000

Mr. James Davis, Director
Operations Department
Nuclear Energy Institute
1776 I Street, N. W.
Suite 400
Washington, DC 20006-3708

Dear Mr. Davis:

This is to inform you of our decisions on two risk-informed changes to the Standard Technical Specification (STS) NUREGs proposed by the NEI Technical Specification Task Force (TSTF). Specifically, the enclosed comments request modifications to TSTFs -358 and -359. We understand that the TSTF is already preparing a revision to each of these travelers to provide additional justification to support the changes. The enclosed comments are based on the staff's review of Revision 0 of these travelers submitted in November 1999, and are provided for your consideration in preparing Revision 1 to these travelers.

Please contact Nanette Gilles at (301) 415-1180 or e-mail nvg@nrc.gov, if you have any questions or need further information.

Sincerely,

/RA/

William D. Beckner, Chief
Technical Specifications Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Project No. 689
Enclosures: As stated

cc: N. Clarkson, BWOG
H. Pontious, BWROG
T. Weber, CEOG
D. Buschbaum, WOG
D. Hoffman, EXCEL

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DISPOSITION SUMMARY

TSTF-358: Modify

It is unclear why this TSTF is only applicable to NUREG-1433. The TSTF doesn't appear to contain any vendor specific information in the justification.

There may be plant conditions during which it is preferable (and perhaps safer) not to have to complete missed surveillance tests for some structure, systems, and components (SSCs). Therefore, in principle, increasing the delay time to perform certain surveillance tests seems appropriate. However, the industry has not provided defendable risk-informed arguments in favor of the proposed delay, in accordance with Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis".

Missed Surveillances Can Be Risk-Significant

The probability that a standby active component (such as MOV, pump and circuit breaker) will fail when demanded during an accident (i.e., the component's average "unavailability") is most frequently based on the assumption that the component fails due to "standby" stresses (i.e., stresses which are present while the component is in standby, such as corrosion, dirt, luck of lubrication):

$$q = \frac{1}{2} * \lambda * T$$

where: q = the component's average unavailability,

λ = the components failure rate while in standby (failures/hour), and

T = the interval at which the component is tested for operability.

The average unavailability, calculated by using the above equation, reflects the potential vulnerability of the component to "standby" stresses. Such vulnerability increases with time between operability checks (tests) assuming corrective action is taken to restore failed components identified by the test.

Since the probability that two or more components fail due to common cause is proportional to q, doubling the surveillance testing interval of some risk important SSCs would double the risk contribution of these SSCs. Based on results from available PRAs, doubling the risk contribution of some SSCs can lead to a significant increase in risk as defined by RG 1.174 and RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," and the Significance Determination Process (SDP) which is expected to become part of the new reactor oversight process. For example, doubling the surveillance testing interval for HPSI pumps or the HPSI injection MOVs at some plants could cause a CDF increase of the order of 1E-5/year. If the surveillance testing interval of two or more sets of similar components associated with systems performing defense in depth functions (e.g., AFW and feed-and-bleed in some PWRs) are doubled, the increase in CDF can be as high as 1E-4/year. These examples show that doubling the testing interval of some surveillance tests can be risk-significant.

Approach for Risk-Informed Justification of Proposed Change

Two approaches could, theoretically, be followed to justify the proposed change:

a) Perform a generic risk assessment (e.g., by using available PRA results and insights) to show that there is no significant increase in risk associated with the proposed change, as defined in Regulatory Guide (RG) 1.174 and RG 1.177 and/or identify exceptions where the proposed change should not be allowed. The performance of such risk analysis may need to include conservative assumptions to limit the level of detail and extend its applicability to all plants. Once this is achieved there will be no need for licensees to use PRA when a "missed surveillance" is discovered (e.g., for determining the "first reasonable opportunity" to perform the test).

b) Accept the proposed change without a generic risk assessment but require licensees to assess the risk impact of missed surveillance tests every time a Surveillance is discovered missed (e.g., for determining the "first reasonable opportunity" to perform the test). This appears to be the approach proposed by the industry.

The proposed approach requires (1) PRAs of acceptable quality by licensees who request the proposed revision and (2) a risk-informed regulatory oversight mechanism for assessing plant performance and taking appropriate corrective actions. The industry submittal does not address how these requirements would be satisfied. Some issues that need to be addressed are:

– Do all licensees have the PRA capability needed to access the risk impact of missed surveillance tests?

– What is the impact of the proposed change, in conjunction with proposed changes to reporting requirements in 10 CFR 50.73, on the regulatory oversight process? Recently, a proposed change to 10 CFR 50.73 was published in the Federal Register (64 FR 36291, 7/6/99). The proposed rule recommends changing the reporting requirements that relate to missed surveillances. Specifically, Section 50.73(a)(2)(i)(B), "Operation or condition prohibited by TS," would be modified to eliminate reporting if the event consisted solely of a case of a late surveillance test where the oversight is corrected, the test is performed, and the equipment is found to be functional. Therefore, the only missed surveillances that would be reported under the proposed 10 CFR 50.73 are those where the equipment is found to be inoperable when eventually tested.

– Does the new reactor oversight process currently have the capability to pick up risk-significant missed surveillance tests?

– How does the proposed change impact NRC's ability to participate in assessing risk-significance and overseeing plant safety?

Specific Comments

1. The proposed industry change states that “The determination of the first reasonable opportunity should include consideration of the impact on plant risk .....and impact on any analysis assumptions, in addition to unit conditions, planning, availability of personnel, and the time required to perform the Surveillance.” This statement is not clear. What “analysis assumptions” does the industry refers to? How would the risk impact be integrated with plant conditions, planning, etc, in the decision making?

2. The industry states that (1) there have been very few occurrences of missed surveillance tests and (2) when a missed surveillance test is subsequently performed, it passes. However, this does not tell us much regarding the risk significance of the proposed change.

   – The statement that the number of missed surveillance tests has been very small, if accurate, indicates that the contribution to the average yearly risk from missed surveillance tests has been small. However, this may not continue to be true if the desirable change to SR 3.0.3 is implemented without an effective regulatory oversight mechanism (some licensees may “abuse” the flexibility if granted).

   – The statement that “a missed surveillance test passes when it is subsequently performed,” in conjunction with the statement that “the number of missed surveillance tests has been very small,” does not imply that a component’s failure probability remains constant when the testing interval increases. Even if the first statement is true, it just implies that there has not been a statistically significant number of demands of components with increased testing intervals.

   – In addition to the average (yearly) increase in risk, the increase in risk during a specified plant condition (in this case during the delay time) is used to determine risk significance (e.g., the ICCDP used in RG 1.177).

3. The statement “any reporting requirements associated with the missed Surveillance would be consistent with 10 CFR 50.73," does not necessarily imply that missed surveillance tests (and associated delay times) will be reported. The impact of the proposed change on reporting requirements, as well as the proposed changes to reporting requirements themselves, need to be understood to ensure that NRC will be aware of missed surveillance tests and related delay times for risk-significant components.

4. The statement “Performance of some surveillance tests carries with it a finite risk (e.g., some tests require specific plant configurations and having to manipulate the plant configuration can cause unplanned transients) is correct. However, for the reasons explained above, such statement does not lead to the conclusion that “This risk, when compared with the confidence that the Surveillance will pass when performed, justifies the proposed change,” as the industry claims.

5. With regard to the discussion of previous occurrences of missed surveillances where enforcement discretion was sought, it might be useful to include information regarding the staff's conclusions and bases for acceptance in the NOED cases that the TSTF references in the justification. If the staff has granted enforcement discretion for missed surveillances repeatedly, it is likely that some of the bases for granting such discretion is consistent with the industry's justification for requesting TSTF-358 and it would be helpful to the staff reviewing TSTF-358 to have such precedence.

The staff requests that the TSTF revise the justification for TSTF-358 to address the above items.

TSTF-359: Modify

It is unclear why this TSTF is only applicable to NUREG-1433. The TSTF doesn't appear to contain any vendor specific information in the justification.

There may be plant conditions during which it is preferable (and perhaps safer) to increase the existing flexibility with respect to mode restrains. Therefore, in principle, modifying the existing "mode restrain logic" in LCO 3.0.4 and SR 3.0.4 to allow entry into a Mode or condition within the applicability after any adverse effects on plant risk have been assessed seems reasonable. However, the industry has not provided defendable risk-informed arguments in favor of the proposed change, in accordance with Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis". .

Changing MODES With an LCO Not Met Can Be Risk-Significant

The results of a review by CEOG and San Onofre staff (presented during an Industry/NRC meeting on Risk-Informed Technical Specifications) indicate that some safety systems are more important in some Modes or operating conditions than in others. For example, high pressure safety injection (HPSI) is very important in Modes 3 and 4 following outage (more important even that it is in Mode 1). Therefore, by entering Modes 3 and 4 after outage while the HPSI system is inoperable or degraded, may lead to a significant increase in risk.

Approach for Risk-Informed Justification of Proposed Change

Two approaches could, theoretically, be followed to justify the proposed change:

1. Perform a generic risk assessment (e.g., by using available PRA results and insights) to show that there is no significant increase in risk associated with the proposed change, as defined in RG 1.174 and RG 1.177and/or identify exceptions where the proposed change should not be allowed. The performance of such risk analysis may need to include conservative assumptions to limit the level of detail and extend its applicability to all plants. Once this is achieved there will be no need for licensees to use PRA to justify entering a plant operation Mode (or other specified condition) within the applicability of the LCO while the LCO is not met.

2. Accept the proposed change without a generic risk assessment but require licensees to assess the risk impact and take appropriate compensatory measures prior to making a change in plant operation Mode or other specified condition within the applicability of the LCO while the LCO is not met. This appears to be the approach proposed by the industry.

The proposed approach requires (1) PRAs, including "transition" models, of acceptable quality by all licensees and (2) a risk-informed regulatory oversight mechanism for assessing plant performance and taking appropriate corrective actions. The industry submittal does not address how these requirements would be satisfied. Some issues that need to be addressed are:

– Do licensees have the PRA capability needed to access plant risk, including during "transition" to/from shutdown?

– Does the new reactor oversight process have the capability to pick up, track and assess risk-significant changes in Mode or other specified condition of plant operation?

– How does the proposed change impact NRC's ability to participate in assessing risk-significance and overseeing plant safety?

Specific Comments

1. The proposed industry change states that "The review and approval may consider a variety of factors and will focus on minimizing plant risk." This statement needs clarification. Would a change in Mode of operation be allowed if it increases risk? If the answer is yes, how would the risk be minimized? How would other factors be integrated with risk in the decision making process?

2. In the "deterministic justification" of the proposed industry change it is stated that "The established AOTs provide a limit to how long a licensee could be in a Mode of the applicability without meeting the LCO." Although this is true, there are cases where the plant can be placed into a condition of significant risk.

3. The industry should provide the "qualitative review," mentioned under "Risk Discussion" in the submittal, for the staff's review. In addition, a systematic investigation of likely changes in Modes or other specified conditions of operation and a "feeling" for the associated risks could provide useful information to support an implementation approach for the proposed change. For example, such investigation may show that no detailed PRA models are needed to compare risks, including risks associated with "transition"modes of operation.

The staff requests that the TSTF revise the justification for TSTF-359 to address the above items.