

U.S. NUCLEAR REGULATORY COMMISSION



DESIGN-SPECIFIC REVIEW STANDARD FOR NuScale SMR DESIGN

16.0 TECHNICAL SPECIFICATIONS

REVIEW RESPONSIBILITIES

Primary - Organization responsible for the review of technical specifications

Secondary - None

I. AREAS OF REVIEW

Title 10 of the *Code of Federal Regulations* (CFR), Section 50.36 requires that each operating license (OL) issued by the Commission contain technical specifications (TS) that set forth the limits, operating conditions, and other requirements imposed upon facility operation for the protection of public health and safety. As a part of the regulatory standardization effort, the U.S. Nuclear Regulatory Commission (NRC) staff, the Pressurized Water Reactor (PWR) Owners Group, and the Boiling Water Reactor (BWR) Owners Group have prepared standard technical specifications (STS) that are representative of the pressurized and boiling water reactor designs of currently operating licensed reactor facilities. These STS are published by the NRC as five NUREGs; each NUREG is tailored to a particular light-water reactor nuclear steam supply system (NSSS) design and the design of the associated balance-of-plant equipment systems. The STS reflect PWR NSSS designs by Babcock and Wilcox (NUREG-1430), Westinghouse (NUREG-1431), and Combustion Engineering (NUREG-1432) and the BWR4 (NUREG-1433) and BWR6 (NUREG-1434) BWR NSSS designs by General Electric.

The STS NUREGs are subject to change, and the latest versions are available from the NRC [website](http://www.nrc.gov/reactors/operating/licensing/techspecs/current-approved-sts.html) at <http://www.nrc.gov/reactors/operating/licensing/techspecs/current-approved-sts.html>.

STS changes are typically made using a formal change process. The nuclear electrical power generation industry participates in this process through the Technical Specifications Task Force (TSTF), a joint activity of the PWR and BWR Owners Groups. The TSTF coordinates with the NRC to implement the change process (also referred to as the TSTF traveler process), which is designed to ensure incorporation of a change into the STS only after the NRC staff and the TSTF agree to the change. However, the NRC staff can change the STS without industry concurrence when warranted.

Each STS NUREG is maintained current and updated by the TSTF traveler process as described on the NRC website to reflect the following:

- Modifications to TS-required NSSS-related SSCs or balance-of-plant equipment systems.
- Revisions to regulatory requirements.
- Experience obtained by the NRC staff in reviewing proposed TS changes from licensees.

- Operational experience obtained from licensees and reviewers responsible for assessment of events at operating plants, development of generic communications, and the operating plant oversight process (inspection program).

10 CFR 52.47(a)(11) and 52.79(a)(30) provide that a design certification (DC) applicant and a combined license (COL) applicant, respectively, shall propose TS prepared in accordance with 10 CFR 50.36 and 50.36a. Accordingly, a DC applicant for an iPWR design proposes generic TS (GTS) in Chapter 16 of the Design Control Document (DCD) as part of the DC application; and a COL applicant proposes plant-specific TS, which consist of the GTS and site-specific TS, as part of the COL application that references an iPWR DC rule. A COL applicant may also propose plant-specific TS as part of a COL application that does not reference a DC rule.

1. Design Certification Application Review Areas

The GTS are derived from and must be consistent with the proposed iPWR NSSS design and the associated safety and probabilistic risk analyses. The DC applicant evaluates the proposed iPWR design and the associated analyses against the four criteria of 10 CFR 50.36(c)(2)(ii) to ensure that the proposed GTS contain limiting conditions for operation (LCOs) for all structures, systems, and components (SSCs) and parameters that satisfy one or more of the criteria. The DC applicant should present the results of this evaluation in DCD Chapter 16 as part of the DC application.

The specific areas of an iPWR DC application review are as follows:

- A. The proposed GTS are reviewed for whether the breadth, scope, detail, format and content are consistent with that of the STS, which are based on currently operating PWR designs, and the approved GTS in the DCD for certified PWR designs.

The writer's guide for plant-specific improved TS, TSTF-GG-05-01, June 2005 (Reference 9), was followed in preparing the latest revision to the STS NUREGs and should be used to achieve and maintain consistency among the TS requirements for different reactor designs.

The TS requirements for an SSC depend on the properties and functions of the SSC. For example, the repair completion time for a system component or a system train may depend on the significance of the system's expected role or function during postulated accident or transient scenarios. Insight for defining TS requirements for a proposed iPWR design can be obtained from TS requirements defined for NSSS designs previously reviewed and approved by the NRC. Such insight can result from considering the properties, functions, and significance of SSCs in the proposed iPWR design and comparing them to the properties, functions, and significance of similar or functionally equivalent SSCs in previously approved NSSS designs. Insight for defining TS requirements can also be obtained from the STS for the operating reactors and the GTS for approved certified PWR NSSS designs, and by considering similarities and differences among the SSCs and TS requirements of these designs. STS NUREGs are being developed for approved certified NSSS designs that have been referenced by COL applicants. When available these NUREGs can provide insight for defining iPWR TS requirements as well.

Parameters and SSCs with unique considerations, such as an unusual design or application, may need TS requirements that depart from STS or GTS

requirements previously approved by the NRC for similar or functionally equivalent SSCs or parameters in other NSSS designs. Careful attention should be paid to defining TS requirements for such SSCs and parameters.

- B. The proposed GTS are reviewed for whether they are consistent with 10 CFR 50.36(c)(1) by providing appropriate safety limits related to the protection of the fuel cladding and the reactor coolant system pressure boundary fission product barriers.
- C. The proposed GTS are reviewed for whether they are consistent with 10 CFR 50.36(c)(1), (c)(2), and (c)(3), by specifying the following for each applicable SSC and parameter:
 - i. An LCO with appropriate conditions of applicability within which it must be met, and the associated limiting safety system settings for instrumentation systems;
 - ii. Remedial actions that must be performed when an LCO is not met and that are appropriate to the safety significance of the specified plant condition; and
 - iii. Surveillance requirements (SRs) to verify the capability of the SSC to perform its specified safety function, or that the parameter is within specified limits. SRs should have test intervals consistent with both the reliability and availability assumed in the NSSS design's probabilistic risk assessment (PRA). The choice of an SR frequency should also take into consideration past precedents, and the operating and test history for similar TS-required SSCs, and recommendations of the SSC's manufacturer.
- D. The proposed GTS are reviewed for whether they are consistent with 10 CFR 50.36(c)(4) by providing appropriate design requirements for site location, reactor core (fuel assembly design and control rod assembly design), and fuel storage (criticality, drainage, and capacity).
- E. The proposed GTS are reviewed for whether they are consistent with 10 CFR 50.36(c)(5) by providing appropriate administrative control specifications regarding responsibility (licensee staff positions responsible for unit operation), organization (licensee onsite and offsite organizations for unit operation and corporate management, respectively), unit staff qualifications, written procedures, programs and manuals, reporting requirements, and high radiation areas.
- F. The proposed GTS are reviewed for whether the approach for defining each proposed GTS requirement for an SSC is different from traditional approaches such as those used in STS for a similar or functionally equivalent SSC in other designs. The DC applicant is expected to have provided clear justifications and bases for such approaches in the DCD.

For a DC application that uses risk-informed decision making for defining TS requirements, the review will verify that the application addresses information needs identified in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP), Section 16.1,

“Risk-informed Decision Making: Technical Specifications,” Rev. 1, March 2007 (Reference 15).

- G. The guidance in SRP Section 16.1 provides insights for addressing changes with respect to a PRA baseline, which is that associated with the current design. RGs 1.174 and 1.177 can be used to assess the effect of a design change as well as technical specification completion times by way of sensitivity analyses. The proposed GTS and bases are reviewed for whether only site-specific information is bracketed. In general, site-specific information, numerical values and graphs necessary for plant operation may not be complete at the DC application stage. For example, at this stage, determination of some site-specific TS numerical values is pending future decisions by the COL applicant on selection and procurement of hardware after issuance of the DC rule. Such preliminary or placeholder site-specific information in the proposed GTS is enclosed in brackets. Such bracketed information is designated as “COL information” which must be finalized by each applicant for a COL referencing the DC rule. The review of information provided in this area is limited to whether the values reasonably agree with the expected operational capability of the plant, as stated in the DCD. Accordingly, the DC application review is conducted with partial information and the level of review is commensurate with the information provided in the DCD.

The GTS and bases should not bracket information that is in actuality finalized and therefore “generic” and not subject to further site-specific verification or confirmation in order for it to be useable for plant operation.

For a DC application, the review will address the appropriateness of COL action items (referred to as COL license information in certain DCs) and DC requirements and restrictions (e.g., interface requirements and site parameters). A DC applicant is expected to provide guidance for completing a COL action item, when necessary conditions for completing the item are not obvious or self-evident. The guidance can take the form of a “Reviewer’s Note” (for use by COL applicant reviewers and NRC technical reviewers) either in the proposed GTS or GTS bases, or in the introductory Tier 2 information in DCD Chapter 16.

- H. If a proposed iPWR design includes passive safety systems, the proposed GTS are reviewed for whether TS LCOs or short-term availability controls for active nonsafety systems are specified based on the results of the regulatory treatment of nonsafety systems (RTNSS) evaluation in DCD Section 19.3.
- I. The bases for proposed GTS Sections 2 and 3 are reviewed for whether the level of detail, format and content are consistent with that of the STS bases, which are based on currently operating PWR designs, and the approved GTS bases in the DCDs for certified PWR designs. The bases are reviewed for consistency with the associated proposed TS requirements and related portions of the iPWR DCD.

2. Combined License Application Review Areas

COL applicants who reference a DC rule should propose plant-specific TS consisting of GTS, which are the TS requirements approved as a part of the design approval and certification, and site-specific TS requirements, which include information to complete COL action items denoted in the GTS by brackets and site-specific TS requirements which are

the subject of requests for exemption from the GTS. Site-specific TS requirements may also need to be proposed for the site-specific portions of the plant that are either partially or wholly outside the scope of the referenced design certification appendix to 10 CFR Part 52. A COL applicant incorporates the GTS and bases into the COL application by reference and may propose departures from the GTS and bases prior to issuance of the COL by requesting an exemption from the associated DC rule appendix to 10 CFR Part 52 in accordance with 10 CFR 52.7.

The GTS serve as interim STS for the certified NSSS design pending development of an associated STS NUREG. Although GTS are not included in the STS NUREG change process, a COL applicant who references a DC rule should develop plant-specific TS using the GTS as a starting point. A holder of a COL may propose changes to the plant-specific TS in accordance with 10 CFR 52.98 and 10 CFR 50.90 in order to adopt approved changes to the STS NUREGs when such changes apply. Therefore, such amendment requests are anticipated to occur for each plant licensed under 10 CFR Part 52.

COL applicants who do not reference a DC rule should propose plant-specific TS based on applicable parts of the current STS NUREGs and certified GTS, and the design of the proposed NSSS, including the design's safety analyses and the unit's PRA. Areas of review for a DC application (except for Item I.1.G above), therefore, also apply to the review of a COL application that is not based on a DC rule. For such a COL application, the applicant should present in the COL application the results of its review of the plant design and safety analysis against the LCO criteria of 10 CFR 50.36(c)(2)(ii).

An applicant for a COL under 10 CFR Part 52 should propose plant-specific TS in Section 16 of the FSAR, which contains the plant-specific DCD, as a part of the COL application. The proposed plant-specific TS should be based on the current STS NUREGs and any approved but not yet incorporated STS changes, or the GTS if referencing a certified plant design.

To support issuance of a COL under 10 CFR 52.97, the staff must approve the final version of TS, which were originally proposed in the FSAR or the generic DCD and subsequently completed as part of the COL application. The approved plant-specific TS reflect the final refinements in design, test results, and expected method of operation, and are issued with the COL. Compliance with the TS is a condition of the license.

The specific review areas for a COL application, whether or not it references an iPWR design certification rule, are the following:

- A. The proposed plant-specific TS are compared to the applicable reference TS (the current STS, the GTS, or both) to determine whether content and format are consistent with that of the reference TS.
- B. The proposed plant-specific TS are reviewed for whether the application states adequate technical justification for each departure from the reference TS. Special attention is given to TS provisions that depart from the reference TS to determine whether proposed differences are justified by uniqueness in plant design or other considerations so that 10 CFR 50.36 is met.

COL applicants wishing to adopt STS changes into the proposed plant-specific TS are responsible for fully describing and justifying in the COL application the

consequent departures from the GTS for the referenced certified design because DCD GTS are not included in the TSTF traveler process.

For a COL application that uses risk-informed decision making for defining TS requirements, the review will verify that the application addresses information needs identified in Standard Review Plan Section 16.1, "Risk-Informed Decision Making: Technical Specifications." (Reference 15)

The guidance in SRP Section 16.1 provides insights for addressing changes with respect to a PRA baseline, which is that associated with the current design. RGs 1.174 and 1.177 can be used to assess the effect of a design change as well as technical specification completion times by way of sensitivity analyses.

- C. The proposed plant-specific TS are reviewed for whether the site-specific information, which replaces or confirms the COL action item information enclosed in brackets in the GTS, is in conformance with the FSAR and is useable for unit operation.

The COL application review will verify that the plant-specific TS are complete. For COL applications referencing a certified plant design the review will verify that the COL applicant has provided site-specific information to resolve COL action items included in Chapter 16 of the referenced generic DCD. Regardless of whether the COL application references a certified plant design, the plant-specific TS issued with the COL must be complete and cannot contain COL action items or unresolved site-specific information. Additionally, for a COL application referencing a certified plant design, the COL applicant must address requirements and restrictions (e.g., interface requirements and site parameters) included in the referenced DC.

COL applicants referencing a certified plant design shall propose plant-specific TS containing all site-specific information that is necessary to ensure plant operation within its design basis. The COL applicant must confirm all preliminary information and provide all missing information that is denoted in the GTS by bracketed values, reviewer's notes, or any other placeholder. The plant-specific TS issued with the COL will be complete and will contain no COL action items for the COL holder to resolve (i.e., completing the plant-specific TS). The COL will contain no license condition on completing the plant-specific TS.

To comply with 10 CFR 52.79(a)(30), COL applicants must resolve all GTS COL action items before COL issuance. The COL applicant may propose to resolve each such item using one of the following three options, listed in order of preference:

- i. Provide a plant-specific value or plant-specific information.
- ii. Provide a value or information that bounds the plant-specific value or information, but by which the plant may be safely operated (i.e., a useable bounding value or useable bounding information).
- iii. Establish a plant-specific TS Section 5.5 or 5.6 administrative controls program or report.

Administrative controls TS as described in option (iii) should require (a) use of an NRC-reviewed and -approved methodology for determining the plant-specific

value, (b) the establishment of an associated document, outside the plant-specific TS, in which the relocated plant-specific value must be recorded and maintained, and (c) any other information or restrictions the NRC staff deems necessary and appropriate to satisfy 10 CFR 50.36. For example, some COL applicants have proposed an administrative controls technical specification for a setpoint control program to satisfy 10 CFR 50.36(c)(1)(ii)(A) in lieu of specifying explicit values for the limiting safety system settings in the plant-specific TS.

Options (ii) and (iii) should allow an applicant to provide the necessary information without relying on information that is impractical to obtain before the time of COL issuance (i.e., information such as design detail, equipment selection, as-built system configuration, and system test results).

- D. The bases for proposed plant-specific TS Sections 2 and 3 are reviewed for whether the level of detail, format and content are consistent with those of the STS bases, which are based on currently operating PWR designs, the approved GTS bases in the DCD for certified PWR designs, and if referencing an iPWR DC rule, the GTS bases. The bases are reviewed for consistency with the associated proposed plant-specific TS requirements and related portions of the FSAR, and whether all site-specific bracketed information is complete.

3. Review Interfaces

Other Design Specific Review Standard (DSRS) sections interface with this section as follows:

- A. The TS branch reviewer, with concurrence from applicable technical branch reviewers, determines the acceptability of GTS and bases proposed in an iPWR DC application, or plant-specific TS and bases proposed in a COL application. The TS branch reviewer and licensing PM coordinate supporting reviews by technical branch reviewers, utilizing the current work planning process as follows:
 - i. The technical branch reviewers determine, the validity of site-specific features, methods, and numerical values proposed by applicant.
 - ii. The TS branch reviewer, in coordination with the reviewer of nonsafety systems requiring regulatory treatment (RTNSS SSCs), which is addressed by Standard Review Plan (SRP) Section 19.3 (Reference 16), determines which RTNSS SSCs should be included in TS and which of these SSCs should be included in short term availability controls. In determining the SSCs which PRA has shown to be significant to public health and safety, the TS branch reviewer coordinates with technical branch reviewers responsible for DCD or FSAR Chapters 15 and 19 with specific attention to the risk significance of SSCs identified in accident analyses and PRA.
 - iii. The licensing PM integrates the TS review effort into the appropriate design certification process or COL licensing process and advises the TS branch reviewer of any TS-related matters found to be deficient during the design certification process or COL licensing process.
 - iv. The technical branch reviewers report the results of their evaluations as indicated in Subsection III of this DSRS section.

- B. Usually, TS reviews are done on a TS section basis by TS branch reviewers and technical reviewers from responsible technical branches. Technical branches have TS sections within their areas of technical review responsibility as listed in the following table. (Note that in coordinating this review, the licensing PM should use this table as guidance for preparing technical review assignments using the organizational structure in place at the time of the review.)

TS Section	Technical Areas
1.0 Use and Application	TS, instrumentation and control, core physics, pressure and temperature limits, accident analysis, PRA
2.0 Safety Limits (SLs)	TS, pressure and temperature limits, accident analysis, PRA, core physics
3.0 LCO Applicability	TS, PRA
3.0 SR Applicability	TS, PRA
3.1 Reactivity Control Systems	TS, core physics, reactor core design, accident analysis, PRA
3.2 Power Distribution Limits	TS, core physics, reactor core design, accident analysis, PRA
3.3 Instrumentation	TS, instrumentation and control (analog and digital), accident analysis, PRA
3.4 Reactor Coolant System (RCS)	TS, RCS design, mechanical, materials, chemical, RCS over-pressure protection, accident analysis, PRA
3.5 Emergency Core Cooling Systems (ECCS)	TS, mechanical, accident analysis, PRA
3.6 Containment Systems	TS, mechanical, chemical, accident analysis, PRA
3.7 Plant Systems	TS, mechanical, accident analysis, PRA, ventilation air filtration, heating and air conditioning, hydrology, ultimate heat sink (UHS)
3.8 Electrical Power Systems	TS, electrical, mechanical, chemical
3.9 Refueling Operations	TS, accident analysis, PRA, instrumentation, reactivity controls
4.0 Design Features	TS, fuel design, fuel storage

TS Section	Technical Areas
5.0 Administrative Controls	All technical areas including but not limited to TS, reactor core design, mechanical, electrical, quality assurance, radiological controls, core physics, accident analysis, instrumentation and control, ventilation filter testing, chemical, structural, health physics, accident radiological consequence analysis, PRA, human factors, pressure and temperature limits

- C. SRP Section 16.1 (Reference 15) provides guidance for reviewing the application of risk-informed decision making to TS. No DSRS corresponding to this SRP section was deemed necessary.

The guidance in SRP Section 16.1 provides insights for addressing changes with respect to a PRA baseline, which is that associated with the current design. RGs 1.174 and 1.177 can be used to assess the effect of a design change as well as technical specification completion times by way of sensitivity analyses.

Specific acceptance criteria and review procedures are contained in the DSRS sections pertaining to technical review areas listed above.

II. ACCEPTANCE CRITERIA

Requirements

Acceptance criteria are based on meeting the relevant requirements of the following Commission regulations that require applications to include proposed TS:

- 10 CFR 50.36
- 10 CFR 50.36a
- 10 CFR 52.47(a)(11)
- 10 CFR 52.79(a)(30)

DSRS Acceptance Criteria

Specific DSRS acceptance criteria acceptable to meet the relevant requirements of the NRC's regulations identified above are set forth below. The DSRS is not a substitute for the NRC's regulations, and compliance with it is not required. As an alternative, and as described in more detail below, an applicant may identify the differences between a DSRS section and the design features (DC and COL applications only), analytical techniques, and procedural measures proposed in an application and discuss how the proposed alternative provides an acceptable method of complying with the NRC regulations that underlie the DSRS acceptance criteria.

The STS developed for each of the operating light-water-reactor NSSSs and the associated balance-of-plant systems can provide guidance on many aspects related to TS requirements and the associated bases. The latest STS versions are available from the NRC [website](http://www.nrc.gov/reactors/operating/licensing/techspecs/current-approved-sts-html) at <http://www.nrc.gov/reactors/operating/licensing/techspecs/current-approved-sts-html>.

The PWR STS and GTS that may be provide guidance for preparing TS requirements for iPWR designs are:

- NUREG-1430, STS, Babcock and Wilcox Plants, Rev. 4 (Reference 4)
- NUREG-1431, STS, Westinghouse Plants, Rev. 4 (Reference 5)
- Westinghouse AP1000 design certification rule, Appendix D to 10 CFR Part 52, and DCD Tier 2, Revision 19, Section 16.1, GTS and bases (ML11171A382)

Another STS NUREG or certified GTS may also provide guidance if it specifies a system that has design and functional similarities with a system for a proposed iPWR design. For COL applicants referencing a certified design, the GTS and bases of the referenced design provide the guidelines for the evaluation of proposed plant-specific TS.

In addition, an iPWR DC applicant may consider changes to plant-specific TS, which were obtained by way of license amendment by a COL holder, as supplemental guidance to the associated referenced AP1000 GTS.

An iPWR DC applicant may also consider approved, but not yet incorporated, TSTF travelers as supplemental guidance to the STS.

Human-factors engineering principles were applied to the layout, presentation, and phrasing of requirements in the STS NUREGs to optimize their readability and ease of use by plant operators. Accordingly, applicants should prepare generic and plant-specific TS and bases in conformance with the writer's guide (Reference 9), and the layout, presentation, and phrasing of requirements in the STS NUREGs. Departures from the writer's guide should be justified.

Technical Rationale

The technical rationale for application of these acceptance criteria to the areas of review addressed by this DSRS section is discussed in the following paragraphs:

1. 10 CFR 52.47(a)(11) requires DC applications to include TS prepared in accordance with 10 CFR 50.36 and 10 CFR 50.36a.

10 CFR 52.79(a)(30) requires COL applications to include TS prepared in accordance with 10 CFR 50.36 and 10 CFR 50.36a.
2. 10 CFR 50.36 requires that TS include the following:
 - A. Safety Limits (SLs). SLs apply to important process variables necessary for an appropriate level of protection for the integrity of certain physical barriers that guard against the uncontrolled release of radioactive material. See 10 CFR 50.36(c)(1)(i)(A).
 - B. Limiting Safety System Settings (LSSSs). LSSSs are for automatic protective devices affecting variables with significant safety functions. See 10 CFR 50.36(c)(1)(ii)(A).
 - C. Limiting Conditions for Operation (LCOs). LCOs are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO of a nuclear reactor is not met, the licensee must shut down the reactor or follow any remedial action permitted by the TS until the condition can be met. See 10 CFR 50.36(c)(2)(i).

An LCO must be established in the TS for a nuclear reactor for each item meeting one or more of the following LCO selection criteria; see 10 CFR 50.36(c)(2)(ii), paragraphs (A), (B), (C), and (D):

- 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.* An SSC that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
- Criterion 4.* An SSC which operating experience or PRA has shown to be significant to public health and safety.

- D. Surveillance Requirements (SRs). SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met. See 10 CFR 50.36(c)(3).
- E. Design Features. Design features affect aspects of the facility (e.g., construction materials and geometric arrangements) not covered in the categories described above that, if altered or modified, would have significant effects on safety. See 10 CFR 50.36(c)(4).
- F. Administrative Controls. Administrative controls are provisions for organization and management, procedures, record-keeping, review and audit, and reporting necessary to assure safe operation of the facility. See 10 CFR 50.36(c)(5).

The requirements of 10 CFR 50.36 provide assurance that essential safety-related items and issues of facility design and operation (i.e., those derived from analyses and evaluations included in the safety analysis report) are identified.

- 3. 10 CFR 50.36a requires each licensee of a nuclear power reactor to include TS that require (A) operating procedures for the control of effluents, (B) annual reports of the quantity of principal radionuclides released to unrestricted areas in both gaseous and liquid effluents, (C) compliance with the applicable provisions of 10 CFR 20.1301, and (D) the maintenance and use of the radioactive waste system, pursuant to 10 CFR 50.34a. The STS contain model TS for radiological effluents in Section 5.5, "Programs and Manuals," and Section 5.6, "Reporting Requirements."
- 4. A design certification application for a reactor design with passive safety systems should include an evaluation of non-safety-related SSCs for regulatory oversight. This Regulatory Treatment of Non-Safety Systems (RTNSS) process applies broadly to those non-safety-related SSCs that perform risk-significant functions and, therefore, are candidates for regulatory oversight. The RTNSS process uses the following five criteria to determine those SSC functions; refer to RG 1.206, Section C.IV.9.2 (Reference 13), and SRP Section 19.3 (Reference 16):

- A. SSC functions relied on to meet beyond design basis deterministic NRC performance requirements such as those set forth in 10 CFR 50.62 for mitigating Anticipated Transients Without Scram (ATWS) and in 10 CFR 50.63 for mitigating a Station Blackout (SBO), also known as a loss of all onsite and offsite ac electrical power sources.
- B. SSC functions relied on to ensure long-term safety (beyond 72 hours) and to address seismic events.
- C. SSC functions relied on under power-operating and shutdown conditions to meet the Commission's safety goal guidelines of a core damage frequency (CDF) of less than 1×10^{-4} each reactor year and a large release frequency (LRF) of less than 1×10^{-6} each reactor year.
- D. SSC functions needed to meet the containment performance goal, including containment bypass, during severe accidents.
- E. SSC functions relied on to prevent significant adverse system interactions between passive safety systems and active non-safety SSCs.

Based on SECY-94-084 (Reference 11), and SECY-95-132 (Reference 12), the identified SSCs and their containing structures should have defined functional reliability/availability (R/A) missions and appropriate short-term availability control provisions if TS requirements are not defined for them. In some cases the nonsafety-related-SSC functions identified by these five criteria, particularly those identified by criteria C and D, may also be those identified as meeting LCO Selection Criterion 4 (10 CFR 50.36(c)(2)(ii)(D)). Such SSCs must be included in the TS as the subject of an LCO to satisfy 10 CFR 50.36(c)(2)(ii). SRP Section 19.3 (Reference 16) provides extensive guidance regarding the RTNSS evaluation of nonsafety-related SSCs and criteria for whether such SSCs meet LCO Selection Criterion 4.

III. REVIEW PROCEDURES

The reviewer will select material from the procedures described below, as may be appropriate for a particular case.

These review procedures are based on the identified DSRS acceptance criteria. For deviations from these acceptance criteria, the staff should review the applicant's evaluation of how the proposed alternatives provide an acceptable method of complying with the relevant NRC requirements identified in Subsection II.

1. Selected Programs and Guidance - In accordance with the guidance in NUREG-0800, "Introduction - Part 2: Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: Integral Pressurized Water Reactor Edition" (NUREG-0800 Intro Part 2) as applied to this DSRS Section, the staff will review the information proposed by the applicant to evaluate whether it meets the acceptance criteria described in Subsection II of this DSRS. As noted in NUREG-0800 Intro Part 2, the NRC requirements that must be met by an SSC do not change under the SMR framework. Using the graded approach described in NUREG-0800 Intro Part 2, the NRC staff may determine that, for certain structures, systems, and components (SSCs), the applicant's basis for compliance with other selected NRC requirements may help demonstrate satisfaction of the applicable acceptance criteria for that SSC in lieu of detailed

independent analyses. The design-basis capabilities of specific SSCs would be verified where applicable as part of completion of the applicable ITAAC. The use of the selected programs to augment or replace traditional review procedures is described in Figure 1 of NUREG-0800, Introduction - Part 2. Examples of such programs that may be relevant to the graded approach for these SSCs include:

- 10 CFR Part 50, Appendix A, General Design Criteria (GDC), Overall Requirements, Criteria 1 through 5
- 10 CFR Part 50, Appendix B, Quality Assurance (QA) Program
- 10 CFR 50.49, Environmental Qualification of Electrical Equipment (EQ) Program
- 10 CFR 50.55a, Code Design, Inservice Inspection and Inservice Testing (ISI/IST) Programs
- 10 CFR 50.65, Maintenance Rule requirements
- Reliability Assurance Program (RAP)
- 10 CFR 50.36, Technical Specifications
- Availability Controls for SSCs Subject to Regulatory Treatment of Non-Safety Systems (RTNSS)
- Initial Test Program (ITP)
- Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)

This list of examples is not intended to be all-inclusive. It is the responsibility of the technical reviewers to determine whether the information in the application, including the degree to which the applicant seeks to rely on such selected programs and guidance, demonstrates that all acceptance criteria have been met to support the safety finding for a particular SSC.

2. In accordance with 10 CFR 52.47(a)(8),(21), and (22), and 10 CFR 52.79(a)(17), (20) and (37), for design certification or combined license applications submitted under Part 52, the applicant is required to (1) address the proposed technical resolution of unresolved safety issues and medium- and high-priority generic safety issues which are identified in the version of NUREG-0933 current on the date up to 6 months before the docket date of the application and which are technically relevant to the design; (2) demonstrate how the operating experience insights have been incorporated into the plant design; and, (3) provide information necessary to demonstrate compliance with any technically relevant portions of the Three Mile Island requirements set forth in 10 CFR 50.34(f), except paragraphs (f)(1)(xii), (f)(2)(ix), and (f)(3)(v) for a DC application, and except paragraphs (f)(1)(xii), (f)(2)(ix), (f)(2)(xxv), and (f)(3)(v) for a COL application. These cross-cutting review areas should be addressed by the reviewer for each technical subsection and relevant conclusions documented in the corresponding safety evaluation report (SER) section.
3. The TS branch reviewer with the assistance of technical branch reviewers, as appropriate, reviews the DC applicant's evaluation of the iPWR design against the criteria of 10 CFR 50.36(c)(2)(ii) to confirm that LCOs are established in the GTS for all SSCs and parameters that satisfy one or more of the four criteria outlined in that regulation. The review includes verifying that the "Applicable Safety Analyses" section of the bases for each GTS Section 3.1 through 3.9 specification subsection correctly states which of the four criteria the associated specified SSC or parameter satisfies.

4. Review of TS and bases at the DC or COL application stage for 10 CFR Part 52 applications is done item by item for applicability, format, and specific content by comparing the proposed TS provision with an equivalent provision, if available, in the STS or GTS for previously approved PWR designs (i.e., the reference TS).
 - A. For a DC application review, each of the items is reviewed against related information in the DCD, including the safety analyses and the PRA, and by using available applicable guidance in the reference TS. The bases corresponding to each proposed TS Section 2 or 3 provision should provide clear and technically accurate reasoning for the selection of the provision.

If a reference TS provision is used to justify a proposed TS provision, all differences between the reference TS and the proposed TS provisions, including differences between the respective bases, are reviewed for their acceptability by comparing the affected SSC in the proposed iPWR plant design and the affected SSC in the plant design associated with the reference TS.
 - B. For the review of a COL application, the reviewer verifies that the site-specific numerical values, graphs, tables, and other data proposed in the plant-specific TS are complete and consistent with the FSAR. The reviewer also verifies that the level of detail in the proposed plant-specific TS are consistent with level of detail in the referenced DC GTS, or the reference TS if the COL application is not based on a DC rule. This information is reviewed for conformance with material presented in applicable FSAR sections as summarized in the supporting bases for each TS Section 2 or 3 specification subsection. The plant-specific TS bases in the COL application should also refer to FSAR sections that support and provide clarifying details for each TS Section 2 or 3 specification subsection.
 - C. A COL application that references a DC rule must justify each departure from the referenced DC GTS or bases. Any such departure requires an NRC-approved exemption from the referenced DC rule in order for the departure to be included in the plant-specific TS that are issued with a COL. The reviewer ascertains whether the applicant has adequately justified each proposed departure from the DC rule GTS and bases, and whether the applicant has shown that each such departure satisfies the 10 CFR 52.7 conditions for granting an exemption.
 - D. The proposed generic or plant-specific TS bases should justify the selection of specified variables, conditions, or other limitations as items required by 10 CFR 50.36 to be LCO subjects. Reviewers should give special attention to the review of proposed TS provisions that may be influenced by the plant design to minimize subsequent facility modifications or license changes to harmonize the as-built plant design and the final plant-specific TS issued with a COL.
 - E. The TS branch reviewer consults with specialists in the technical review organizations as necessary to determine the acceptability of proposed site-specific values and information provided by the COL applicant to complete the plant-specific TS.
5. All TS provisions and TS bases are expected to receive a minimum level of review by the TS branch reviewer. As a minimum, the TS branch reviewer will ascertain whether the SSC's or parameter's:

- A. TS adequately address all of the elements for TS that are required by 10 CFR 50.36 and 10 CFR 50.36a;
 - B. TS and TS bases are consistent with the structure and content of the standard TS and standard TS bases (References 3 and 4);
 - C. TS and TS bases are consistent with the iPWR design and safety analyses;
 - D. TS omit no necessary provisions. An example of an omission of a necessary provision would be an LCO requirement not supported by a corresponding surveillance requirement;
 - E. TS contain no logical conflicts. An example of a logical conflict would be a case in which a supported system's LCO applicability was broader than a necessary support system's LCO applicability; and
 - F. TS do not conflict with TS Sections 1.2, "Logical Connectors," 1.3, "Completion Time," and 1.4, "Frequency;" and TSTF-GG-05-01 (Reference 9).
6. When a deficiency is identified in one provision of a specification it may be present in provisions of other specifications. The reviewer will determine whether the deficiency might be systemic to the remainder of the proposed TS. If the reviewer makes such a determination, a request for additional information is sent to the applicant that asks the applicant to find and resolve all instances of the deficiency.
7. At the completion of the review, a proof-and-review copy of the generic or plant-specific TS is prepared for review by the contributing technical branches, as appropriate. This review verifies completion of all TS or bases changes committed to by the applicant in order to resolve technical, formatting, and editorial issues raised by the staff. Each technical branch ascertains the acceptability of TS sections within the branch's area of responsibility and advises the TS branch and the licensing PM of its findings. Following correction of any deficiencies, the TS are ready for issuance as a part of a DC or COL.
8. Additional Review Considerations. Experience reviewing TS changes, developing and revising STS, and developing TS for DCs suggest attention to the following items: (note that this list is not exhaustive.)
- A. When reviewing a difference between the proposed TS provision and the reference TS provision, the reviewer verifies that the applicant's written technical or administrative reasoning in support of the difference is logical, complete, and clearly written.
 - i. Administrative differences such as a preference in terminology should be globally consistent in the TS. Editorial differences are usually acceptable in the TS bases provided the intent of the reference TS bases is maintained; however, editorial differences in the phrasing of TS LCO, applicability, action, and surveillance requirements are discouraged. Such differences should be given careful consideration to ensure the alternative phrasing is equivalent to the reference TS phrasing and maintains consistency with the format and usage rules embodied in the STS. STS format is important, in some cases conveys meaning, and reflects the incorporation of human factor insights into the STS.
 - ii. Technical differences must have sound technical justifications. If a

justification for a difference refers to a topical report, the reviewer verifies that all applicable conditions for reliance on it are met. Conditions for referencing a topical report are typically stated in the reference TS or bases as "Reviewers Note," the topical report itself, or the NRC's safety evaluation of the topical report. Topical or technical reports not previously reviewed, should be formally reviewed and approved by the NRC before being used in support of any aspect of the plant's design or TS requirements. In some cases, an applicant may need to justify applying a topical report, which is approved for other designs, to the proposed plant design.

- B. The bases for STS provide a wealth of information on the purposes and roles of SLs, LCOs, and applicability, action and surveillance requirements. Particularly important are the descriptions of the roles that LCO-specified SSCs or parameters play in the plant's safety analyses of postulated accidents and transients. Also important are statements regarding the 10 CFR 50.36(c)(2)(ii) criteria that LCO-specified SSCs or parameters satisfy.

The bases for proposed GTS and proposed plant-specific TS are derived in part from the bases for the reference TS (STS, GTS, or both). Therefore, regardless of any technical differences between the proposed TS bases and the reference TS bases, the reviewer should determine whether the GTS bases or plant-specific TS bases are consistent with the accident analyses and system descriptions in the respective generic DCD or plant-specific FSAR. In addition, the proposed TS bases should describe the basis for each TS requirement accurately. A deficiency in the bases for a reference TS provision does not justify repeating or maintaining the deficiency in the bases for the corresponding provision in the proposed TS.

- C. A working understanding of TS application and usage rules and formatting conventions, specified in STS Section 1.2, "Logical Connectors," STS Section 1.3, "Completion Time," and STS Section 1.4, "Frequency," and the general LCO and SR specifications specified in STS Section 3.0 is necessary for reviewing TS proposed in DC or COL applications or in license amendment requests by a COL holder to revise plant-specific TS.
- D. Whenever the technical justification for a proposed difference from the reference TS appeals to probabilistic risk analysis insights, consult SRP Section 16.1 (Reference 15) for review acceptance criteria and procedures.

The guidance in SRP Section 16.1 provides insights for addressing changes with respect to a PRA baseline, which is that associated with the current design. RGs 1.174 and 1.177 can be used to assess the effect of a design change as well as technical specification completion times by way of sensitivity analyses.

- 9. Many features of an iPWR design may be significantly different from functionally equivalent design features of previously approved, certified, and licensed PWR designs. Consequently, reference STS or GTS may be only marginally applicable to the preparation of GTS to be included in DCD Chapter 16 of an iPWR DC application. Therefore, the reviewer should assure that the proposed TS are consistent with the following general principles of TS, which are embodied in the STS. Many of these principles were previously described in standard ANSI/ANS-58.4-1979 (Reference 10), which was withdrawn in 1989, and to which the reviewer may refer for more detail. A

brief discussion of the main items from this standard (augmented to use terminology for describing requirements in the improved STS NUREGs) follows:

A. Safety Limits

Specifications for SLs apply to or are derived from process variables which are continually observable and measurable, for example, pressures, temperatures, flow rate, power, neutron flux. To comply with 10 CFR 50.36(c)(1)(i)(A), SLs must be prescribed for selected important process variables that are found to be necessary to reasonably protect the integrity of certain of the physical barriers to fission product release. SLs must be selected such that compliance with them provides assurance that the barrier will perform as assumed in the safety analyses.

B. Limiting Safety System Settings

LSSSs are chosen such that no SL will be violated as a result of a frequent plant process condition, and that no infrequent or limiting plant process condition would have consequences which do not meet the acceptance criteria for that condition. LSSSs allow for instrument drift, minor operational errors and fluctuations in process or control characteristics. The difference between the SL and the LSSS should be sufficient to allow for corrective action by the safety (protection) system to return to normal operation or to shut the reactor down before the SL will be reached for the most severe abnormal situation anticipated during the life of the plant.

The LSSSs correspond to the nominal trip setpoints (NTSs). The NTS is the instrument trip or actuation setting established during channel calibration. The NTS provides the required margin to the trip or actuation setting assumed in the accident analyses, which is typically called the analytical limit. The margin to the analytical limit provided by the NTS ensures that over the channel calibration interval a reactor trip and safety system actuation will occur before the monitored parameter exceeds the analytical limit, thereby preventing a violation of the associated SL.

C. Limiting Conditions for Operation

Consistent with 10 CFR 50.36(c)(2)(ii), LCOs are provided for the following when they are relied upon in the safety analyses; LCOs for these items are included in TS for most licensed reactors:

- i. Condition, or status, of equipment or systems (for example, the minimum number of safety injection subsystems required to be operable);
- ii. Parameter limits with no associated instrument alarms or protective action setpoint (for example, the maximum iodine activity allowed in the reactor coolant system);
- iii. Instrument setpoints for monitored parameters with no associated automatic protection action (for example, the limits on control rod position during power operation); and
- iv. Instrument setpoints for monitored parameters with associated automatic protective actions (for example, the settings for instruments which

actuate safety injection subsystems or initiate a reactor trip).

10 CFR 50.36(c)(2) requires that TS include LCOs that establish the lowest acceptable functional capability or performance levels for a system or a component, or the minimum number of components or portion of the system that must remain operable for the plant to be within the safety envelope defined by the safety analyses during all modes of operation.

To properly define an LCO for a parameter, one needs to consider both the minimum complement of equipment necessary to maintain all modes of plant operation in the “normal” range, and what is necessary to accommodate abnormal situations.

When an LCO is not met, the associated specification should include remedial actions that are required to be taken if the operable status of the equipment or system is less than the required minimum; the monitored parameters are not within the specified range; or the instrument setpoints are less conservative than the specified limiting as-found value.

For each specified condition of failure to meet the associated LCO, the associated required actions typically specify resolving the condition such that the LCO is met before expiration of the specified completion time for the restoration action. In the event the restoration action is not accomplished within the specified completion time, the associated required actions typically require—within an appropriate completion time—placing the unit in a mode of operation in which meeting the LCO is not required. When such an action involves mode changes, the specified completion time is usually chosen to allow an orderly shut down within the normal capabilities of the unit to reduce the chance of a transient that could challenge safety systems. For some specified conditions, the associated required actions may permit operation to continue indefinitely without restoring compliance with the LCO based on establishing, within the specified required action completion time, a specified plant configuration which is deemed to provide a level of safety protection that is equivalent to the safety protection provided by meeting the LCO.

D. Surveillance Requirements

Surveillance requirements (SRs) delineate testing, calibration, monitoring, and inspection in sufficient scope, depth, and frequency to provide assurance that equipment, systems and process variables are within the LCOs and that facility operation will be within the SLs. To satisfy 10 CFR 50.36(c)(3), each LCO must be supported by SRs.

SRs and associated LCOs are complementary. For a specific system, an LCO establishes the minimum performance level, and the SRs will prescribe the frequency and scope of tests to demonstrate such performance.

The frequency and type of surveillances should be based, as much as possible, on quantitative data derived through experience or experiment. Experience with similar equipment used in operation of nuclear power plants should be used, as applicable.

E. Design Features

Design features of the facility which, if altered or modified, could have significant effects on safety and which are not covered by the SLs, LCOs, or SRs, are incorporated in TS Section 4.0.

F. Administrative Controls

Administrative controls are included in the technical specifications to assure that operation of the facility is conducted in a safe manner. Included are requirements for site organization, responsibility, unit staffing qualifications, procedures, and reports that support LCOs by providing numerical values for limits on cycle-specific core operating parameters and reactor coolant system pressure and temperature limits. Also included are programmatic requirements for supporting SRs (e.g., battery parameters, instrumentation setpoint control, control room boundary unfiltered inleakage testing, containment leak testing, ventilation filter testing, inservice testing, and steam generator tube inspection including criteria for tube plugging and repair), meeting 10 CFR 50.36a, identifying a loss of safety function, and control of changes to TS bases.

G. Technical Specifications Bases

Bases for TS summarize the reasons for each TS requirement and are provided for SLs, LSSSs, LCOs and associated requirements regarding modes or conditions of applicability, actions, and surveillances.

The bases explicitly correlate the plant design and safety analyses with the technical specification limits and operating conditions, thereby providing a validation of the overall design for the prescribed modes of operation.

Consistent with bases for standard technical specifications (Refs. 4 and 5), specific aspects to be addressed in the bases for different types of technical specifications are as follows:

- i. Bases for Safety Limits (SLs): The bases identify the barrier to fission product release that is being protected by the limit and show why that limit is adequate.
- ii. Bases for Limiting Safety System Settings (LSSSs): The bases identify the safety limit or other safety requirement that is being ensured by the LSSS and describe all allowances included in determining the relationship of the LSSS to the safety limit or other safety requirement. The bases discuss the conditions under which the bypass of automatic protection associated with an LSSS is performed. The bases for LSSSs are presented with the bases for LCOs on instrumentation functions.
- iii. Bases for Limiting Conditions for Operation (LCOs): The bases identify the safety analysis assumption or other safety requirement that established the need for the LCO, and discuss why the specified lowest functional capability, performance level of equipment, limiting value of a process parameter, or conservative actuation limit for specified automatic protection devices is appropriate. The bases state which of the LCO selection criteria the LCO satisfies. The rationale for deviations from the LCO as allowed by the specified conditions and associated required actions and completion times is also discussed.

- iv. Bases for Surveillance Requirements (SRs): Where it is not obvious that the surveillance supports the LCO, the bases describe how the specified surveillance will assure compliance with the LCO. Note that the action requirements should include an actions condition that clearly applies when such an SR is not met. The rationale for the surveillance frequency is identified to facilitate consistent modifications to the frequencies where warranted by plant performance and operating history.
10. The inclusion or omission of TS defined for non-safety systems is a review focus that is addressed in SRP Section 19.3 (Reference 16). As per 10 CFR 50.36(c)(2)(ii)(D), Criterion 4, a TS LCO must be established for an SSC which operating experience or PRA has shown to be significant to public health and safety. Accordingly, TS should be defined for risk-significant nonsafety-related SSCs and the use of TS may be the preferred regulatory treatment for assuring the availability of these SSCs. Review of these SSCs for inclusion in TS LCOs should, however, take into consideration other regulatory treatment that may also be applied to these SSCs, such as the Maintenance Rule and the Reliability Assurance Program. However, application of such regulatory treatment to a non-safety SSC does not obviate the need for a TS LCO if LCO selection Criterion 4 is satisfied. Appropriate regulatory oversight (R/A missions, short-term availability control mechanisms, design information for Reliability Assurance Program and Maintenance Rule implementation) is defined for non-safety systems satisfying the RTNSS criteria. The review of the adequacy of the regulatory oversight when an SSC is not included in a TS LCO is not the focus here.

As described in SRP Section 19.3, for a DC application for an NSSS design that relies on passive safety systems, the DC applicant should propose nonsafety-related SSCs to be included in the RTNSS evaluation. The RTNSS SSCs are identified using the criteria provided in Section C.IV.9.2 of RG 1.206. The determination of whether a RTNSS SSC is required to be covered by an investment protection short term availability control (availability control) or by a TS LCO, is left to the DC applicant to propose and the NRC staff to assess.

A nonsafety-related SSC must be included in a TS LCO if it satisfies any of the four criteria of 10 CFR 50.36(c)(2)(ii). Insights from probabilistic risk assessment or operating experience may lead the applicant and the staff to a determination that some RTNSS SSCs should be included in TS LCOs because, in particular, they satisfy 10 CFR 50.36(c)(2)(ii)(D) Criterion 4. An availability control would not be provided for such a RTNSS SSC, since establishing a TS LCO provides the needed regulatory oversight for the SSC and reasonable assurance that the SSC will meet its mission if challenged.

Chapter 22 of the NRC final safety evaluation report (FSER) for the ESBWR DC (DCD Chapter 19, Revision 10), and Section 16.3 of the NRC FSER for the AP1000 DC (DCD Tier 2 Section 16.3, Revision 19) established precedents for criteria to use in identifying a RTNSS SSC that satisfies Criterion 4 in certified passive NSSS designs. SSCs meeting these precedents should have operability requirements specified by an LCO in the GTS. These precedents are reflected in the guidance for the review of RTNSS SSCs provided by SRP Section 19.3, "Regulatory Treatment of Non-Safety Systems (Passive Advanced Light Water Reactors)" (Reference 16).

Each RTNSS SSC that does not warrant operability requirements specified by a TS LCO, is normally the subject of an availability control. The availability control for a RTNSS SSC specifies the plant operational conditions during which the RTNSS SSC must be available, similar to how the applicability of a TS LCO specifies when a

required system must be operable. However, the staff's review of availability controls for RTNSS SSCs is not the focus here.

For review of an iPWR DC application, the reviewer should follow the above guidance to verify that the design, including requirements and restrictions (e.g., interface requirements and site parameters), set forth in the generic DCD meets the acceptance criteria. The reviewer should also consider the appropriateness of identified COL action items. The reviewer may identify additional COL action items; however, to ensure these COL action items are addressed during a COL application, they should be added to the DCD.

IV. EVALUATION FINDINGS

The reviewer verifies that the applicant has provided sufficient information and that the review and calculations (if applicable) support conclusions of the following type to be included in the staff's safety evaluation report (SER). The reviewer also states the bases for those conclusions.

Any items which require special attention at this stage of our review have not been identified.

DC Application Review. The staff concludes that the proposed TS satisfy 10 CFR 52.47(a)(11), 10 CFR 50.36 and 10 CFR 50.36a requirements. The conclusion is based on the finding that the proposed TS include all aspects addressed in the previous section. The specific requirements identified for each aspect have been fully addressed.

COL Application Review Not Referencing a DC Rule. The staff concludes that the proposed TS satisfy 10 CFR 52.79(a)(30), 10 CFR 50.36 and 10 CFR 50.36a requirements. The conclusion is based on the finding that the proposed TS include all aspects addressed in the previous section. The specific requirements identified for each aspect have been fully addressed.

COL Application Review Referencing a DC Rule. The staff concludes that the proposed TS satisfy 10 CFR 52.79(a)(30), 10 CFR 50.36 and 10 CFR 50.36a requirements. The conclusion is based upon the finding that the proposed TS comply with the DCD GTS in the [certified design acronym] DCD, as referenced in 10 CFR Part 52, Appendix [D], with appropriate modifications for plant-specific and other technical considerations. The staff also concludes that the plant-specific TS are complete and contain no COL action items.

For DC application GTS reviews and COL application plant-specific TS reviews, the findings will also summarize the staff's evaluation regarding DC requirements and restrictions (e.g., interface requirements and site parameters) relevant to this DSRS section.

V. IMPLEMENTATION

The regulations in 10 CFR 52.17(a)(1)(xii), 10 CFR 52.47(a)(9), and 10 CFR 52.79(a)(41) establish requirements for applications for ESPs, DCs, and COLs, respectively. These regulations require the application to include an evaluation of the site (ESP), standard plant design (DC), or facility (COL) against the Standard Review Plan (SRP) revision in effect six months before the docket date of the application. While the SRP provides generic guidance, the staff developed the SRP guidance based on the staff's experience in reviewing applications

for construction permits and operating licenses for large light-water nuclear power reactors. The proposed small modular reactor (SMR) designs, however, differ significantly from large light-water nuclear reactor power plant designs.

In view of the differences between the designs of SMRs and the designs of large light-water power reactors, the Commission issued SRM- COMGBJ-10-0004/COMGEA-10-0001, "Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews," dated August 31, 2010 (ML102510405) (SRM). In the SRM, the Commission directed the staff to develop risk-informed licensing review plans for each of the SMR design reviews, including plans for the associated pre-application activities. Accordingly, the staff has developed the content of the DSRS as an alternative method for the evaluation of a NuScale-specific application submitted pursuant to 10 CFR Part 52, and the staff has determined that each application may address the DSRS in lieu of addressing the SRP, with specified exceptions. These exceptions include particular review areas in which the DSRS directs reviewers to consult the SRP and others in which the SRP is used for the review. If an applicant chooses to address the DSRS, the application should identify and describe all differences between the design features (DC and COL applications only), analytical techniques, and procedural measures proposed in an application and the guidance of the applicable DSRS section (or SRP section as specified in the DSRS), and discuss how the proposed alternative provides an acceptable method of complying with the regulations that underlie the DSRS acceptance criteria.

The staff has accepted the content of the DSRS as an alternative method for evaluating whether an application complies with NRC regulations for NuScale SMR applications, provided that the application does not deviate significantly from the design and siting assumptions made by the NRC staff while preparing the DSRS. If the design or siting assumptions in a NuScale application deviate significantly from the design and siting assumptions the staff used in preparing the DSRS, the staff will use the more general guidance in the SRP as specified in 10 CFR 52.17(a)(1)(xii), 10 CFR 52.47(a)(9), or 10 CFR 52.79(a)(41), depending on the type of application. Alternatively, the staff may supplement the DSRS section by adding appropriate criteria in order to address new design or siting assumptions.

VI. REFERENCES

1. 10 CFR 52.47, "Contents of applications; technical information"; 10 CFR 52.79, "Contents of applications; technical information in final safety analysis report."
2. 10 CFR 50.36, "Technical specifications."
3. 10 CFR 50.36a, "Technical specifications on effluents from nuclear power reactors."
4. NUREG-1430, "Standard Technical Specifications, Babcock and Wilcox Plants," Rev. 4.
5. NUREG-1431, "Standard Technical Specifications, Westinghouse Plants," Rev. 4.
6. NRC Inspection Manual Chapter IMC-2504, "Construction Inspection Program - Non-ITAAC Inspections," issued April 25, 2006.
7. Letter, Thomas E. Murley to Walter S. Wilgus, dated May 9, 1988, "NRC Staff Review of Nuclear Steam Supply Vendors Owners Groups' Application of The Commission's Interim Policy Statement Criteria to Standard Technical Specifications."

8. SECY-08-0142, "Change in Staff Position Concerning Information in Plant-Specific Technical Specifications that Combined License Applicants Must Provide to Support Issuance of Combined Licenses," September 25, 2008.
9. TSTF-GG-05-01, "Writer's Guide for Plant-Specific Improved Technical Specifications," June 2005. (ML070660229).
10. ANSI/ANS -58.4-1979, American National Standard Criteria for Technical Specifications for Nuclear Power Stations, issued January 25, 1979 (withdrawn 1989).
11. SECY-94-084, "Policy and Technical Issues Associated with Regulatory Treatment of Non-Safety Systems in Passive Plant Designs," March 28, 1994.
12. SECY-95-132, "Policy and Technical Issues Associated with Regulatory Treatment of Non-Safety Systems in Passive Plant Designs (SECY-94-084)," May 22, 1995.
13. RG 1.206, Section C. IV.9, "Regulatory Treatment of Nonsafety Systems," June 2007.
14. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 16.0, "Technical Specifications," Rev. 3, March 2010.
15. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 16.1, "Risk-informed Decision Making: Technical Specifications," Rev. 1, March 2007.
16. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 19.3, "Severe Accidents — Regulatory Treatment of Non-Safety Systems for Passive Advanced Light Water Reactors," Draft Rev. 0, October 2012.