NUREG-0800

U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

19.3 REGULATORY TREATMENT OF NONSAFETY SYSTEMS FOR PASSIVE ADVANCED LIGHT WATER REACTORS

REVIEW RESPONSIBILITIES

Primary- Organization responsible for evaluating regulatory treatment of nonsafety systems in passive advanced light water reactors

Secondary- Organization(s) responsible for the specific design capabilities of structures, systems, and components (SSCs) as described in the Review Interface Section of this Standard Review Plan (SRP)

Organization responsible for the review of the applicants probabilistic risk assessment (PRA)

Organization responsible for the review of severe accident design features

Organization responsible for review of the Technical Specifications (TSs) and Short Term Availability Controls

Draft Rev.0 – June 2013

USNRC STANDARD REVIEW PLAN

This Standard Review Plan (SRP), NUREG-0800, has been prepared to establish criteria that the U.S. Nuclear Regulatory Commission (NRC) staff responsible for the review of applications to construct and operate nuclear power plants intends to use in evaluating whether an applicant/licensee meets the NRC regulations. The SRP is not a substitute for the NRC regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide an acceptable method of complying with the NRC regulations.

The SRP sections are numbered in accordance with corresponding sections in Regulatory Guide (RG) 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)." Not all sections of RG 1.70 have a corresponding review plan section. The SRP sections applicable to a combined license application for a new light-water reactor (LWR) are based on RG 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)."

These documents are made available to the public as part of the NRC policy to inform the nuclear industry and the general public of regulatory procedures and policies. Individual sections of NUREG-0800 will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience. Comments may be submitted electronically by e-mail to NRR_SRP@nrc.gov

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I. AREAS OF REVIEW

This SRP pertains to the staff review of an applicant's Regulatory Treatment of Nonsafety Systems (RTNSS) for a design certification (DC) or a combined license (COL) application. Application content guidance for DC and COL applications is provided in Section C.IV.9 of Regulatory Guide (RG) 1.206, "Combined License Applications for Nuclear Reactors," issued June 2007. The scope of a DC review is limited to the design-specific nonsafety SSCs within the scope of the certification. For a COL application that references a DC, the staff review of RTNSS for the COL should focus on the plant-specific and site-specific nonsafety SSCs that deviate from the referenced DC.

The Advanced Light Water Reactor (ALWR) Utility Requirements Document (URD) for passive plants (Volume III, Chapter 1) issued March 1999 by the Electric Power Research Institute, specifies standards concerning the design and performance of nonsafety related active systems and equipment that perform functions which support safe operation of the facility. These standards include radiation shielding to permit access after an accident, redundancy for the more probable single active failures, availability of nonsafety-related electric power, and protection against more probable hazards. The standards also address realistic safety margin analysis and testing to demonstrate the systems' capabilities to satisfy their functions. However, the ALWR URD does not include specific quantitative standards for the reliability of these systems. Appropriate levels of reliability and availability for these systems are established with the reliability assurance program (RAP) and RTNSS process.

The scope, criteria, and process used to determine RTNSS for the passive plant designs are established in:

1. SECY-94-084, "Policy and Technical Issues Associated with the Regulatory Treatment of Nonsafety Systems in Passive Plant Designs," dated March 28, 1994 (ML003708068) and associated Staff Requirements Memorandum (SRM), June 30, 1994 (ML003708098).

2. SECY-95-132, "Policy and Technical Issues Associated with the Regulatory Treatment of Nonsafety Systems (RTNSS) in Passive Plant Designs," dated May 22, 1995 (ML003708005), and associated SRM, June 28, 1995 (ML003708019).

3. SECY-96-128, "Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design," June 12, 1996 (ML003708224), and associated SRM, January 15, 1997 (ML003755486).

SECY-94-084 and SECY-95-132 describe the scope, criteria, and process used to determine RTNSS in the passive plant designs.

The following five key elements make up the process:

1. The ALWR URD describes the process the designer should use to specify the reliability/availability (R/A) missions of risk-significant SSCs needed to meet regulatory

requirements and to allow comparisons of these missions to U.S. Nuclear Regulatory Commission (NRC) goals. An R/A mission is the set of requirements related to the performance, reliability, and availability of an SSC function that adequately ensures the accomplishment of its task, as defined by the focused PRA or deterministic analysis.

2. The designer applies the process to the design to establish R/A missions for the risk-significant SSCs.

3. If active systems are determined to be risk-significant, the NRC reviews the R/A missions to determine if they are adequate and whether the RAP (SRP 17.4) and administrative controls on availability, or simple TSs and limiting conditions for operation (LCOs) can provide reasonable assurance that the missions can be met during operation.

4. If active systems are relied on to meet the R/A missions, the designer imposes design requirements commensurate with the risk-significance of those elements involved.

5. The DC rule does not explicitly state the R/A missions for risk-significant SSCs. Instead, the rule includes deterministic requirements for both safety-related and nonsafety-related design features.

The RTNSS process applies broadly to those nonsafety-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:

A. SSC functions relied on to meet beyond design basis deterministic NRC performance requirements such as those set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.62 for mitigating Anticipated Transients Without Scram (ATWS) and in 10 CFR 50.63 for Station Blackout (SBO).

B. SSC functions relied on to ensure long-term safety (the period beginning 72 hours after a design basis event and lasting the following 4 days) and to address seismic events.

C. SSC functions relied on under power-operating and shutdown conditions to meet the Commission goals of a core damage frequency (CDF) of less than $1x10^{-4}$ each reactor year and a large release frequency (LRF) of less than $1x10^{-6}$ 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 systems interactions between passive safety systems and active nonsafety SSCs.

The principal areas of the staff's review are listed below.

1. Identification of SSC functions needed to assure that reliability/availability missions are accomplished based on the five RTNSS criteria listed above.

2. Functional design of RTNSS SSCs to meet reliability/availability mission.

    a. Adequacy of functional design requirements

    b. Compliance with functional design requirements

    c. Design improvements to minimize adverse interaction between passive and nonsafety-related active systems.

3. Focused PRA sensitivity studies used to identify risk-significant SSCs in the scope of RTNSS program per RTNSS "C".

4. The augmented design standards that must be met by SSCs in the scope of the RTNSS program including seismic design standards, standards for protection against natural phenomena, standards for protection against internal hazards (e.g., internal floods) and standards for assuring that SSC functions can be achieved expeditiously.

5. The regulatory treatment proposed for SSCs in the scope of RTNSS program.

COL Action Items and Design Certification Requirements and Restrictions

For a DC application, the review will also address COL action items and requirements and restrictions (e.g., interface requirements and site parameters).

For a COL application referencing a DC, a COL applicant must address COL action items (referred to as COL license information in certain DCs) included in the referenced DC. Additionally, a COL applicant must address requirements and restrictions (e.g., interface requirements and site parameters) included in the referenced DC.

Review Interfaces

The comprehensive baseline PRA and focused PRA sensitivity studies that are needed to determine SSCs relied on under power-operating and shutdown conditions to meet the Commission goals are described in Chapter 19 of the application. Likewise, the severe accident evaluation used to identify SSC functions needed to meet the containment performance goal, including containment bypass, during severe accidents is also described in Chapter 19 of the application. The PRA and Severe Accident staff reviews these topics using SRP 19.0 and documents its review in Chapter 19 of the Final Safety Evaluation Report.

The technical organizations in the Office of New Reactors responsible for the review of the functional capabilities of SSCs use the general guidance in this SRP to (1) verify or identify SSCs that require regulatory treatment, (2) develop specific review guidance for SSC functions in their review domain and (3) verify that the level of regulatory treatment specified for SSC

functions in their review domain is commensurate with the R/A missions for those SSCs. Reviewers in these organizations will interact with PRA and Severe Accident staff to gain an understanding of the R/A mission of SSCs within their review scope as characterized in the PRA.

Reviewers responsible for review of systems and components relied upon to ensure long-term safety in the period beginning 72 hours after a design basis event and lasting the following 4 days (hereafter referred to as the "Post-72 hour period") and to address seismic events, i.e., "RTNSS 'B'" SSCs, will interact with reviewers responsible for review of structures that house those systems and components to reach a finding regarding the ability of "RTNSS 'B'" SSCs to withstand seismic events as severe as the design basis safe shutdown earthquake.

Availability controls (ACs) are a form of regulatory oversight for the availability of nonsafety-related SSCs in the scope of RTNSS. ACs are established in a manner similar to TS and include AC LCO, applicability specifications, action statements with completion times, surveillance requirements (ACSR) and frequencies. ACs are submitted to the NRC for review in the form of the Availability Controls Manual (ACM). The review of ACM is led by the organization responsible for the review of technical specifications in Chapter 16 of the Final Safety Analysis Report (FSAR). PRA and Severe Accident staff and staff responsible for review of specific SSC functions support the review of the ACM in the following ways:

1. Assuring that treatment of RTNSS SSCs in the ACM is commensurate with the assumptions in the PRA.

2. Confirming that, at a minimum, ACs have been included in the ACM for RTNSS "B" SSCs.

3. Verifying the adequacy of the ACSR.

II. ACCEPTANCE CRITERIA

Background

Requirements

Acceptance criteria are based on meeting Commission policy and the relevant requirements of the following Commission regulations:

1. 10 CFR 50.36(c)(2)(ii)(D) – TS limiting condition for operation of a nuclear reactor must be established for a system, structure or component which operating experience or PRA has shown to be significant to public health and safety.

SRP Acceptance Criteria

Specific SRP acceptance criteria acceptable to satisfy the Commission's policy on RTNSS and to meet the relevant requirements of the NRC regulations identified above are as follows for the

review described in this SRP. The SRP is not a substitute for the NRC regulations, and compliance with it is not required. However, an applicant is required to identify and describe differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide acceptable methods of compliance with the NRC regulations. The SRP acceptance criteria are derived from Commission direction and staff guidance published in multiple documents, including the following:

1. SECY-93-087, "Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor ALWR Designs," dated April 2, 1993 (ML003760768), and associated SRM, July 21, 1993 (ML003708056).

2. SECY-94-084, "Policy and Technical Issues Associated with the Regulatory Treatment of Nonsafety Systems in Passive Plant Designs," dated March 28, 1994, and associated SRM, June 30, 1994 (ML003708068).

3. SECY-95-132, "Policy and Technical Issues Associated with the Regulatory Treatment of Nonsafety Systems (RTNSS) in Passive Plant Designs," dated May 22, 1995, and associated SRM, June 28, 1995 (ML003708005).

4. SECY-96-128, "Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design," June 12, 1996, and associated SRM, January 15, 1997 (ML003708224).

5. Memorandum from L. Joseph Callan, USNRC Executive Director for Operations to Chairman Jackson, US NRC, "Implementation of Staff Position in SECY-96-128, 'Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standard Pressurized Reactor Design', Related to Post-72 Hour Actions", June 23, 1997 (ML003708229).

Acceptance Criteria

Specific acceptance criteria are listed below for each principal area of the staff's review.

Area of Review – Identification of SSCs in the Scope of the RTNSS Program

1. The staff will verify that the applicant has met the following acceptance criterion: The applicant has identified those nonsafety-related SSCs that require regulatory treatment using the five scoping criteria listed above.

2. The staff will verify that the applicant has met the following acceptance criterion for RTNSS "B" SSCs: The applicant has identified the necessary functions performed by installed nonsafety-related SSCs to provide a back-up post 72-hour period passive system support capability and provided reasonable assurance that those SSCs can perform their necessary functions for a period up to seven days following an accident

3. The PRA and Severe Accident staff will verify that the applicant has met the following acceptance criterion: The applicant has determined those nonsafety SSCs, if any, used to prevent the occurrence of initiating events and, based on their importance to risk as determined from the PRA included them in the scope of RTNSS.

Area of Review – Functional Design of RTNSS SSCs

1. The staff will verify that the applicant has met the following acceptance criterion: The applicant has established functional requirements related to RTNSS R/A missions for the design of SSCs in the RTNSS program, including support systems.

2. The staff will verify that the applicant has met the following acceptance criterion: The applicant has designed SSCs in the RTNSS program, and their support systems, to satisfy their functional requirements related to the RTNSS R/A missions.

3. The staff will verify that the applicant has met the following acceptance criterion: The applicant has systematically evaluated adverse interactions between the passive safety systems and any nonsafety-related active systems providing defense-in-depth, and incorporated effective design improvements to minimize adverse systems interactions. The staff will also confirm that the applicant has properly updated the PRA model to account for any residual adverse system interactions, after design improvements have been made.

4. The staff will verify that the applicant has met the following acceptance criterion: The design of RTNSS SSCs includes features, as needed, to allow performance of those human actions necessary for successful implementation of the functional design requirement (e.g., controls, connections, access).

Area of Review – Focused PRA Sensitivity Studies

1. The PRA and Severe Accident staff will verify that the applicant has met the following acceptance criterion: The applicant has used the focused PRA to determine (1) the functional R/A missions of active systems needed to meet NRC regulations, Commission goals and the containment performance goal objectives, and (2) the risk-significance associated with failure to accomplish each R/A mission.

Area of Review – Augmented Design Standards

1. The staff will verify that the applicant has met the following acceptance criterion: Safety functions required in the post 72-hour period following an accident can be accomplished with onsite equipment and supplies.

2. The staff will verify that the applicant has met the following acceptance criterion: RTNSS "B" SSCs and supporting equipment will be readily available for connection. Use of on-site equipment and supplies, including mobile equipment, is required in the 4 day post

72-hour period. Offsite equipment and supplies may be relied upon after the seventh day following an accident.

3. The staff will verify that the applicant has met the following acceptance criterion: To ensure that RTNSS "B" SSCs can withstand the effects of a safe shutdown earthquake (SSE) without the loss of capability to perform required functions, the SSCs should be analyzed, designed and constructed using the method and criteria for seismic Category II building structures defined in Chapter 3 of the FSAR. For these systems and components, the design of equipment anchorages must be consistent with the SSE design of equipment anchorages of Seismic Category I items and there should be no spatial interaction with any other non-seismic SSCs that could adversely interact to prevent the functioning of the RTNSS "B" SSCs following an SSE; but no dynamic qualification of active equipment is necessary.

4. The staff will verify that the applicant has met the following acceptance criteria: (1) RTNSS "B" SSCs have been analyzed and designed to withstand the effects of high winds produced in hurricanes and tornadoes, including the effects of sustained winds, gusts, and associated wind-borne missiles and that applicants have used the guidance in RG 1.76 and 1.221 appropriately to choose the design basis wind speeds for RTNSS SSCs, (2) RTNSS "B" SSCs have been analyzed and designed to withstand adverse effects associated with internal hazards, i.e., those created from conditions inside the plant.

5. The staff will verify that the applicant has met the following acceptance criterion: RTNSS "B" SSCs and supporting equipment will be protected from floods and meet the criteria in SRP 2.4 and SRP 3.4.1.

Area of Review – Regulatory Treatment of SSCs in the RTNSS Program

The staff will verify that the applicant has met the following acceptance criteria:

1. The applicant has established the reliability and availability mission of each RTNSS SSC using the applicable probabilistic, deterministic, and other methods used to identify and quantify risk, including information obtained from sources such as the PRA, severe accident evaluations, industry operating experience, and expert panels.

2. The applicant has established treatment requirements for each SSC commensurate with its reliability and availability missions through operational programs such as pre-service and in-service testing and surveillance, the maintenance program established through 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of maintenance at Nuclear Power Plants," quality assurance activities for the nonsafety-related SSCs in accordance with Part V of SRP Section 17.5 and ACs, including LCOs and surveillance requirements, in the form of either TSs or administrative controls.

3. Controls for RTNSS "B" SSCs will be provided in the ACM.

III. REVIEW PROCEDURES

The general procedures for the review of RTNSS SSCs for all passive light water reactors are given in the following paragraphs. In applying these procedures to the review of RTNSS SSCs in the designs of small modular integral pressurized water reactors (iPWR) that rely on passive safety systems, the staff uses a graded approach described 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," Revision 0 (Draft for Comment), January 2013." Some examples of this "graded approach" are:

- RTNSS "B" SSCs may have testing and inspections, tests, analyses, and acceptance criteria (ITAAC) because of the augmented design standards they must meet; whereas, testing and ITAAC for other RTNSS SSCs would be unlikely.

- Functional capabilities of some RTNSS "C" SSCs may have higher risk-significance than functional capabilities of other RTNSS "C" SSCs. RTNSS "C" SSCs performing the function with higher risk-significance would normally receive a more rigorous review.

Area of Review – Identification of SSCs in the Scope of the RTNSS Program

The staff reviews the process used by the applicant to determine which nonsafety-related systems in the facility design should be subject to regulatory treatment and under what conditions that treatment should apply. The staff verifies that the implementation of the RTNSS process follows the scope, criteria, and specific steps described in SECY-94-084 and SECY-95-132, which are discussed in RG 1.206. In particular, the staff verifies that the applicant has applied the RTNSS scoping criteria described in Section I of this SRP appropriately.

1. The staff reviews the applicant's analysis of accidents related to NRC deterministic performance requirements such as 10 CFR 50.62 and 10 CFR 50.63 to identify any nonsafety-related SSCs that have been credited in the analyses and confirms that these SSCs have been included in the scope of the RTNSS program (RTNSS "A").

2. The staff reviews the applicant's determination of safety functions that must be satisfied to maintain the plant in a safe stable shutdown condition[1] in the post 72-hour period and following seismic events, and the methods for achieving those safety functions. The staff verifies that nonsafety-related SSCs relied upon to achieve those functions have been included in the scope of the RTNSS program (RTNSS "B").

[1] The NRC considers a "safe stable shutdown condition" for advanced passive LWRs to be: A condition by which all plant conditions are stable and within regulatory limits and the reactor coolant system pressure is stabilized and reactor coolant temperature is at value less than or equal to 420 degrees F.

3. The staff reviews the applicant's description of the Seismic Margins Analysis (SMA) documented in Chapter 19 of the FSAR to identify any nonsafety-related SSCs that have been credited in the SMA. The staff confirms that any nonsafety-related SSCs that are relied upon to meet the acceptance criteria for the SMA have been included in the scope of the RTNSS program (RTNSS "B").

4. The PRA and Severe Accident staff reviews the results of the focused PRA sensitivity studies as described in SRP 19.0, "Probabilistic Risk Assessment and Severe Accident Evaluation for New Reactors," Revision 3, 2013. The staff confirms that nonsafety-related design features or functional capabilities with mitigation capability sufficient to reduce the CDF or LRF below the Commission goals when credited in the focused PRA have been identified as risk-significant and included in the scope of the RTNSS program (RTNSS "C").

5. The PRA and Severe Accident staff use information in Chapters 15 and 19 of the FSAR pertaining to initiators of transients and accidents affecting the nuclear steam supply system, and consult as necessary with reviewers of those sections, to verify that the applicant has correctly identified the SSCs that require evaluation of risk-significance based on their contribution to initiating event frequencies. The staff then verifies that the applicant has completely addressed the following screening criteria for assessing risk significance of those SSCs with respect to initiating event frequency:

    a. Does the calculation of the initiating event frequency consider the nonsafety-related SSCs?

    b. Does the unavailability of the nonsafety-related SSCs significantly affect the calculation of the initiating event frequency?

    c. Does the initiating event significantly[2] affect the CDF and the LRF?

    The staff verifies that the applicant has included nonsafety-related SSCs in the scope of the RTNSS program that satisfy the screening criteria listed above (RTNSS "C").

6. The PRA and Severe Accident staff reviews the applicant's evaluation of potential uncertainties associated with assumptions made in the PRA regarding passive systems and verifies that the applicant has included nonsafety-related SSCs in the scope of the RTNSS program to compensate for the uncertainties in the PRA and in the modeling of severe accident phenomenology, or provided a reasonable justification for not doing so (RTNSS "C").

7. The staff verifies that the applicant included any nonsafety-related SSCs credited in meeting the Commission's containment performance goals in the scope of the RTNSS program (RTNSS "D"). The goals are:

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[2] An SSC failure that is a dominant contributor to an initiating event is significant if the initiating event contributes 10 percent or more to at-power or shutdown internal events CDF.

a. The containment should maintain its role as a reliable, leak-tight barrier by ensuring that containment stresses do not exceed American Society of Mechanical Engineers service level C limits for a minimum period of 24 hours following the onset of core damage, and that following this 24-hour period the containment should continue to provide a barrier against the uncontrolled release of fission products.

b. The conditional containment failure probability determined from the Level II PRA is less than or equal to 0.1.

8. The staff reviews the applicant's evaluation of the potential for adverse interaction between passive safety-related and active nonsafety-related systems and assures that any nonsafety-related design features or functional capabilities relied upon to prevent nonsafety-related systems from adversely impacting a safety function have been included in the scope of RTNSS (RTNSS "E").

Area of Review – Functional Design of RTNSS SSCs

1. The staff reviews the design of SSCs to assure that the acceptance criteria listed in Section II have been satisfied. Review is limited to those functions of the SSC needed to assure that specified reliability/availability missions can be achieved.

Area of Review – Focused PRA Sensitivity Studies

1. The PRA and Severe Accident staff reviews the focused PRA using guidance in SRP 19.0 to assure that acceptance criteria in Section II of this SRP are satisfied.

2. The PRA and Severe Accident staff reviews the mission statements for RTNSS SSCs and verifies that R/A missions are consistent with the assumptions in the PRA or other pertinent assumptions related to the function of the SSC. The staff issues requests for additional information when necessary to gain a clear understanding of the stated mission or support a determination that the mission is reasonable given the function of the SSC.

Area of Review – Augmented Design Standards

1. The staff reviews the applicant's determination of safety functions that must be satisfied to maintain the plant in a safe stable shutdown condition in the post 72-hour period and the methods for achieving those safety functions. The staff verifies that nonsafety-related SSCs relied upon to achieve those functions have been designed to meet the augmented design standards for protection from seismic events and natural phenomena.

2. The staff reviews the applicant's augmented design standards and verifies that they meet the acceptance criteria stated above in Section II.

Area of Review – Regulatory Treatment of SSCs in the RTNSS Program

1. The staff reviews the results of the focused PRA sensitivity studies and confirms that the applicant has included requirements in the TSs, in accordance with 10 CFR 50.36(c)(2)(ii)(D), for nonsafety-related design features or functional capabilities with mitigation capability sufficient to reduce the CDF or LRF below the Commission goals when credited in the focused PRA.

2. The staff reviews ACs selected by the applicant for SSCs in the scope of the RTNSS program. The staff verifies that AC LCOs and completion times, if appropriate, are established such that the availability of each function provides reasonable assurance that RTNSS SSCs can meet their RTNSS R/A missions. The staff also verifies that surveillance requirements are established which provide an adequate level of support to ensure that component performance is consistent with its RTNSS R/A mission. Reviewers should assure that any support systems needed to establish the availability of a function have been identified and addressed with ACs. It is acceptable for support systems to simply inherit the controls of the supported system. The reviewer considers the activities, including tests, performed to implement a surveillance requirement and confirms that SSC availability can be adequately determined with the surveillance requirement.

Guidance Specific to DC and COL applications

For review of a DC application, the reviewer should follow the above procedures to verify that the design set forth in the FSAR meets the acceptance criteria. DCs have referred to the FSAR as the design control document. 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 DC FSAR.

For review of a COL application, the scope of the review is dependent on whether the COL applicant references a DC, an early site permit or other NRC approvals (e.g., manufacturing license, site suitability report or topical report).

For review of both DC and COL applications, SRP Section 14.3 should be followed for the review of ITAAC. The review of ITAAC cannot be completed until after the completion of this section.

IV. EVALUATION FINDINGS

The reviewer verifies that the applicant has provided sufficient information to address the regulatory criteria stated in the section on RTNSS in the staff's Safety Evaluation Report (SER) and that the review and calculations (if applicable) support conclusions of the following type to be included in the SER. The reviewer also states the bases for those conclusions.

1. The staff concludes that the applicant's process for using the focused PRA results to identify RTNSS-important nonsafety-related SSCs follows the process approved by the NRC and is therefore acceptable.

2. Based on its review, the staff concludes that the applicant has correctly identified the nonsafety equipment relied upon to meet the SBO and ATWS rules and therefore requiring regulatory treatment.

3. The staff finds that the applicant has included sufficient nonsafety-related equipment in the RTNSS program to ensure that safety functions relied upon in the post-72-hour period and following seismic events have a reasonable likelihood of being successful. Further, the staff finds that the nonsafety-related equipment relied upon in the post-72-hour period has been designed in accordance with Commission policy and that the applicant has established appropriate ACs for this equipment.

4. The staff has reviewed the mission statements for SSCs including R/A missions. These statements correctly describe the missions of RTNSS and nonsafety-related SSCs and R/A missions are consistent with assumptions in the PRA; therefore, the staff finds them acceptable.

5. The applicant proposed a means for implementing RTNSS controls in the form of administrative ACs for the SSCs as discussed in the SER Section. The ACM, which has been incorporated into FSAR, documents the ACs.

6. The staff has reviewed the applicant's implementation of the RTNSS process using the guidance in SRP 19.3 and determined that it satisfies the scope, criteria, and process described in SECY-94-084 and associated SRM, SECY-95-132 and associated SRM, and RG 1.206. Therefore, the staff finds the applicant's implementation to be acceptable.

The staff should support findings of acceptability with logical bases built from an evaluation of the considerations given in Subsection III of this SRP. Reviewers should verify that the applicant provided sufficient information to complete the review in accordance with this SRP and therefore that the review is sufficiently complete to support its general findings as identified above, which should be included in the staff's SER.

For DC reviews, the findings will also summarize the staff's evaluation of the COL action/information items proposed by the DC applicant that are relevant to this SRP section. For COL reviews, the findings will also summarize the staff's evaluation of how the COL applicant addressed those COL action/information items included in the DCD referenced in its application that are relevant to this SRP section.

V. IMPLEMENTATION

The staff will use this SRP section in performing safety evaluations of license applications, design certifications, and design approvals submitted by applicants pursuant to 10 CFR Part 50 or 10 CFR Part 52.

The provisions of this SRP apply to reviews of applications submitted six months or more after the date of issuance of this SRP, unless superseded by a later revision.

VI. REFERENCES

1. 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

2. 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

3. EPRI, "Advanced Light Water Reactor (ALWR) Utility Requirements Document for Passive Plants," (Volume III, Chapter 1), March 1999.

4. NRC, Memorandum from L. Joseph Callan, USNRC Executive Director for Operations to Chairman Jackson, US NRC, "Implementation of Staff Position in SECY-96-128, 'Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standard Pressurized Reactor Design,' Related to Post-72- Hour Actions", June 23, 1997.

5. NRC, "Safety Goals for the Operations of Nuclear Power Plants; Policy Statement," *Federal Register*, Volume 51, No. 149, pp. 28044-28049, August 4, 1986. Corrected and reprinted at *Federal Register*, Volume 51, No. 162, pp. 30028–30033, August 21, 1986.

6. RG 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," June 2007.

7. RG1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," Revision 1, March 2007.

8. RG 1.221, "Design-Basis Hurricane and Hurricane Missiles for Nuclear Power Plants," October 2011.

9. SECY-93-087, "Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor ALWR Designs," dated April 2, 1993, and associated SRM, July 21, 1993.

10. SECY-94-084, "Policy and Technical Issues Associated with the Regulatory Treatment of Nonsafety Systems in Passive Plant Designs," dated March 28, 1994, and associated Staff Requirements Memorandum (SRM), June 30, 1994.

11. SECY-95-132, "Policy and Technical Issues Associated with the Regulatory Treatment of Nonsafety Systems (RTNSS) in Passive Plant Designs," dated May 22, 1995, and associated SRM, June 28, 1995.

12. SECY-96-128, “Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design,” June 12, 1996, and associated SRM, January 15, 1997.

13. SECY-11-0024 “Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews,” dated February 18, 2011 (ML110110691), and associated SRM, May 11, 2011 (ML111320551).

Paperwork Reduction Act Statement

This Standard Review Plan contains and references information collection requirements that are subject to the Paperwork Reduction Act of 995 (44 U.S.C. 3501 ET SEQ.). These information collections were approved by the Office of Management and Budget, approval numbers 3150-0011 and 3150-0151.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

SRP Section 19.3
Description of Changes

Section 19.3 "REGULATORY TREATMENT OF NONSAFETY SYSTEMS FOR PASSIVE ADVANCED LIGHT WATER REACTORS"

This SRP section reflects the staff's disposition of public comments on the guidance previously provided in Section 19.3, Draft Revision 0, dated October 2012 of NUREG-0800. See the Agencywide Documents Access and Management System (ADAMS) Accession No. ML12128A405. A description of each comment and how it has been addressed by the NRC will be published when the SRP section is issued in final form. In addressing the public's comments, the NRC has modified the SRP section to reflect a revised position on treatment of the high winds external hazard for certain RTNSS SSCs. This position differs from the one described in the previously issued draft Section 19.3 of NUREG-0800 and from the alternative proposed in public comments (ML12319A465) on the previously issued draft Section 19.3 of NUREG-0800, which, during a public meeting held on January 22, 2013, the staff agreed to consider. The reason for the change is as follows.

The staff's original position on treatment of the high winds external hazard is documented in a memorandum from L. Joseph Callan, USNRC Executive Director for Operations to Chairman Jackson, US NRC dated June 23, 1997 (ML003708229) and entitled: "Implementation of Staff Position in SECY-96-128, 'Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standard Pressurized Reactor Design', Related to Post-72 Hour Actions". At that time the NRC was concerned with the ability of a severe hurricane to cause an extended loss of reliable offsite AC power for a period longer than 72 hours. Consequently, the NRC took the position that it was reasonable and practical to design post-72 hour SSCs (most notably nonsafety related diesel generators and their enclosure) to withstand a Category 5 hurricane and associated wind-borne missiles; but, these SSCs should not be required to withstand tornado loads and tornado missiles. Also at the time, tornado loads and missiles were considered generally to lead to more restrictive design requirements.

Since this position was established in the mid-1990s , Regulatory Guide 1.76 has been revised using the Enhanced Fujita Scale, resulting in a significant decrease to the maximum design basis tornado wind speeds, and new guidance (Regulatory Guide 1.221) has been issued for addressing hurricanes and associated hurricane missiles. In addition, recent operating experience shows that tornado wind events can also cause an extended loss of reliable offsite AC power for more than 72 hours. Lastly, application of the guidance described in the memorandum referenced above could in some cases result in a level of treatment for nonsafety related SSCs which meet Criterion B for RTNSS that is higher than the level for safety-related SSCs. Therefore, the RTNSS missile protection guidance described in the memorandum is no longer appropriate. The NRC's position now is that RTNSS "B" SSCs should be protected from both tornados and hurricanes and missiles they might create, and that applicants should choose the design basis wind speeds for RTNSS "B" SSCs using the guidance in Regulatory Guides 1.76 and 1.221.

The public has not had an opportunity to comment on this approach to treatment of the high winds hazard for certain RTNSS SSCs as it is now described in the section on acceptance criteria for Augmented Design Standards (Item 4 on page 19.3-8). Section 19.3, Draft Revision 0 of NUREG-0800 will be finalized after comments on this new information have been received and addressed by the NRC. A description of each comment on this new information and how it has been addressed by the NRC will be published when the SRP section is issued in final form.