

RISK MANAGEMENT TECHNICAL SPECIFICATIONS  
INITIATIVE 4b  
RISK-INFORMED COMPLETION TIMES

CORNERSTONE: MITIGATING SYSTEMS

APPLICABILITY: This Temporary Instruction (TI) applies to South Texas Project only.

2515/170-01 OBJECTIVE

The objective of this TI is to support the review of licensees' implementation of the risk management technical specification (RMTS) Initiative 4b, described in the RMTS Guidelines (NEI 06-09), for determining risk-informed completion times (RICT), also known as allowable outage times (AOTs). As an ancillary benefit, this TI promotes information gathering to help the Nuclear Regulatory Commission (NRC) staff identify and shape possible future regulatory positions, generic communications, and rulemaking.

2515/170-02 BACKGROUND

Consistent with the Commission's policy statements on technical specifications (TS) and the use of probabilistic risk assessment (PRA), the staff and the industry are developing risk-informed improvements to TS. These improvements are intended to maintain and/or improve safety while reducing unnecessary burden, and to bring TS into congruence with the Commission's other risk-informed regulatory requirements, in particular risk management requirements of 10 CFR 50.65(a)(4). The term "risk management technical specifications (RMTS)" is used to emphasize the goal of constructing TS that reinforce the pro-active management of the total risk presented by the plant configuration and actions that may be needed to respond to planned or emergent conditions.

TS have taken advantage of risk technology as experience and capability have increased. Since the mid-1980's, the NRC has been reviewing and granting improvements to TS that are based, at least in part, on PRA insights. In its final policy statement on TS improvements of July 22, 1993, the Commission stated that it expects that licensees will utilize any plant specific PRA or risk survey in preparing their TS related submittals. The Commission reiterated this point when it issued the revision to 10 CFR 50.36, "Technical

Specifications,” in July 1995. In August 1995, the NRC adopted a final policy statement on the use of PRA methods in nuclear regulatory activities that encourage greater use of PRA to improve safety decision making and regulatory efficiency. Since that time, the industry and the NRC have been pursuing increased use of PRA in developing improvements to TS. RMTS Initiative 4b is such an improvement.

## 2515/170-03 INSPECTION REQUIREMENTS

### 03.01 General

The inspection prescribed by this TI is required to be completed and all findings resolved to the satisfaction of the NRC staff within 2 years after implementation or when a question arises over the licensee’s implementation of the RICT technical specification modification in accordance with NEI 06-09. To complete this TI the licensee must have exercised the process of extending a Technical Specification (TS) completion time by either, 1) preplanning and approving an activity which requires a completion time extension, or 2) emergent conditions require exercising a completion time extension.

The inspectors will verify that the licensee has effectively implemented an adequate process, integrated with a comprehensive configuration risk management program to support the accurate computation of risk-informed TS completion times, taking all relevant factors into account. In particular, when TS limiting conditions for operation (LCOs) are not met (See RIS 2005-20, and IMC 9900 Guidance on Operability Determinations and Degraded and Non-Conforming Conditions) and the associated conventional TS CTs or AOTs cannot be met, licensees are expected to take the specified Required Action OR manage the additional plant risk with the objective of extending the CT or AOT past the original CT while maintaining it within the guidelines set forth in the Risk Management Guidance Document, NEI 06-09, dated November 2006.

Current TS contain structures, systems, or components (SSCs) with specific allowed outage times, known as TS completion times (CTs). These times are in effect when the requirements of an LCO are not met and the unit is in the applicable Mode of Operation for the associated SSC (e.g., if the diesel generator is inoperable with the unit in Mode 1, restore to operable within 7 days; otherwise, be in Mode 3 within 6 hours). Current TS address systems independently and do not generally provide actions for the combined risk impact due to multiple systems being out of service concurrently. The maintenance rule configuration risk assessment requirement was added to address this consideration, but does not obviate compliance with current TS requirements. These current TS requirements may present inconsistencies with the maintenance rule requirements, and may require plant shutdown, or other actions, that are not the most risk-appropriate actions given the specific plant configuration. The overall objective of this initiative is to modify the TS, on a case-by-case basis, to reflect a configuration risk management approach that is more consistent with the maintenance rule 50.65(a)(4) approach. The proposal involves a combination of the current TS CTs, a quantified 50.65(a)(4) based risk assessment to determine CT extension feasibility, and CT backstop limits. The CT backstop limits ensure that low risk safety functions are not permitted to be inoperable for an excessive period of time. This initiative would permit, contingent upon the results of a plant configuration risk assessment, an extension of the existing CT within an LCO using a quantitative

implementation of 50.65(a)(4). During the time the plant is in the CT extension the configuration risk must be continuously monitored and re-evaluated as changes in configuration/risk occur. Licensees who undertake to use RICTs must provide the means and staff for their prompt and accurate calculation. Where on watch operators are expected to get involved with RICT calculations, the means to do so should be automated to the extent that there is minimal or virtually no impact on the operators ability to operate the plant safely. On watch operators should have the ability to promptly evaluate changes in plant risk as risk significant equipment becomes inoperable or operable using on-line risk management tools.

## 2515/170-04            GUIDANCE

### 04.01    General.

The requirements for implementing RICTs are provided in NEI 06-09, Revision 0. These requirements shall be incorporated in the site specific procedures and are only applicable in Modes 1 and 2. Some portions of this Temporary Instruction may not be applicable depending upon actual plant circumstances (e.g., no additional risk significant equipment became unavailable while in an extended completion time which would have required a revised RICT). Portions which could not be completed should be documented in the report details so further inspection can be accomplished at a later date, if required. Section 04.05 may require additional support from an SRA at the discretion of the inspection lead (Senior Resident Inspector).

### 04.02    Configuration Risk Management and Application of TS

- a. Review the licensee's process for extending a TS completion time past the front stop CT. Verify that the appropriate equipment configuration was evaluated and appropriate compensatory risk management actions were taken in a prompt manner. Verify the risk calculation was performed prior to exceeding the front stop CT. Verify that a revised RICT was calculated if additional risk significant equipment subsequently became unavailable once the front stop CT had been exceeded. Additionally, verify the associated time clock had remained in effect until the applicability of the LCO was exited.
- b. Perform a review of the RICT calculation with respect to PRA Functionality. Refer to Section 2.3.1.11 of NEI 06-09 for PRA Functionality Assessment Guidance.

### 04.03    Documentation Requirements

- a. Verify station procedures accurately reflect the documentation requirements specified in Section 2.3.2 of NEI 06-09. Review the associated documentation for a specific instance where the RICT was extended past a front stop CT. This documentation should include, as a minimum, operator logs, engineering assessments, condition reports, functionality assessments and work management tools. Additionally, review any risk management actions that were implemented. Review Section 2.3.2.6 of NEI 06-09 for further documentation requirements.

- b. Review the accumulated annual risk above the zero maintenance baseline when equipment is out of service beyond the front stop CT as required every refueling cycle.

#### 04.04 Training

- a. Verify that required training was administered to the following personnel, as a minimum: licensed operators, work control personnel, PRA personnel, and station management. The required training should cover the areas listed in Section 2.3.3 of NEI 06-09 and should be commensurate with their respective responsibilities. Select an instance where a RICT was extended past the front stop CT OR is planned to be extended past the front stop CT and verify personnel involved with the approval of the condition received appropriate training.

#### 04.05 PRA Models and Risk Management Tools

**NOTE:** The following inspection guidance need not duplicate the PRA audit that was performed to support issuance of the license amendment. Review the plant specific audit to determine if there were any deficiencies or follow-up items that are related to the steps below. Any portions of the following steps may be repeated at the discretion of the lead inspector to support verification that the deficiencies or follow-up items were adequately dispositioned.

- a. Verify that the PRA and Configuration Risk Management tool/monitor are accurately depicting plant configuration risk. This review shall include the licensee's PRA and CRM tool/monitor updates to reflect plant modification since the completion of the last PRA update. The review shall include NRC inspections of PRA quality (Regulatory Guide 1.200) and must verify that the PRA and CRM tool/monitor continues to have the scope and capabilities needed for the purposes to which it is being applied (e.g., SSCs modeled, initiating events, plant conditions and transitions, external events, etc.). Then PRA uncertainties must be addressed. Finally, the PRA review must assess maintenance of the PRA to reflect design and/or procedural changes and significant, persistent changes in SSC reliability or failure rates (i.e., updating values assumed in fault-tree analysis). Refer to Section 4 of NEI 06-09 for detailed Risk Management Tool Attributes.
- b. Review the licensee's risk assessment (RA) processes (See IP 7111.13 for guidance). Some RA tools or processes use pre-computed risk values directly from the PRA. In these cases, because the PRA has already been reviewed, the RA process review need only verify that the process or tool can readily and accurately access the required PRA information and also accurately compute the RICT when an ICDP limit is programmed in. For those licensee RA processes that involve separate RA tools (e.g., so-called "on-line" risk monitors) that are derived from the plant's PRA, the review must verify that (1) there is adequate fidelity to the PRA, including no over-simplification (e.g., excessive cutset truncation), (2) that PRA fidelity is maintained, and (3) that the RA tool can accurately compute the RICT taking all relevant factors into account, including, but not limited to, plant configuration (for whatever reasons), mode of operation and inter-modal transition, maintenance and other activities that may affect initiating event frequencies,

external events (including fire, internal flooding, grid instability and other adverse environmental conditions), and containment integrity. Refer to Section 4 of NEI 06-09 for detailed Risk Management Tool Attributes.

- c. Verify that the application tools and software are being maintained by a quality program. Review section 2.3.5.8 of NEI 06-09 for the quality program criteria. This review includes a verification that issues related to the RICT program are being identified and entered into the corrective actions program.

#### 04.06 Disposition of Findings

- a. In general, findings of performance deficiencies with respect to 10 CFR 50.65(a)(4) will be handled in accordance with existing guidance (i.e., IP 71111.13, IMC 0612, Appendices B, E, and F, and IMC 0609, Appendix K). However, in those cases in which an inadequate RA is identified (i.e., underestimate of total overall plant risk and/or the increase in risk due to the TS SSC outage), and the inadequate RA leads the licensee to exceed the conventional TS AOT/CT and also what would have been the RICT, had it been correctly calculated, then the licensee must declare the TS LCO not met and promptly commence to comply with the TS action statement(s). The licensee may/should also take additional risk management actions (RMAs) in parallel to limit further risk increases, and also, if practicable, to reduce risk at least to the point at which the RICT may remain valid. If the front stop CT has expired and that portion of the RICT that is valid has expired before the inadequate RA is discovered, then the licensee may be found to be in violation of the TS. In those instances, the TS violation will be handled as other TS violations are handled.

#### 2515/170-05 REPORTING REQUIREMENTS

The results of this Temporary Instruction should be included in Section 4OA4 of an integrated inspection report and should be forwarded to NRR/DIRS/ITSB, Attention: Timothy Kolb via e-mail at [tck@nrc.gov](mailto:tck@nrc.gov). Mr. Kolb can also be reached by telephone at (301) 415-1428.

#### 2515/170-06 COMPLETION SCHEDULE

This TI should be completed within 2 years after the licensee has implemented the Risk Managed Technical Specifications license amendment.

#### 2515/170-07 EXPIRATION

This TI will expire 11/30/2009.

## 2515/170-08 CONTACT

For questions regarding the performance of this TI and emergent issues, contact: Timothy Kolb at 301-415-1428 or [tck@nrc.gov](mailto:tck@nrc.gov); or Timothy Kobetz at 301-425-5170 or [tjk1@nrc.gov](mailto:tjk1@nrc.gov); or Andrew Howe at 301-415-3078, or [ajh1@nrc.gov](mailto:ajh1@nrc.gov).

## 2515/170-09 STATISTICAL DATA REPORTING

All direct inspection effort expended on this TI is to be charged to 2515/170 for reporting by the Regulatory Information Tracking System (RITS) with an IPE code of TI. Indirect inspection effort for preparation is charged to 2515/170 with an IPE code of TIP. Indirect inspection effort for documentation is charged to 2515/170 with an IPE code of TID.

## 2515/170-10 ORIGINATING ORGANIZATION INFORMATION

### 10.01 Organizational Responsibility

This TI was prepared by the Technical Specifications Branch (NRR/DIRS/ITSB), and issued by the Inspection Programs Branch (NRR/DIPM/IIPB).

### 10.02 Resource Estimate

The estimated direct inspection effort to perform this TI is estimated to be 20 to 50 hours per unit. This TI should be performed by a Resident Inspector with assistance from Regional SRA/PRA personnel.

### 10.03 Training

No formal training is proposed for the performance of this TI. The inspectors should be familiar with the information provided in Section 10.04, References.

### 10.04 References

IP 71111.13, Maintenance Risk Assessments and Emergent Work Control.

RG 1.174, An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant Specific Changes to the Licensing Basis.

RG 1.177, An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications.

RG 1.200, An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk Informed Activities.

EPRI 1009474, Dec 2004 RMTS Guidelines.

NEI 06-09, Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines, Industry Guidance Document (ML063390639).

Risk Assessment Standardization Project NUREG 1896.  
Audit Report regarding South Texas Project, Units 1 and 2, Risk-managed Technical Specifications Application (ML062860170).

END

Attachment 1  
Revision History Page

Commitment Tracking Number	Issue Date	Description of Change	Training Needed	Comment Resolution Accession Number
N/A	11/29/07 CN 07-037	This TI was created to provide inspection guidance related to Risk Informed Completion Time Change implementation.	N/A	N/A