Description of Common Cause Failure Treatment in the TS Risk Informed Completion Time (RICT) Program

The NRC proposed the TS Section 5.5 RICT Program be modified to address common cause failure (CCF) as follows:

[d]. If a high degree of confidence cannot be established that there is no common cause failure that could affect the redundant components, the RICT shall account for the increased possibility of common cause failure. Accounting for the increased possibility of common cause failure shall be accomplished by one of the two methods below. If one of the two methods below is not used, the TS front stop shall not be exceeded.

- The RICT calculation shall be adjusted to numerically account for the increased possibility of CCF, in accordance with RG 1.177, as specified in Section A-1.3.2.1 of Appendix A of the RG. That is, when a component fails, the CCF probability for the remaining redundant components shall be increased to represent the conditional failure probability due to CCF of these components, in order to account for the possibility that the first failure was caused by a CCF mechanism.

  OR

- Prior to exceeding the front stop, RMAs shall be implemented. These RMAs shall not already be credited in the RICT calculation, and shall target the success of redundant and/or diverse SSCs that perform the function(s) of the failed SSC, and, if possible, reduce the frequency of initiating events that call upon the function(s) performed by the failed SSC. Documentation of the RMAs shall be available for NRC review.

The industry proposes the following wording:

[d]. If the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

1. Numerically accounting for the increased possibility of CCF in the RICT calculation; or

2. Prior to exceeding the Completion Time, Risk Management Actions (RMAs) [not already credited in the RICT calculation] shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, or reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

<u>Discussion of Differences</u>

1. The format is revised to be consistent with the ISTS and the Writer's Guide, such as using numbers instead of bullets and the appropriate format of the logical connector "or." See TS Program 5.5.1 for an example.

2. (Paragraph d) The proposed term "high degree of confidence" has no objective measure and will likely lead to inspection issues. One individual's high degree of confidence may not align with another's. Instead, the industry proposes the objective measure of completion of an extent of condition evaluation. If such an evaluation is complete, a licensee and the NRC staff can consider common cause failure to be assessed. If not, additional margin should be included in the RICT calculation.

3. (Paragraph d) The staff and industry proposals state that the increased possibility of a CCF shall be accomplished by using one of two methods. The staff proposal then states that if one of the two methods isn't used, a RICT can't be calculated (i.e., the front stop cannot be exceeded). This statement is unnecessary. If one of the two methods must be used and one is not used, a RICT can't be used.

4. (First bullet point) A TS Administrative Control Program description provides the high-level requirements for a licensee-controlled program that implements the requirements. Note the TS RIC program introduction states, "The program shall include the following." The TS program should include the requirements and constraints on the licensee's program, but not every detail. The industry proposal simplifies the staff proposal in several ways:

    a. It is sufficient to state that the increased possibility of a CCF must be accounted for numerically. In their review of licensee's implementation of TSTF-505, the NRC may review the method used to numerically account for an increased possibility of CCF. Methods other than that described in RG 1.177 may be acceptable.

    b. The following explanatory statement is removed, "That is, when a component fails, the CCF probability for the remaining redundant components shall be increased to represent the conditional failure probability due to CCF of these components, in order to account for the possibility that the first failure was caused by a CCF mechanism." Licensees understand the purpose of numerically accounting for an increased possibility of common cause failure and this type of explanation is not necessary or found in other TS Administrative Controls.

    c. The reference to Regulatory Guide (RG) 1.177 is removed. Regulatory Guides are not intended to be requirements. As stated on the front page of RG 1.177, "Regulatory guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions that differ from those set forth in regulatory guides will be deemed acceptable if they provide a basis for the findings required for the issuance or continuance of a permit or license by the Commission." As stated previously, the NRC staff may review the methods for accounting for CCG as part of their review of the licensee's amendment request.

5. (Second bullet point) The term "front stop," while used in NEI 06-09, is not defined and does not appear in the TS or Bases. Its use should be avoided in the TS. The paragraph is revised to state "Prior to exceeding the Completion Time," which is equivalent.

6. (Second bullet point) The requirement, "These RMAs shall not already be credited in the RICT calculation," is eliminated. At most sites, there will be proceduralized RMAs in place for many situations. The PRA may credit some or all of these actions, but the benefit from identifying an activity as an RMA is that it is performed, it emphasizes to the plant operator its importance, and the RMA becomes a focus of the control room while the RICT is in effect. For example, a plant's protective actions may include protecting the redundant (as opposed to diverse) train and by using a zero-maintenance model some credit may be in the RICT calculation for this action. However, other RMAs, such a stopping work in the switchyard or limiting transient combustibles near the redundant train, reduce overall plant risk and are not specifically credited in the RICT calculation. Even if there are no additional unique RMAs beyond those credited in the PRA model, this increased focus enhances plant safety.

7. (Second bullet point) The proposed term "*target the success* of redundant and/or diverse SSCs" is undefined and may be misinterpreted by licensees and NRC inspection staff. The phrase "support the redundant or diverse SSCs" is more typical wording. Also, the term "and/or" is avoided in the TS (See the Writer's Guide, section 3.1.1.h). A logical "or" serves the same purpose as "or" is not exclusive.

8. (Second bullet point) The term "if possible" is typically not used in TS as the TS represent legal requirements. Instead of stating, "and, if possible, reduce the frequency of," the conjunction was rewritten as "or reduce the frequency of…". As stated previously, a logical "or" is not exclusive and one or both actions may be taken.

9. (Second bullet point) The term "failed SSC" was revised "inoperable SSC" to be consistent with TS terminology and the introductory paragraph d.

10. (Second bullet point) The statement "Documentation of the RMAs shall be available for NRC review," is redundant and is eliminated. The TS program requires following NEI 06-09. Section 2.3.2, "Documentation," of NEI 06-09, step 6, states, "Relative to extended CTs beyond the front-stop CT, the following shall be documented: … 6.5. Risk management actions implemented." This requirement is reiterated in Section 3.1 of the NRC's SE states (page 8), under "Documentation," which states: "Each entry into the RMTS is required to be properly documented to permit proper review and oversight to determine compliance with the TS requirements. The minimum requirements include: … RMAs including compensatory actions implemented."