

1. SUMMARY DESCRIPTION

The Technical Specifications (TS) Section 5.5, "Risk Informed Completion Time Program," is revised to address incorporation of newly developed methods in probabilistic risk assessment (PRA) models used to calculate a Risk Informed Completion Time (RICT). A new report is added to TS Section 5.6, titled the "Probabilistic Risk Assessment (PRA) Upgrade Report," to inform the NRC of the use of newly developed PRA methods to calculate a RICT.

2. DETAILED DESCRIPTION

2.1. Current Requirements

The Risk Informed Completion Time Program (RICT Program) was added by TSTF-505, Revision 2, "Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18183A493) which was approved by the Nuclear Regulatory Commission (NRC) on November 21, 2018 (ADAMS Accession No. ML18269A041).

Paragraph e of the RICT Program, states:

The risk assessment approaches and methods shall be acceptable to the NRC. The plant PRA shall be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant, as specified in Regulatory Guide 1.200, Revision 2. Methods to assess the risk from extending the Completion Times must be PRA methods used to support this license amendment, or other methods approved by the NRC for generic use; and any change in the PRA methods to assess risk that are outside these approval boundaries require prior NRC approval.

2.2. Reason for the Proposed Change

The current RICT Program requires prior NRC approval of change to the PRA methods used to calculate a RICT. This requirement is overly restrictive, and the term "PRA method" is not well defined and could lead to uncertainty on which PRA model changes require prior NRC approval. The industry and the NRC have developed revised TS and supporting regulatory guidance to address these issues.

2.3. Description of the Proposed Change

The RICT Program is Specification 5.5.21 in NUREG-1430, NUREG-1431, and NUREG-1432¹, Specification 5.5.18 in NUREG-1433 and NUREG-1434². Paragraph e of the RICT Program is replaced with the following:

- e. A RICT must be calculated using the following PRA and non-PRA approaches approved by the NRC: [list specific PRA and non-PRA approaches used for fire and seismic analysis (e.g., Fire PRA and Seismic Margins Analysis)]. Changes to these PRA and non-PRA approaches require prior NRC approval.
- f. The PRA maintenance and upgrade process for the PRA models used in the RICT program shall follow Regulatory Guide 1.200, Revision 3, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities."

A new paragraph f is added that states:

- g. A report shall be submitted in accordance with Specification 5.6.8 following each PRA upgrade and associated peer review involving a newly developed PRA method that has not been previously reported to the NRC for a RICT program.

A new reporting requirement is added to Section 5.6, "Reports." The new report is Specification 5.6.8 in NUREG-1430, NUREG-1431, and NUREG-1432, Specification 5.6.6 in NUREG-1433, and Specification 5.6.7 in NUREG-1434. It states:

5.6.[8] Probabilistic Risk Assessment (PRA) Upgrade Report

A report shall be submitted following each PRA upgrade involving a newly developed PRA method that has not been previously reported to the NRC for a RICT program and the associated peer review in accordance with Specification 5.5.18. The report shall describe the scope of the upgrade, including (1) the PRA models upgraded and newly developed methods used, (2) a list of the peer review and finding closure reports available to the NRC for oversight and inspection activities, (3) any open findings from the peer-review of implementation of the newly developed method, and (4) changes to key assumptions related to the newly developed method or its implementation.

Both the RICT Program and the PRA Upgrade Report are bracketed in the Standard Technical Specifications (STS), indicating that the programs only apply to licensees that have adopted TSTF-505 by license amendment.

¹ NUREG-1430 provides the Standard Technical Specifications (STS) for Babcock & Wilcox plant designs. NUREG-1431 provides the STS for Westinghouse plant designs. NUREG-1432 provides the STS for Combustion Engineering plant designs.

² NUREG-1433 provides the STS for BWR/4 plant designs, but is also representative of the BWR/2, BWR/3, and, in this case, BWR/5 designs. NUREG-1434 provides the STS for the BWR/6 plant design, and is representative, in some cases, of the BWR/5 plant design.

It is expected that licensees will incorporate these changes into a license amendment request to adopt TSTF-505, Revision 2, as a variation from the traveler. The attachment provides a recommended variation discussion to be used in the TSTF-505, Revision 2, model application.

3. TECHNICAL EVALUATION

Throughout 2018 and 2019 the Nuclear Energy Institute (NEI) and the Technical Specifications Task Force (TSTF) held a series of meetings with the NRC to discuss a regulatory framework that permits the industry to upgrade plant PRAs and implement newly developed methods in a manner that is acceptable to the NRC. This includes a companion document to the American Society of Mechanical Engineers (ASME) / American Nuclear Society (ANS) PRA Standard that contains information that enables peer-reviewers to evaluate newly developed methods, and a revision to Regulatory Guide 1.200 that endorses the revised ASME/ANS PRA Standard with appropriate clarifications. In addition, NEI issued NEI 17-07, Revision 2, "Performance of PRA Peer Reviews Using the ASME/ANS PRA Standard," which discusses peer review of PRA upgrades that include newly develop methods.

Changes to the TS were developed that provide flexibility for licensees to upgrade their PRA models, including newly developed methods, while providing the NRC with the ability to provide oversight. These changes permit licensees to revise their PRA models to incorporate most newly developed methods in accordance with the requirements of the ASME/ANS PRA Standard without prior NRC approval. The documents provide clear definitions of what constitutes a PRA method and what is a newly developed method (i.e., a method that has been developed separately from a state-of-practice method or that involves a fundamental change to a state-of-practice model)). The PRA maintenance and upgrade process following ASME/ANS RA-Sa-2009, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," Regulatory Guide 1.200, Revision 3, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," and NEI 17-07, Revision 2, will ensure that changes to the PRA models used in the RICT program, including changes involving newly-developed methods, are properly evaluated.

The proposed TS changes implement this process.

The new paragraph e states:

A RICT must be calculated using the following PRA and non-PRA approaches approved by the NRC: [list specific PRA and non-PRA approaches used for fire and seismic analysis (e.g., Fire PRA and Seismic Margins Analysis)]. Changes to these PRA and non-PRA approaches require prior NRC approval.

The industry and NRC agree that NRC prior approval is needed for a change to the fire and seismic approaches reviewed by the NRC as part of their approval of the licensee's adoption of TSTF-505. For example, if a licensee used a Seismic Margins Analysis (SMA) to justify adoption of TSTF-505 and the licensee wishes to replace the SMA with a seismic PRA model, the seismic PRA model must be reviewed and approved by the NRC for use in the RICT calculations.

The new Paragraph f states:

The PRA maintenance and upgrade process for the PRA models used in the RICT program shall follow Regulatory Guide 1.200, Revision 3, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities."

This sentence recognizes that Regulatory Guide 1.200, Revision 3, provides an appropriate mechanism for evaluating maintenance and upgrade of a licensee's PRA.

The new paragraph g states:

A report shall be submitted in accordance with Specification 5.6.[8] following each PRA upgrade and associated peer review involving a newly developed PRA method that has not been previously reported to the NRC for a RICT program.

Paragraph g requires submittal of a report to the NRC following a PRA upgrade and associated peer review that includes newly developed PRA methods. This notifies the NRC of the use of newly developed methods in the RICT Program and provides an opportunity for the NRC to inspect the change. Methods that have been previously reported to the NRC for use in a RICT Program need not be reported as the NRC has had the opportunity to inspect the use of those methods.

The PRA Upgrade Report in TS Section 5.6 states:

A report shall be submitted following each PRA upgrade involving a newly developed PRA method that has not been previously reported to the NRC for a RICT program and the associated peer review in accordance with Specification 5.5.[21]. The report shall describe the scope of the upgrade, including (1) the PRA models upgraded and newly developed methods used, (2) a list of the peer review and finding closure reports available to the NRC for oversight and inspection activities, (3) any open findings from the peer-review of implementation of the newly developed method, and (4) changes to key assumptions related to the newly developed method or its implementation.

The report is only required to be submitted following a PRA upgrade involving newly developed PRA methods that have not been previously reported to the NRC. PRA upgrades that do not involve newly developed methods follow the process described in the ASME/ANS PRA Standard and companion document as endorsed by Regulatory Guide 1.200.

There is no specific time frame to submit report, except that it is not required until after the peer review of the PRA upgrade is completed.

The report describes the upgrade including the PRA models that are upgraded and the newly development methods that were incorporated. The report also includes a list of documents available for NRC inspection at the licensee site, such as the peer review report and finding closure reports. If there are any open findings from the peer review of the implementation of the newly developed method, those are to be described. Further, any key assumptions related to the newly developed method or its implementation are described in the report.

4. REGULATORY EVALUATION

The regulatory evaluation, regulatory analysis, No Significant Hazards Consideration Analysis, and Environmental Considerations in TSTF-505, Revision 2, are not affected by incorporation of the variation described in this traveler.

5. REFERENCES

None.

Recommended Variation Discussion for TSTF-505, Revision 2, Model Application

Paragraph e of the Risk Informed Completion Time Program in TSTF-505, Revision 2, is replaced with a new paragraph e and new paragraphs f and g, and the addition of a new report, "PRA Upgrade Report," in Section 5.6 of the Technical Specifications (TS).

- e. A RICT must be calculated using the following PRA and non-PRA approaches approved by the NRC: [list specific PRA and non-PRA approaches used for fire and seismic analysis (e.g., Fire PRA and Seismic Margins Analysis)]. Changes to these PRA and non-PRA approaches require prior NRC approval.
- f. The PRA maintenance and upgrade process for the PRA models used in the RICT program shall follow Regulatory Guide 1.200, Revision 3, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities."
- g. A report shall be submitted in accordance with Specification 5.6.8 following each PRA upgrade and associated peer review involving a newly developed PRA method that has not been previously reported to the NRC for a RICT program.]

5.6.[8] Probabilistic Risk Assessment (PRA) Newly Developed Method Upgrade Report

A report shall be submitted following each PRA upgrade involving a newly developed PRA method that has not been previously reported to the NRC for a RICT program and the associated peer review in accordance with Specification 5.5.18. The report shall describe the scope of the upgrade, including (1) the PRA models upgraded and newly developed methods used, (2) a list of the peer review and finding closure reports available to the NRC for oversight and inspection activities, (3) any open findings from the peer-review of implementation of the newly developed method, and (4) changes to key assumptions related to the newly developed method or its implementation.

These revised requirements were developed by the industry and the NRC to provide a regulatory framework that permits licensees to perform PRA upgrades and to use newly developed methods that affect the RICT Program with appropriate controls and oversight by the NRC.

The industry and NRC agree that NRC prior approval is needed for a change to the fire and seismic approaches reviewed by the NRC as part of their approval of the licensee's adoption of TSTF-505. Other PRA model changes may be made using the referenced controls.

Paragraph f and the PRA Upgrade Report require submittal of a report to the NRC following a PRA upgrade and associated peer review that includes newly developed PRA methods. This notifies the NRC of the use of newly developed methods in the RICT Program and provides an opportunity for the NRC to inspect the change.

Technical Specifications and Bases Markup