

C.I.16 Technical Specifications

The U.S. Nuclear Regulatory Commission (NRC) sets forth its regulations specific to technical specifications (TS) in Title 10, Section 50.36, “Technical Specifications,” of the *Code of Federal Regulations* (10 CFR 50.36) and 10 CFR 50.36a, “Technical Specifications on Effluents from Nuclear Power Reactors.” In accordance with 10 CFR 52.83, “Applicability of Part 50 Provisions,” these regulations also apply to holders of combined licenses (COLs). The “NRC Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors” found in Volume 58 of the *Federal Register* (FR), page 3912 (58 FR 39132), dated July 22, 1993, contains additional information regarding the NRC’s policies on TS. The final policy statement and the statement of considerations for 10 CFR 50.36 (60 FR 36953), dated July 19, 1995, also discuss the use of probabilistic approaches to improve TS.

Neither 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” nor 10 CFR Part 52, “Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants,” specifies detail in the content or format for the TS. In 1992, the NRC issued Standard Technical Specifications (STS) to clarify the content and format of requirements necessary to ensure safe operation of nuclear power plants in accordance with 10 CFR 50.36. The following five NUREGs contain the STS that differ according to the design of the nuclear steam supply system (NSSS). For each NUREG, Volume 1 contains the specifications, and Volume 2 contains the associated TS bases. The STS include bases for safety limits, limiting safety system settings, limiting conditions for operation (LCOs), and associated action and surveillance requirements.

- NUREG-1430, “Standard Technical Specifications Babcock and Wilcox Plants”
- NUREG-1431, “Standard Technical Specifications Westinghouse Plants”
- NUREG-1432, “Standard Technical Specifications Combustion Engineering Plants”
- NUREG-1433, “Standard Technical Specifications General Electric Plants, BWR/4”
- NUREG-1434, “Standard Technical Specifications General Electric Plants, BWR/6”

The format and content of the TS and bases for a COL referencing a certified design must be based on the generic TS and bases for one of the approved certified designs listed as appendices to 10 CFR Part 52 (e.g., Appendix A, “Design Certification Rule for the U.S. Advanced Boiling Water Reactor,” and Appendix D, “Design Certification Rule for the AP1000 Design”). Generic TS and associated bases developed and approved for a certified design contain general requirements on use and application as well as conventions regarding formatting and organization that were adapted from the most recent version of the STS appropriate to the NSSS design at the time of certification. The format and content of the TS and bases for a COL application not referencing a certified design should be based on the most recent version of the STS appropriate to the NSSS design.

In accordance with 10 CFR 50.36(a), each operating license that the Commission issues for a nuclear power plant must contain TS that set forth all limits, operating conditions, and other requirements that the NRC imposes on operation of the facility to protect the health and safety of the public (among other purposes). Consequently, each applicant for a COL for a nuclear power plant must submit the proposed TS for the facility.

Toward that end, Chapter 16 of the COL application and the associated final safety analysis report (FSAR) should include, explicitly or by reference, the proposed plant-specific TS and bases. In so doing, the applicant should ensure that the proposed plant-specific TS meet the requirements of 10 CFR 50.36 and 10 CFR 50.36a for operating reactors. The plant-specific TS and bases should be consistent with the content and format of the “referenced TS and bases,” either the approved generic TS and bases for the referenced certified plant design or the most recent version of the STS appropriate for the

selected NSSS design. The proposed plant-specific TS and bases may include appropriate plant-specific deviations from the referenced TS and bases when warranted. For applications referencing a certified design, the applicant should justify these deviations in a separately submitted exemption request. Applicant-supplied information to fulfill COL information items for a certified design or, as discussed in Section C.IV.3.3.3, to replace information bracketed in the generic TS and bases, is not considered a deviation from the generic TS and bases and does not require an exemption; however, the application should include the justification for such information. Applications referencing the STS should include justification for any deviation as well as justification for information to replace information bracketed in the STS.

The COL application must include information required for plant-specific adoption of topical reports listed in the referenced TS bases. If the COL application references a certified design, a separately submitted exemption request must address any deviation from the referenced topical reports or the required information. If referencing the STS, the COL application must include justification for each such deviation.

The NRC published major revisions to the STS in 1995 (Revision 1), 2001 (Revision 2), and 2004 (Revision 3). The STS continue to evolve to incorporate improvements identified from experience in their use. The process for initiating changes to the STS involves the industry-sponsored Technical Specifications Task Force (TSTF) submitting STS change proposals (called TSTF travelers) to the NRC for review, approval, and subsequent incorporation into the next revision of the STS. Once the NRC staff approves a TSTF traveler, the associated changes are considered to be a part of the STS and are available for adoption by nuclear plant licensees and license applicants. Consistent with the Commission's policy statement on TS and the use of probabilistic risk assessment (PRA), the NRC and the industry continue to develop more fundamental risk-informed improvements to the STS.

For a COL application that references a certified design, the plant-specific TS and bases may deviate from the certified generic TS and bases to incorporate approved TSTF travelers adapted to the certified design. The COL applicant may propose such deviations concurrently with the COL application through a separately submitted exemption request, such as, in accordance with Section VIII.C.4 of Appendix A to 10 CFR Part 52. The exemption request must include justification for each deviation from the certified generic TS and bases.

For a COL application that does not reference a certified design, the plant-specific TS and bases may deviate from the STS, which includes all approved travelers. The COL application must include justification for each deviation from the STS.

Whether referencing a certified design or not, when a TSTF traveler is approved during the NRC review of the COL application, the applicant may elect to add the traveler to its application. After the COL is issued, the COL licensee may adopt approved TSTF travelers through the license amendment process in accordance with 10 CFR 50.90 and the TS bases control program set forth in the administrative controls section of the plant-specific TS.

As required by 10 CFR 50.36(a), the COL application shall include a summary statement of the bases or reasons for the proposed plant-specific specifications other than those contained in the TS administrative controls section. Consistent with the STS, bases are only required for TS sections related to safety limits, limiting safety system settings, LCOs, and any associated action and surveillance requirements. No bases are required for the TS sections related to TS usage rules (definitions, logical connectors, required action completion times, and surveillance requirement frequencies), design features, and administrative controls. However, the bases are not a part of the TS.

Each TS provided in the COL application should be as complete as possible and should include the relevant numerical values, graphs, tables, and other data. The bases for each TS provided in the COL application should reference the applicable FSAR sections that provide clarifying details in support of the bases.

The proposed TS bases should provide justification that the specified variables, conditions, or other limitations are those that 10 CFR 50.36(c)(2)(ii) requires to be the subject of LCOs. The applicant should give special attention to those TS that are influenced by the design in order to minimize subsequent facility modifications or license changes to ensure the final plant-specific TS reflect the as-built plant. In particular, the TS bases should contain sufficient information, consistent with the FSAR, to confirm the design suitability of features and specifications that affect the type, capacity, and number of LCO-required systems as well as the capability for performance of surveillance activities involving those LCO-required systems.

The TS are part of the license, and the applicant should treat them as a separate document from the FSAR for the purposes of updating, distribution, and control. Similarly, the applicant also should treat the TS bases as a separate document from both the FSAR and the TS for the purposes of updating, distribution, and control.

Manuals, reports, and program documents identified in the administrative controls section of the TS or applicable governing regulations are not considered to be part of the FSAR, TS, or TS bases. The applicant should prepare these documents such as the offsite dose calculation manual, core operating limits report, and the Reactor Coolant System Pressure and Temperature Limits Report, and submit them to the NRC as required by the associated TS administrative control requirements and any applicable governing regulations. Applicants may, but are not required to, submit such documents with the COL application.

The COL application should contain plant-specific TS that are derived from the analyses and evaluations included in the FSAR. The plant-specific TS should include the following categories of information as required by 10 CFR 50.36 and 10 CFR 50.36a for operating reactors:

- safety limits
- limiting safety system settings
- LCOs (and associated remedial actions, if any)
- surveillance requirements
- design features
- administrative controls (including requirements on effluents containing radioactive material)

The COL application should include LCOs for each item that meets one or more of the following criteria set forth in 10 CFR 50.36(c)(2)(ii):

- Criterion 1—installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary
- Criterion 2—a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier
- Criterion 3—a structure, system, or component that is part of the primary success path and that functions or actuates to mitigate a design-basis accident or transient analysis that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier

- Criterion 4—a structure, system, or component that operating experience or PRA has shown to be significant to public health and safety

The COL application should describe the applicant’s processes and governing procedures that ensure that (1) the proposed TS include an LCO for each structure, system, or component and parameter meeting one or more of the four criteria set forth in 10 CFR 50.36(c)(2)(ii) and (2) PRA is appropriately included in the development of, and revisions to, the TS, consistent with existing NRC rules and regulations.

Regulatory Guide 1.177, “An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications,” contains guidance for proposing TS changes, such as relaxations of required action completion times and surveillance requirement frequencies. If any proposed TS requirements are based on risk insights or such risk insights are used to support relaxation of a referenced generic or standard TS requirement, the COL application should discuss the following:

- the use of the five key principles of the risk-informed decisionmaking process (as specified in Section B, “Discussion,” of Regulatory Guide 1.177) to assess the nature and safety impact of such TS requirements and the controls used to prepare this risk information
- the appropriateness, for the NRC’s decision regarding the proposed risk-informed TS requirements, of the selected approaches and methods (whether quantitative or qualitative, traditional or probabilistic), data, and criteria for considering risk
- how the controls used to ensure that proposed risk-informed TS requirements meet current regulations, orders, and license conditions are consistent with the principles of risk-informed regulation
- how the regulations regarding application for, and issuance of, license amendments, as set forth in 10 CFR 50.90 through 10 CFR 50.92, “Issuance of Amendment,” are met
- the use of controls to ensure that any discrepancies between the proposed risk-informed TS requirements and the applicant or licensee commitments are identified and considered in the evaluation
- the use of the three-tiered approach in accordance with Regulatory Guide 1.177 to evaluate the risk associated with the proposed risk-informed TS requirements, in keeping with the fundamental principle that the proposed TS requirements are consistent with the defense-in-depth philosophy, thereby ensuring that the proposed risk-informed TS requirements will not significantly impact defense in depth

References

- (1) U.S. Nuclear Regulatory Commission, “Use of Probabilistic Risk Assessment Methods in Nuclear Activities: Final Policy Statement,” *Federal Register*, 60 FR 42622, August 16, 1995.
- (2) SECY-97-234, “Quarterly Status Update for the Probabilistic Risk Assessment Implementation Plan,” October 14, 1997.
- (3) NUREG-1430, “Standard Technical Specifications Babcock and Wilcox Plants,” latest revision.
- (4) NUREG-1431, “Standard Technical Specifications Westinghouse Plants,” latest revision.
- (5) NUREG-1432, “Standard Technical Specifications Combustion Engineering Plants,” latest revision.

- (6) NUREG-1433, "Standard Technical Specifications General Electric Plants, BWRI/4," latest revision.
- (7) NUREG-1434, "Standard Technical Specifications General Electric Plants, BWR/6," latest revision.
- (8) Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," August 1998.
- (9) U.S. Nuclear Regulatory Commission, "Statement of Considerations: Technical Specifications for Facility Licensees; Safety Analyses Reports," *Federal Register*, 33 FR 18612, December 17, 1968.
- (10) U.S. Nuclear Regulatory Commission, "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors," *Federal Register*, 58 FR 39132, July 22, 1993.
- (11) U.S. Nuclear Regulatory Commission, "10 CFR 50.36, 'Technical Specifications,'" *Federal Register*, 60 FR 36953, July 19, 1995.

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