SECTION 1

INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

This document is a safety evaluation report (SER) on the application for license renewal (LR) for the Monticello Nuclear Generating Plant (MNGP), as filed by the Nuclear Management Company, LLC (NMC or the applicant). By letter dated March 16, 2005, NMC submitted its application to the U.S. Nuclear Regulatory Commission (NRC or the Commission) for renewal of the MNGP operating license for an additional 20 years. The NRC staff (the staff) prepared this report, which summarizes the results of its safety review of the renewal application for compliance with the requirements of Title 10, Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," of the *Code of Federal Regulations* (10 CFR Part 54). The NRC license renewal project manager for the MNGP license renewal review is Daniel Merzke. Mr. Merzke can be contacted by telephone at 301-415-3777 or by electronic mail at DXM2@nrc.gov. Alternatively, written correspondence may be sent to the following address:

Division of License Renewal
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In its March 16, 2005, submittal letter, the applicant requested renewal of the operating license issued under Section 104b (Operating License No. DPR-22) of the Atomic Energy Act of 1954, as amended, for MNGP, for a period of 20 years beyond the current license expiration date of midnight September 8, 2010. MNGP is located approximately 30 miles northwest of Minneapolis, Minnesota. The NRC issued the construction permit for MNGP on June 19, 1967. The NRC issued the operating license for MNGP on January 9, 1981. MNGP is a single-cycle, forced circulation, General Electric BWR-3, boiling-water reactor producing steam for direct use in a steam turbine. General Electric Corporation supplied the nuclear steam supply system and Bechtel Corporation originally designed and constructed the balance of the plant. MNGP operates at a licensed power output of 1775 megawatt thermal (MWt), with a gross electrical output of approximately 600 megawatt electric (MWe). The Updated Safety Analysis Report (USAR) contains details concerning the plant and the site.

The license renewal process consists of two concurrent reviews—a technical review of safety issues and an environmental review. The NRC regulations found in 10 CFR Part 54 and 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," respectively, set forth the requirements for these reviews. The safety review for the MNGP license renewal is based on the applicant's license renewal application (LRA) and on its responses to the staff's requests for additional information (RAIs). The applicant supplemented and clarified its responses to the LRA and RAIs in audits, meetings, and docketed correspondence. The staff reviewed and considered all information submitted in support of the LRA. The public may view the LRA and all pertinent information and materials, including the USAR mentioned above, at the NRC Public Document Room, located in One White Flint North, 11555 Rockville Pike (first floor), Rockville, MD 20852-2738 (301-415-4737/800-397-4209), and at the Monticello Public Library, 200 West 6th Street,

Monticello, MN 55362. In addition, the public may find the MNGP LRA, as well as materials related to the license renewal review, on the NRC Web site at http://www.nrc.gov.

This SER summarizes the results of the staff's safety review of the MNGP LRA and describes the technical details considered in evaluating the safety aspects of the unit's proposed operation for an additional 20 years beyond the term of the current operating license. The staff reviewed the LRA in accordance with NRC regulations and the guidance provided in NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR), dated July 2001.

Sections 2 through 4 of this SER address the staff's review and evaluation of license renewal issues that it considered during the review of the application. Section 5 is reserved for the report of the Advisory Committee on Reactor Safeguards (ACRS). Section 6 provides the conclusions of this report.

Appendix A to this SER is a table that identifies the applicant's commitments associated with the renewal of the operating license. Appendix B provides a chronology of the principal correspondence between the NRC and the applicant related to the review of the application. Appendix C is a list of principal contributors to the SER. Appendix D is a bibliography of the references used in support of the review.

In accordance with 10 CFR Part 51, the staff prepared a draft plant-specific supplement to the Generic Environmental Impact Statement (GEIS). This supplement discusses the environmental considerations related to renewing the license for MNGP. The staff issued draft Supplement 26 to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Monticello Nuclear Generating Plant (NUREG-1437, Supplement 26) Draft Report for Comment," on January 23, 2006.

1.2 License Renewal Background

Pursuant to Section 103c of the Atomic Energy Act of 1954, as amended, and NRC regulations (10 CFR 50.51(a)), operating licenses for commercial power reactors are issued for 40 years. Pursuant to 10 CFR 54.31(b), these licenses can be renewed for up to 20 additional years. The original 40-year license term was selected on the basis of economic and antitrust considerations, rather than on technical limitations; however, some individual plant and equipment designs may have been engineered on the basis of an expected 40-year service life.

In 1982, the NRC anticipated interest in license renewal and held a workshop on nuclear power plant aging. This workshop led the NRC to establish a comprehensive program plan for nuclear plant aging research. On the basis of the results of that research, a technical review group concluded that many aging phenomena are readily manageable and do not pose technical issues that would preclude life extension for nuclear power plants. In 1986, the NRC published a request for comment on a policy statement that would address major policy, technical, and procedural issues related to license renewal for nuclear power plants.

In 1991, the NRC published the license renewal rule in 10 CFR Part 54 (the Rule) (Volume 56, page 64943, of the *Federal Register* (56 FR 64943), dated December 13, 1991). The NRC participated in an industry-sponsored demonstration program to apply the Rule to a pilot plant

and to gain experience necessary to develop implementation guidance. To establish a scope of review for license renewal, the Rule defined age-related degradation unique to license renewal; however, during the demonstration program, the NRC found that many aging mechanisms occur and are managed during the period of initial license. In addition, the NRC found that the scope of the review did not allow sufficient credit for existing programs, particularly the implementation of the Maintenance Rule, which also manages plant-aging phenomena. As a result, the NRC amended the Rule in 1995. As published in 60 FR 22461, dated May 8, 1995, the amended 10 CFR Part 54 establishes a regulatory process that is simpler, more stable, and more predictable than the previous Rule. In particular, the NRC amended 10 CFR Part 54 to focus on managing the adverse effects of aging, rather than on identifying age-related degradation unique to license renewal. The NRC initiated these rule changes to ensure that important systems, structures, and components (SSCs) will continue to perform their intended functions during the period of extended operation. In addition, the revised Rule clarified and simplified the integrated plant assessment (IPA) process to be consistent with the revised focus on passive, long-lived structures and components (SCs).

In parallel with these initiatives, the NRC pursued a separate rulemaking effort (61 FR 28467, dated June 5, 1996) and developed an amendment to 10 CFR Part 51 to focus the scope of the review of environmental impacts of license renewal and to fulfill the NRC's responsibilities under the National Environmental Policy Act of 1969 (NEPA).

1.2.1 Safety Review

License renewal requirements for power reactors are based on two key principles:

(1) The regulatory process is adequate to ensure that the licensing bases of all currently operating plants provide and maintain an acceptable level of safety, with the possible exception of the detrimental effects of aging on the functionality of certain SSCs, as well as a few other safety-related (SR) issues, during the period of extended operation.

(2) The plant-specific licensing basis must be maintained during the renewal term in the same manner and to the same extent as during the original licensing term.

In implementing these two principles, 10 CFR 54.4, "Scope," defines the scope of license renewal as including those SSCs (1) that are SR, (2) whose failure could affect SR functions, and (3) that are relied on to demonstrate compliance with the NRC's regulations for fire protection (FP), environmental qualification (EQ), pressurized thermal shock (PTS), anticipated transient without scram (ATWS), and station blackout (SBO).

Pursuant to 10 CFR 54.21(a), an applicant for a renewed license must review all SSCs that are within the scope of the Rule to identify SCs that are subject to an aging management review (AMR). Those SCs that are subject to an AMR perform an intended function without moving parts, or without a change in configuration or properties, and are not subject to replacement based on qualified life or specified time period. As required by 10 CFR 54.21(a), an applicant for a renewed license must demonstrate that the effects of aging will be managed in such a way that the intended function, or functions, of those SCs will be maintained, consistent with the current licensing basis (CLB), for the period of extended operation; however, active equipment is considered to be adequately monitored and maintained by existing programs. In other words, the detrimental effects of aging that may affect active equipment are more readily detectable

and can be identified and corrected through routine surveillance, performance monitoring, and maintenance activities. The surveillance and maintenance activities programs for active equipment, as well as other aspects of maintaining the plant's design and licensing basis, are required throughout the period of extended operation.

Pursuant to 10 CFR 54.21(d), each LRA is required to include a supplement to the USAR. This supplement must contain a summary description of the applicant's programs and activities for managing the effects of aging and the evaluation of time-limited aging analyses (TLAAs) for the period of extended operation.

License renewal also requires the identification and updating of the TLAAs. During the design phase for a plant, certain assumptions are made about the length of time the plant can operate. These assumptions are incorporated into design calculations for several of the plant's SSCs. In accordance with 10 CFR 54.21(c)(1), the applicant must either show that these calculations will remain valid for the period of extended operation, project the analyses to the end of the period of extended operation, or demonstrate that the effects of aging on these SSCs can be adequately managed for the period of extended operation.

In 2001, the NRC developed and issued Regulatory Guide (RG) 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses." This RG endorses NEI 95-10, Revision 3, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54—The License Renewal Rule," which the Nuclear Energy Institute (NEI) issued in March 2001. NEI 95-10 details an acceptable method of implementing the license renewal rule. The NRC also used the SRP-LR to review this application.

In the LRA, MNGP fully utilizes the process defined in NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," issued in July 2001. The GALL Report provides a summary of staff-approved aging management programs (AMPs) for the aging of many SCs that are subject to an AMR. If an applicant commits to implementing these staff-approved AMPs, the time, effort, and resources used to review an applicant's LRA can be greatly reduced, thereby improving the efficiency and effectiveness of the license renewal review process. The GALL Report summarizes the aging management evaluations, programs, and activities credited for managing aging for most of the SCs used throughout the industry. The report also serves as a reference for both applicants and staff reviewers to quickly identify those AMPs and activities that the staff has determined can provide adequate aging management during the period of extended operation.

1.2.2 Environmental Review

In December 1996, the staff revised the environmental protection regulations to facilitate the environmental review for license renewal. The staff prepared NUREG-1437, Revision 1, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," to document its evaluation of the possible environmental impacts associated with renewing licenses of nuclear power plants. For certain types of environmental impacts, the GEIS establishes generic findings that are applicable to all nuclear power plants. These generic findings are codified in Appendix B, "Environmental Effect of Renewing the Operating License of a Nuclear Power Plant," to Subpart A, "National Environmental Policy Act—Regulations Implementing Section 102(2)," of 10 CFR Part 51. Pursuant to 10 CFR 51.53(c)(3)(i), an

applicant for license renewal may incorporate these generic findings in its environmental report. In accordance with 10 CFR 51.53(c)(3)(ii), an environmental report must also include analyses of those environmental impacts that must be evaluated on a plant-specific basis (i.e., Category 2 issues).

In accordance with NEPA and the requirements of 10 CFR Part 51, the NRC performed a plant-specific review of the environmental impacts of license renewal, including whether new and significant information existed that the GEIS did not consider. As part of its scoping process, the NRC held a public meeting on June 30, 2005, in Monticello, Minnesota, to identify environmental issues specific to the plant. The NRC's draft plant-specific Supplement 26 to the GEIS regarding MNGP documents the results of the environmental review and includes a preliminary recommendation with respect to the license renewal action. The NRC held another public meeting on March 22, 2006, in Monticello, Minnesota, to discuss the draft plant-specific Supplement 26 to the GEIS regarding MNGP. After considering comments on the draft, the NRC will prepare and publish a final, plant-specific supplement to the GEIS separately from this report.

1.3 Principal Review Matters

Title 10, Part 54, of the *Code of Federal Regulations* describes the requirements for renewing operating licenses for nuclear power plants. The staff performed its technical review of the MNGP LRA in accordance with NRC guidance and the requirements of 10 CFR Part 54. Title 10, Section 54.29, "Standards for Issuance of a Renewed License," of the *Code of Federal Regulations* sets forth the standards for renewing a license. This SER describes the results of the staff's safety review.

In 10 CFR 54.19(a), the NRC requires a license renewal applicant to submit general information. The applicant provided this general information in Section 1 of its LRA for MNGP, which it submitted to the NRC by letter dated March 16, 2005. The staff reviewed Section 1 and found that the applicant had submitted the information required by 10 CFR 54.19(a).

In 10 CFR 54.19(b), the NRC requires that each LRA include "conforming changes to the standard indemnity agreement, 10 CFR 140.92, Appendix B to account for the expiration term of the proposed renewed license." The applicant stated the following in the LRA regarding this issue:

> The current indemnity agreement No. B-42 for the Monticello Nuclear Generating Plant states that the agreement shall terminate at the time of expiration of the license.
>
> The indemnity agreement lists DPR-22 as the applicable license number. Should the license number be changed upon issuance of the renewed license, NMC requests that conforming changes be made to the indemnity agreement as appropriate.

The staff intends to maintain the original license number upon issuance of the renewed license. Therefore, conforming changes to the indemnity agreement do not need to be made, and the requirements of 10 CFR 54.19(b) have been met.

In 10 CFR 54.21, "Contents of Application—Technical Information," the NRC requires that each LRA must contain (a) an IPA, (b) a description of any CLB changes that occurred during the staff review of the LRA, (c) an evaluation of TLAAs, and (d) an FSAR (Final Safety Analysis Report) supplement. Sections 3 and 4 and Appendix B to the LRA address the license renewal requirements of 10 CFR 54.21(a), (b), and (c). Appendix A to the LRA contains the USAR supplement required by 10 CFR 54.21(d).

In 10 CFR 54.21(b), the NRC requires that each year following submission of the LRA, and at least 3 months before the scheduled completion of the staff's review, the applicant must submit an amendment to the renewal application that identifies any changes to the CLB of the facility that materially affect the contents of the LRA, including the USAR supplement. The applicant submitted an update to the LRA by letter dated March 15, 2006, which summarized the changes to the CLB that had occurred at MNGP during the staff's review of the LRA. This submission satisfies the requirements of 10 CFR 54.21(b) and is still under staff review.

In accordance with 10 CFR 54.22, "Contents of Application—Technical Specifications," an applicant's LRA must include changes or additions to the technical specifications (TSs) that are necessary to manage the effects of aging during the period of extended operation. In Appendix D to the LRA, the applicant stated that it had not identified any TS changes necessary to support issuance of the renewed operating license for MNGP. This adequately addresses the requirement specified in 10 CFR 54.22.

The staff evaluated the technical information required by 10 CFR 54.21 and 10 CFR 54.22 in accordance with NRC regulations and the guidance provided by the SRP-LR. Sections 2, 3, and 4 of this SER document the staff's evaluation of the technical information contained in the LRA.

As required by 10 CFR 54.25, "Report of the Advisory Committee on Reactor Safeguards," the ACRS will issue a report to document its evaluation of the staff's LRA review and associated SER. SER Section 5 will incorporate the ACRS report once it is issued. SER Section 6 will document the findings required by 10 CFR 54.29, "Standards for Issuance of a Renewed License."

The final plant-specific supplement to the GEIS will document the staff's evaluation of the environmental information required by 10 CFR 54.23, "Contents of Application—Environmental Information," and will specify the considerations related to renewing the license for MNGP. The staff will prepare this supplement separately from this SER.

1.4 Interim Staff Guidance

The license renewal program is a living program. The NRC staff, industry, and other interested stakeholders gain experience and develop lessons learned with each renewed license. The lessons learned address the NRC's performance goals of safety, openness, and effectiveness. Interim staff guidance (ISG) is documented for use by the NRC staff, industry, and other interested stakeholders until it is incorporated into license renewal guidance documents, such as the SRP-LR and the GALL Report.

Table 1.4-1 provides the current set of ISGs issued by the staff, as well as the SER sections in which the staff addresses them.

Table 1.4-1 Current Interim Staff Guidance

ISG Issue (Approved ISG No.)	Purpose	SER Section
GALL Report presents one acceptable way to manage aging effects **(ISG-1)**	This ISG clarifies that the GALL Report contains one acceptable way, but not the only way, to manage aging for license renewal.	N/A
SBO Scoping **(ISG-2)**	The license renewal rule 10 CFR 54.4(a)(3) includes 10 CFR 50.63(a)(1)—SBO. The SBO rule requires that a plant *must withstand and recover from* an SBO event. The recovery time for offsite power is much faster than that of EDGs. The offsite power system should be included within the scope of license renewal.	2.5.2.4
Concrete AMP **(ISG-3)**	Lessons learned from the GALL demonstration project indicate that GALL *is not clear on whether* concrete requires an AMP.	3.5.2.2 3.5.2.3
FP System Piping **(ISG-4)**	This ISG clarifies the staff position for wall-thinning of the FP piping system in GALL AMPs XI.M26 and XI.M27. The staff's new position is that there is no need to disassemble FP piping, as disassembly can introduce oxygen to FP piping, which can accelerate corrosion. Instead, a nonintrusive method, such as volumetric inspection, can be used. Testing of sprinkler heads should be performed at year 50 of *sprinkler system service life*, and every 10 years thereafter. This ISG eliminates the halon/carbon dioxide system inspections for charging pressure, valve lineups, and the automatic mode of operation test from GALL; *the staff considers these test* verifications to be operational activities.	3.0.3.2.16 3.3.2.3.9

ISG Issue (Approved ISG No.)	Purpose	SER Section
Identification and Treatment of Electrical Fuse Holders **(ISG-5)**	This ISG includes electrical fuse holders AMR and AMP (i.e., same as terminal blocks and other electrical connections). The position includes only fuse holders that are not inside the enclosure of active components (e.g., inside of switchgears and inverters). Operating experience finds that metallic clamps (spring-loaded clips) have a history of age-related failures from aging stressors such as vibration, thermal cycling, mechanical stress, corrosion, and chemical contamination. The staff finds that visual inspection of fuse clips is not sufficient to detect the aging effects from fatigue, mechanical stress, and vibration.	3.6.2.3.2
The ISG Process **(ISG-8)**	This ISG clarifies and updates the ISG process on improved license renewal guidance documents.	N/A
Standardized Format for License Renewal Applications **(ISG-10)**	This ISG provides a standardized LRA format for applicants.	N/A

1.5 Summary of Open Items

An open item (OI) is an issue that, in the staff's judgment, has not been resolved in a manner that meets all applicable regulatory requirements. The NRC issued the initial SER on April 26, 2006, with no OIs. The staff did not identify any subsequent open items in preparing the final SER.

1.6 Summary of Confirmatory Items

A confirmatory item (CI) is an issue that the applicant and the staff have resolved, but for which the applicant has not yet formally submitted the resolution. The NRC issued the initial SER on April 26, 2006, with no CIs. The staff did not identify any subsequent CIs in preparing the final SER.

1.7 Summary of Proposed License Conditions

As a result of the staff's review of the LRA for MNGP, including subsequent information and clarifications provided by the applicant, the staff identified three proposed license conditions.

The first license condition requires the applicant to include the USAR supplement required by 10 CFR 54.21(d) in the next USAR update, as required by 10 CFR 50.71(e), following the issuance of the renewed license.

The second license condition requires that the list of commitments identified in Appendix A to this SER be completed in accordance with the schedule in Appendix A.

The third license condition requires that all capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H.

SECTION 2

STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW

2.1 Scoping and Screening Methodology

2.1.1 Introduction

Title 10, Section 54.21, "Contents of Application—Technical Information," of the *Code of Federal Regulations* (10 CFR 54.21) requires that each license renewal application (LRA) contain an integrated plant assessment (IPA). Furthermore, the IPA must list and identify structures and components (SCs) subject to an aging management review (AMR) from all of the systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, "Scope."

In LRA Section 2.1, "Scoping and Screening Methodology," the applicant described the scoping and screening methodology used to identify SSCs at the Monticello Nuclear Generating Plant (MNGP) within the scope of license renewal and the SCs subject to an AMR. The staff reviewed the applicant's scoping and screening methodology to determine whether it meets the scoping requirements stated in 10 CFR 54.4(a) and the screening requirements stated in 10 CFR 54.21.

In developing the scoping and screening methodology for the MNGP LRA, the applicant considered the requirements of 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," (the Rule), the Statements of Consideration for the Rule, and the guidance presented by the Nuclear Energy Institute (NEI), in NEI 95-10, Revision 4, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54—The License Renewal Rule." In developing this methodology, the applicant also considered the correspondence between the U.S. Nuclear Regulatory Commission (NRC or the staff) and other applicants or NEI.

2.1.2 Summary of Technical Information in the Application

In LRA Sections 2 and 3, the applicant provided the technical information required by 10 CFR 54.21(a). In LRA Section 2.1, the applicant described the process used to identify SSCs that meet the license renewal scoping criteria under 10 CFR 54.4(a), as well as the process used to identify SCs subject to an AMR, pursuant to 10 CFR 54.21(a)(1).

Additionally, LRA Sections 2.2, "Plant Level Scoping Results," 2.3, "System Scoping and Screening Results: Mechanical Systems," 2.4, "Scoping and Screening Results: Containments, Structures, and Component Supports," and 2.5, "Scoping and Screening Results: Electrical and Instrumentation and Controls Systems," amplify the process the applicant used to identify SCs subject to an AMR. LRA Section 3, "Aging Management Review Results," contains the following information:

- Section 3.1, "Aging Management of Reactor Coolant System"
- Section 3.2, "Aging Management of Engineered Safety Features"
- Section 3.3, "Aging Management of Auxiliary Systems"
- Section 3.4, "Aging Management of Steam and Power Conversion System"
- Section 3.5, "Aging Management of Containments, Structures, and Component Supports"
- Section 3.6, "Aging Management of Electrical and Instrumentation and Controls"

LRA Section 4, "Time-Limited Aging Analyses," contains the applicant's identification and evaluation of time-limited aging analyses.

2.1.2.1 Scoping Methodology

In LRA Section 2.1, the applicant described the methodology used to scope SSCs, pursuant to the 10 CFR 54.4(a) scoping criteria. The following sections present the applicant's scoping methodology, as described in the LRA.

2.1.2.1.1 Application of the Scoping Criteria in 10 CFR 54.4(a)

The applicant described the general approach to scoping safety-related (SR) and nonsafety-related (NSR) SSCs and SSCs credited with demonstrating compliance with certain regulated events in LRA Section 2.1.2, "Application of Scoping Criteria in 10 CFR 54.4(a)." The following sections describe the scoping approaches specific to each of the three 10 CFR 54.4(a) scoping criteria.

Application of the Scoping Criterion in 10 CFR 54.4(a)(1)

In LRA Section 2.1.4.2.1, "Scoping Criterion 1—Safety Related SSCs," the applicant presented its scoping methodology as it pertains to SR criteria pursuant to 10 CFR 54.4(a)(1). The applicant used MNGP Q-List and Q-List Extension color-coded drawings to code items as SR in the MNGP plant equipment electronic database (CHAMPS), which also served as one of a number of information sources in the current licensing basis (CLB) used to identify SSCs meeting Scoping Criterion 1. For example, information from the Updated Safety Analysis Report (USAR), technical specifications (TSs), and design documents was reviewed to ensure all major system and structure functions had been identified properly. These functions were compared to Scoping Criterion 1 to identify SSCs within the scope of license renewal which are relied upon to remain functional during and following design-basis events (DBEs).

CHAMPS and controlled drawings were used to identify components required to support system-level and structure-level functions within the scope of license renewal. Those components included within the scope of license renewal generally matched information in CHAMPS. Differences noted were documented and resolved.

Application of the Scoping Criterion in 10 CFR 54.4(a)(2)

In LRA Section 2.1.4.2.2, "Non-Safety Related Affecting Safety Related," the applicant presented the scoping methodology as it related to the NSR criteria pursuant to 10 CFR 54.4(a)(2). The applicant stated that MNGP SSCs meeting Scoping Criterion 2 were grouped into three categories, (1) CLB topics, (2) NSR SSCs directly connected to Scoping Criterion 1 SSCs (typically piping systems), or (3) NSR SSCs not directly connected to Scoping Criterion 1 SSCs, but whose failure could prevent, as a result of spatial proximity, the satisfactory accomplishment of a Scoping Criterion 1 function. SSCs meeting Scoping Criterion 2 in the first two categories typically were identified during document reviews, including the MNGP USAR, plant drawings, design documents, piping analyses, CHAMPS, and other CLB documents. SSCs in the third category typically were identified by both document reviews and extensive plant walkdowns to identify spatial interactions meeting broader criteria for license renewal.

CLB Topics

A review of the MNGP CLB identified NSR SSCs with preventive or mitigative functions supporting safe shutdown, the failure of which could prevent satisfactory accomplishment of a Scoping Criterion 1 function. High-energy line breaks (HELB), internal and external flooding events, internal and external missile hazards, overhead handling systems, and seismic interactions were evaluated. NSR SSCs were placed within the scope of license renewal as a result of this review if their failure could adversely affect an SR SSC.

NSR SSCs Directly Connected to Scoping Criterion 1 SSCs

NSR SSCs directly connected to Scoping Criterion 1 SSCs (typically piping systems) and component supports required to prevent NSR SSCs from physical interaction with SR SSCs are within the scope of license renewal. All piping supports in buildings with Scoping Criterion 1 components are within the scope of license renewal. The LRA describes the applicable supports as those that must remain in place so they do not prevent equipment required to perform intended functions from performing them. SCs within the scope of license renewal extend into the NSR portion of the piping and supports up to and including the first equivalent anchor beyond the safety/nonsafety interface, that point beyond which failure of the piping system will not prevent satisfactory performance of Scoping Criterion 1 functions of connected SSCs. The piping components and supports up to and including the first equivalent anchor are within the scope of license renewal.

NSR structures attached or next to Scoping Criterion 1 structures are within the scope of license renewal if their failure could prevent a Scoping Criterion 1 SSC from performing its intended function.

NSR SSCs Not Directly Connected to Scoping Criterion 1 SSCs

NSR SSCs not directly connected, but in spatial proximity, to Criterion 1 SSCs whose failure could prevent the satisfactory accomplishment of a Criterion 1 function are within the scope of license renewal. The LRA states that both spray (pressurized liquid or steamlines) and leaks (nonpressurized liquid lines) were evaluated for their impact on Scoping Criterion 1 components without regard to whether the Scoping Criterion 1 components were active or passive and

without regard to the duration of the spray or leak. All pressurized liquid systems in the general area of Scoping Criterion 1 components are within the scope of license renewal and assumed to leak anywhere around the circumference or along the length of the pipe. All nonpressurized liquid systems directly above Scoping Criterion 1 components are also within the scope of license renewal. Leaks were assumed to occur anywhere along the length of the piping system.

Air and gas systems are not included within the scope of license renewal because they do not contain NSR components whose failure could prevent satisfactory accomplishment of Scoping Criterion 1 functions. Site-specific operating experience was reviewed to verify that MNGP air/gas systems have not affected other plant equipment negatively. The applicant's review of industry operating experience also revealed no events of this nature. Because none of the air/gas lines are high-energy lines and all supports in buildings with Scoping Criterion 1 components are within the scope of license renewal, air/gas systems are not Scoping Criterion 2 items.

NSR conduits, cable trays, junction boxes, or lighting fixtures may contain or be routed near Scoping Criterion 1 cables or other components; therefore, all NSR conduits, trays, junction boxes, and lighting fixtures and their supports located within structures housing SR equipment are within the scope of license renewal. Additionally, conduits, trays, junction boxes, and lighting fixtures and their supports required for regulated events located in structures not housing Scoping Criterion 1 equipment are within the scope of license renewal.

Though most heating, ventilation, and air conditioning (HVAC) ducts and their supports are NSR, they are located throughout the plant, typically along ceilings, and thus above many Scoping Criterion 1 SSCs. Like air/gas pipe systems, HVAC ducts are not hazards to other plant equipment. Falling is a concern; therefore, all HVAC duct supports located within structures housing Scoping Criterion 1 components are within the scope of license renewal.

Application of the Scoping Criterion in 10 CFR 54.4(a)(3)

In LRA Section 2.1.4.2.3, "Scoping Criterion 3—Other Regulations Identified in 10 CFR Part 54," the applicant discussed the methodology used to identify SSCs credited with functions that demonstrate compliance with regulations for fire protection (FP), environmental qualification (EQ), anticipated transients without scram (ATWS), and station blackout (SBO), pursuant to the 10 CFR 54.4(a)(3) license renewal scoping criteria. The applicant did not evaluate pressurized thermal shock because it is not applicable to boiling-water reactors (BWRs).

Fire Protection

In LRA Section 2.1.4.2.4, "Fire Protection," the applicant described the scoping of SSCs relied on to perform functions that demonstrate compliance with 10 CFR 50.48, "Fire Protection"; Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities"; and commitments made in response to Appendix A to NRC Branch Technical Position APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976." The applicant stated that a detailed evaluation of the CLB, including CHAMPS, the safe-shutdown analysis, the fire hazards analysis, plant drawings, the USAR, and the operations manual was

performed for FP, and SSCs supporting either FP design features or safe shutdown following postulated fires are within the scope of license renewal.

Environmental Qualification

In LRA Section 2.1.4.2.5, "Environmental Qualification," the applicant described the scoping of SSCs relied on to perform functions that demonstrate compliance with 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants," which defines electric equipment important to safety that is required to be environmentally qualified to mitigate certain accidents that would result in harsh environmental plant conditions. The applicant stated that components that meet the requirements of 10 CFR 50.49 are identified on the EQ Master List. All equipment identified on the EQ Master List supporting the MNGP CLB was included within the scope of license renewal as components or commodities, pursuant to 10 CFR 54.4(a)(3).

Anticipated Transients without Scram (ATWS)

In LRA Section 2.1.4.2.7, "Anticipated Transients without Scram," the applicant described the scoping of SSCs relied on to perform functions that demonstrate compliance with the ATWS requirements of 10 CFR 50.62, "Requirements for Reduction of Risk from Anticipated Transients Without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants." The applicant stated that the MNGP design features related to ATWS are within the scope of license renewal because they are relied on to meet 10 CFR 50.62 requirements. The applicant stated that ATWS mitigation is accomplished by the use of three systems, (1) the alternate rod injection subsystem, (2) the standby liquid control system, and (3) the recirculation pump trip system. Based on a review of the CLB, plant and vendor drawings, the USAR, docketed correspondence, modifications, and CHAMPS, the components relied upon to mitigate ATWS events were determined to be within the scope of license renewal.

Station Blackout

In LRA Section 2.1.4.2.8, "Station Blackout," the applicant described the scoping of SSCs relied on to perform functions that demonstrate compliance with the requirements of 10 CFR 50.63, "Loss of Alternating Current Power." The applicant stated that, based on the review of plant-specific SBO calculations, the USAR, plant drawings, modifications, and CHAMPS, the components relied upon to mitigate SBO were determined to be within the scope of license renewal.

2.1.2.1.2 Documentation Sources Used for Scoping and Screening

In LRA Section 2.1.3, "Plant Information Sources," the applicant stated that it had evaluated information from the following sources during the license renewal scoping and screening process:

- USAR
- CLB information including TSs and docketed licensing correspondence
- design-basis documents (DBDs)

- Q-List and Q-List Extension
- controlled drawing file
- industry codes, standards, and regulations
- technical correspondence, analyses, and reports
- calculations
- plant modifications and alterations
- nuclear steam supply system supplier; architect-engineer; and vendor reports, specifications, and drawings
- Maintenance Rule documents
- CHAMPS

The applicant stated that it reviewed these documents to identify the major SSCs and their respective functions. Functions of SSCs that were determined to be within the scope of license renewal were identified as intended functions, pursuant to 10 CFR 54.4(b). CHAMPS and controlled drawings were used to identify components required to support system-level and structure-level functions within the scope of license renewal. These sources also were used to develop the list of SCs subject to an AMR.

2.1.2.1.3 Plant and System-Level Scoping

LRA Section 2.1.4 states that the scoping process categorizes the entire plant according to major SSCs and commodity groups. The applicant identified and evaluated SSC and commodity group functions against criteria in 10 CFR 54.4(a) to determine whether the function was an intended function. The SSC or commodity was deemed within the scope of license renewal and received further screening if a portion of the SSC or commodity fulfilled a scoping criterion.

2.1.2.1.4 Component-Level Scoping

After identifying the intended functions of systems and structures, the applicant identified components that support intended functions. The applicant considered components supporting intended functions as within the scope of license renewal and screened them to determine whether an AMR was required.

Commodity groups were used when component evaluations were by component type rather than by system or structure. Components constructed from similar materials, exposed to similar environments, and performing similar intended functions form the commodity groups. Commodity group components were not associated with specific systems or structures during the evaluation, but with their assigned commodity groups. An AMR of each commodity group took place as if it were a separate, individual system. Electrical components, component supports, and fire stops and seals were placed in separate commodity groups.

CHAMPS does not uniquely identify all components installed in the plant. For example, CHAMPS does not typically include such items as cables, raceways, piping, conduits, fireproofing, general construction items (e.g., nuts, bolts), or consumable materials (e.g., diesel

fuel, resins). Components not uniquely identified in CHAMPS that are within the scope of license renewal are identified as commodities or generic assets (e.g., pipe, structural steel) in their respective system or structure in the license renewal database to ensure proper coverage and evaluation.

2.1.2.1.5 Structure Scoping

LRA Section 2.1.4.1 states that CHAMPS includes a category for structures that comprise all of the MNGP buildings and structures. Buildings were categorized as individual or grouped license renewal structures. The applicant electronically searched other information sources, like CLB documentation, using several keywords (e.g., "structure," "new structure," "building modification") to ensure evaluation of all plant structures for license renewal intended functions, regardless of their coverage in CHAMPS.

2.1.2.2 Screening Methodology

After identifying the SSCs within the scope of license renewal, the applicant implemented a process for determining which SSCs would be subject to an AMR, pursuant to 10 CFR 54.21(a)(1). In LRA Section 2.1.5, "Screening Process," the applicant discussed the screening of SSCs within the scope of license renewal.

System, Structure, and Commodity Group Component Screening

LRA Section 2.1.5.2, "General Screening Methodology," states that the screening process identifies the components from the systems, structures, and commodity groups within the scope of license renewal that are subject to an AMR. These components perform or support a component-level intended function without moving parts or a change in configuration or properties and are not subject to replacement based on a qualified life or specified time period. Component-level intended functions support system-level intended functions. The plant systems, structures, and commodity groups within the scope of license renewal and their system-level intended functions were identified previously in the scoping process. The screening process consists of the following distinctive steps:

- identification of components subject to an AMR (passive and long-lived) for each system, structure, or commodity within the scope of license renewal
- identification of the component-level intended functions of all components subject to AMRs
- identification of applicable references for making these determinations

The applicant identified SCs within the scope of license renewal performing intended functions without moving parts or a change in configuration or properties (10 CFR 54.21(a)(1)(l) screening criterion). Active/passive screening determinations were based on the guidance in Appendix B to NEI 95-10. Passive SCs within the scope of license renewal not subject to replacement based on a qualified life or specified time period (10 CFR 54.21(a)(1)(ii) screening criterion) were identified as requiring AMRs. Component supports and fire stops and seals were binned in separate structural commodity groupings.

Electrical/Instrumentation and Control (I&C) Component Screening

In LRA Section 2.1.5.4, "Scoping and Screening of Electrical Equipment," the applicant described the methodology for screening electrical and I&C components. Component-level screening was performed for "in-scope" components associated with electrical systems. Components identified as within the scope of license renewal were evaluated pursuant to NEI 95-10, Appendix B guidance to determine whether they were considered "active." Components were either screened out as active or included in a commodity group. Long-lived, passive components were divided into four commodity groups, (1) Non-EQ Cables and Connections, (2) Fuse Holders, (3) Electrical Penetrations, and (4) Offsite Power/SBO Recovery Path components. Aging management was performed on only these four commodity groups.

2.1.3 Staff Evaluation

The staff evaluated the LRA scoping and screening methodology in accordance with the guidance in Section 2.1, "Scoping and Screening Methodology," of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR). The following regulations form the basis for the acceptance criteria for the scoping and screening methodology review:

- 10 CFR 54.4(a) relating to the identification of plant SSCs within the scope of license renewal
- 10 CFR 54.4(b) relating to the identification of intended functions of plant SSCs within the scope of license renewal
- 10 CFR 54.21(a)(1) and 10 CFR 54.21(a)(2) relating to the applicant's methods for identifying plant SCs subject to an AMR

As part of the review of the applicant's scoping and screening methodology, the staff reviewed the activities described in the following sections of the LRA using the guidance in the SRP-LR:

- Section 2.1 to ensure that the applicant described a process for identifying SSCs within the scope of license renewal, in accordance with the requirements of 10 CFR 54.4(a)
- Sections 2.2, 2.3, 2.4, and 2.5 to ensure that the applicant described a process for identifying structural, mechanical, and electrical components subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1) and 10 CFR 54.21(a)(2)

In addition, the staff conducted a scoping and screening methodology audit at the MNGP facility in Minnesota during the week of June 20–24, 2005. The audit focused on ensuring that the applicant had developed and implemented adequate guidance to conduct the scoping and screening of SSCs in accordance with the LRA methodologies and the requirements of the Rule. The staff reviewed implementation procedures and technical reports describing the applicant's scoping and screening methodologies. In addition, the staff conducted detailed discussions with the applicant on the implementation and control of the license renewal program and reviewed administrative control documentation and selected design documentation used by the applicant during the scoping and screening process. The staff reviewed the applicant's processes for quality assurance (QA) related to the development of the applicant's LRA and training and qualification of the LRA development team. The staff also

reviewed a sample of system scoping and screening results reports for the control rod drive (CRD) system and intake structure (flood control) to ensure that the applicant appropriately implemented the methodology outlined in the administrative controls and that the results were consistent with the CLB. The staff documented its review in an audit report issued July 18, 2005, identifying several issues requiring additional information from the applicant before completion of the review. Each of those issues is identified and addressed in detail in SER Sections 2.1.3.1.2 and 2.1.3.1.4.

2.1.3.1 Scoping Methodology

The applicant's license renewal project personnel and contractors performed the scoping evaluations for the LRA. The staff had detailed discussions with the applicant's license renewal project personnel and reviewed documentation of the scoping process. The staff assessed whether the scoping methodology described in the LRA and implementation procedures had been implemented appropriately and whether the scoping results were consistent with CLB requirements. The staff also reviewed a sample of system scoping results for the CRD system and intake structure (flood control).

2.1.3.1.1 Implementation Procedures and Documentation Sources Used for Scoping and Screening

The staff reviewed the applicant's scoping and screening implementation procedures to verify that the process used to identify SCs subject to an AMR was consistent with the LRA and SRP-LR, and that the applicant appropriately implemented the procedural guidance. The staff also reviewed the scope of CLB documentation sources supporting the LRA and the process used by the applicant to ensure that CLB commitments were considered appropriately in scoping and screening.

Scoping and Screening Implementation Procedures

The staff reviewed the scoping and screening methodology implementation procedures and engineering reports, as documented in the audit report dated July 18, 2005.

In reviewing these procedures, the staff focused on the consistency of the detailed procedural guidance with the LRA and the staff positions documented in the SRP-LR and interim staff guidance documents. The staff found that the scoping and screening methodology instructions were consistent with LRA Section 2.1 and were of sufficient detail to guide the applicant on the scoping and screening implementation process followed during LRA activities.

In addition to the implementing procedures, the staff reviewed supplemental design information including DBDs, system drawings, and selected licensing documentation on which the applicant relied during scoping and screening. The staff found these design documentation sources useful in ensuring that the initial scope of SSCs identified by the applicant was consistent with the CLB.

Sources of Current Licensing Basis Information

The staff reviewed the scope and depth of the applicant's CLB evaluation to verify that the methodology was sufficiently comprehensive to identify SSCs within the scope of license

renewal and SCs requiring an AMR. As defined in 10 CFR 54.3(a), the CLB is the set of NRC requirements applicable to a specific plant and a licensee's written commitments for ensuring compliance with and operation within such requirements and the plant-specific design-basis docketed and in effect. The CLB includes NRC regulations, orders, license conditions, exemptions, TSs, design-basis information docketed in the USAR, and licensee commitments remaining in effect that were made in such docketed licensing correspondence as licensee responses to NRC bulletins, generic letters, and enforcement actions, as well as licensee commitments documented in NRC safety evaluations or licensee event reports.

LRA Section 2.1.3 provides a description of the CLB and related documents used during the scoping and screening process that is consistent with the guidance in the SRP-LR and NEI 95-10. Specifically, LRA Section 2.1.3 identified the USAR, TSs, docketed licensing correspondence, the Q-List, controlled plant drawings, industry codes, and plant design records. Additionally, in the scoping and screening implementation procedure, the applicant provided a comprehensive listing of documents that could be used to support scoping and screening evaluations. The applicant noted that system descriptions and system intended functions were identified based on the review of the applicable sections of the USAR, operations manual, Maintenance Rule scoping document, design- and licensing-basis documents, and license renewal project technical reports.

During the audit, the staff reviewed the applicant's technical report, which specifically addresses DBEs. The report addressed in detail various sections of the USAR related to design-basis accidents (DBAs) and bounding transients and evaluated natural phenomena and external events applicable to MNGP. Supplemental information used to verify complete identification of DBEs included selected DBDs covering a number of support and accident mitigation systems, as well as selected topical reports developed to support the license renewal evaluation. Design descriptions for each system described in the USAR were reviewed to identify DBE mitigation functions credited in the CLB. The applicant identified these event mitigation functions and confirmed that the SSCs credited with performing those functions were evaluated adequately in the scoping and screening process.

CHAMPS is the applicant's primary repository for component safety classification information. During the audit, the staff reviewed the applicant's administrative controls for CHAMPS safety classification data and concluded that the applicant had adequate measures to control the integrity and reliability of CHAMPS safety classification data. Therefore, the staff concluded that CHAMPS provides a sufficiently controlled source of component data to support scoping and screening evaluations.

The applicant identified topical reports as a source of information supporting identification of systems and structures relied upon to demonstrate compliance with events within the scope of 10 CFR 54.4(a)(3), as well as documenting evaluation of special topics like scoping and screening of thermal insulation, treatment of consumables, and intended functions of heat exchangers. These reports were developed in accordance with MNGP directives that describe the requirements for preparation of such topical reports. The topical reports contain a listing of CLB references used for their development that was consistent with LRA Section 2.1.3. The staff reviewed these reports and concluded that the preparation of the topical reports according to applicant requirements reasonably ensured adequate summaries of CLB information for scoping purposes. The staff further verified the adequacy of the technical information in a

sample of the reports by reviewing selected CLB source documents used to develop the technical reports.

Conclusion

As part of the audit, the staff evaluated the scope and depth of the applicant's CLB evaluation for assurance that the scoping methodology considered all SSC intended functions. In reviewing the LRA, scoping and screening implementation procedures, and license renewal technical reports, the staff determined that the applicant had developed and reviewed an adequately broad set of documents encompassing its CLB that is consistent with the guidance in the SRP-LR and NEI 95-10. The applicant's document review process adequately identified and documented system description and intended function evaluations performed during the scoping phase of the review. Therefore, the staff concluded that the applicant's methodology for the identification, review, and documentation of CLB information to support the scoping of SSCs is adequate.

2.1.3.1.2 Application of the Scoping Criteria in 10 CFR 54.4(a)

Application of the Scoping Criterion in 10 CFR 54.4(a)(1)

In part, 10 CFR 54.4(a)(1) provides that, to identify SSCs within the scope of license renewal, the applicant must include all SR SSCs relied upon to remain functional during and following DBEs to ensure the following functions:

- the integrity of the reactor coolant pressure boundary
- the ability to shut down the reactor and maintain it in a safe-shutdown condition
- the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11, "Determination of Exclusion Area, Low Population Zone, and Population Center Distance"

As to identification of DBEs, Section 2.1.3, "Review Procedures," of the SRP-LR states the following:

> The set of DBEs as defined in the rule is not limited to Chapter 15 (or equivalent) of the Updated Final Safety Analyses Report (UFSAR). Examples of DBEs that may not be described in this chapter include external events, such as floods, storms, earthquakes, tornadoes, or hurricanes, and internal events, such as a high-energy-line break. Information regarding DBEs as defined in 10 CFR 50.49(b)(1) may be found in any chapter of the facility UFSAR, the Commission's regulations, NRC orders, exemptions, or license conditions within the CLB. These sources should also be reviewed to identify SSCs that are relied upon to remain functional during and following DBEs (as defined in 10 CFR 50.49(b)(1)) to ensure the functions described in 10 CFR 54.4(a)(1).

The applicant's program for satisfying the scoping requirements of 10 CFR 54.4(a) requires identification of all major SR and NSR SSCs and the function or functions that each major SSC is required to perform. The applicant used a number of information sources, the CLB, DBEs,

and quality classifications to identify the major SSCs and their respective functions. USAR Chapters 12 and 14 address DBEs. The applicant also used its DBDs to identify SR SSCs relied upon to remain functional during and following DBEs. The Q-List of the Operational QA Plan and the Q-List Extension drawings (color-coded piping &instrumentation drawings (P&ID)) specify the QA program boundaries for SSCs. These documents define the SSCs subject to the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, and were used to code items as SR in CHAMPS.

The applicant's review of these documents identified the major SSCs and their respective functions, which were compared to the scoping criteria of 10 CFR 54.4(a) to identify functions within the scope of license renewal. SSC functions that meet 10 CFR 54.4(a) scoping criteria requirements are identified as intended functions in the Advanced License Extension Management System (ALEX) license renewal database. SSC intended functions support one or more of the 10 CFR 54.4(a) scoping criteria.

CHAMPS electronically stores component information used to prepare work orders and other uses. CHAMPS provides seismic and quality classification. The applicant used CHAMPS and controlled drawings to identify components required to support system-level and structure-level intended functions. Such components were included within the scope of license renewal.

The applicant scoped SSCs in accordance with its implementing procedures. For additional assurance that the applicant adequately implemented its SR scoping methodology, the staff reviewed a sample of the license renewal scoping report results for the CRD system and discussed the methodology and results with the applicant's personnel responsible for these evaluations. The staff verified that the applicant had identified and used pertinent engineering and licensing information to identify the SSCs within the scope of license renewal, in accordance with the 10 CFR 54.4(a)(1) criteria.

Conclusion

On the basis of this sample review, discussions with the applicant, and review of the applicant's scoping process, the staff concluded that the applicant's methodology for identifying systems and structures meets the 10 CFR 54.4(a)(1) scoping criteria.

Application of the Scoping Criterion in 10 CFR 54.4(a)(2)

In part, 10 CFR 54.4(a)(2) requires that the applicant consider all NSR SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1)(I), 10 CFR 54.4(a)(1)(ii), or 10 CFR 54.4(a)(1)(iii) as within the scope of license renewal. By letters dated December 3, 2001, and March 15, 2002, the NRC issued a staff position to the NEI which provided staff expectations for determining which SSCs meet the 10 CFR 54.4(a)(2) criterion. The December 3, 2001, letter provides specific examples of operating experience which identified pipe failure events (summarized in Information Notice (IN) 2001-09, "Main Feedwater System Degradation in Safety-Related ASME Code Class 2 Piping Inside the Containment of a Pressurized Water Reactor," and the approaches the staff considers acceptable for determining which piping systems should be within the scope of license renewal based on the 10 CFR 54.4(a)(2) criterion. The March 15, 2002, letter further describes the staff's expectations for the evaluation of nonpiping SSCs to identify additional NSR SSCs within the scope of license renewal. The position states that applicants should not

consider hypothetical failures, but rather the plant's CLB, engineering judgment and analyses, and relevant operating experience. The paper further describes operating experience as all documented plant-specific and industry-wide experience useful in determining the plausibility of a failure. Documentation would include NRC generic communications and event reports, plant-specific condition reports, industry reports, such as significant operating event reports (SOERs), and engineering evaluations.

In its scoping implementation procedures, the applicant documented its methodology for performing 10 CFR 54.4(a)(2) scoping of NSR SSCs and described the general methodology for identifying those NSR SSCs whose failure could affect the ability to maintain intended functions of SR SSCs within the scope of license renewal. The procedure provides general guidance consistent with that of Appendix F to NEI 95-10, Revision 4, regarding the use of mitigative and preventive approaches to identify SSCs within the scope of license renewal to meet the 10 CFR 54.4(a)(2) criterion. The procedure further describes the process for identifying the SSCs within the scope of license renewal and includes guidance for each discipline review (mechanical, structural, and electrical).

In addition, the applicant developed a technical report, as documented in the audit report, to further define the methodology used for the 10 CFR 54.4(a)(2) evaluation. This technical report describes the current regulation and the interim staff position on scoping of SSCs according to the 10 CFR 54.4(a)(2) criterion; the applicant's evaluation of licensing-basis topics, including HELB, internal and external missiles, internal and external flooding, and heavy loads; evaluation of NSR SSCs attached directly to SR SSCs; and NSR SSCs within close spatial proximity to SR SSCs. Section 4.0 of the report addresses in detail the results of the 10 CFR 54.4(a)(2) evaluation.

With respect to the CLB topics, including HELB, internal and external missiles, internal and external flooding, and heavy loads, the applicant's methodology evaluated information for each to identify NSR SSCs of interest. To ensure a complete and extensive evaluation of the existing CLB, the applicant developed a process which included searching CHAMPS to identify relevant references to the TS-bases documents, USAR sections, DBDs, licensing correspondence, plant drawings, plant modification packages, technical reports, and operations manuals for each topic. These documents were reviewed and an evaluation for each topic was performed to identify design features relied on for these events as within the scope of license renewal.

The staff reviewed the applicant's methodology in evaluating these CLB topics, discussed the evaluation process with the applicant's staff responsible for performing these reviews, and evaluated a sample of the results of this evaluation to ensure that implementation of written instructions and the results are consistent with those evaluations. The staff determined that the applicant's documented methodology was consistent with the 10 CFR 54.4(a)(2) requirements and that the applicant's evaluation was consistent with that methodology. The staff reviewed a sample of the CLB information used for the applicant's evaluations and confirmed its consistency with that design information.

The applicant's evaluation of NSR SSCs attached directly and those within close spatial proximity to SR SSCs considered current industry guidance on the subject as a result of recent staff license renewal evaluations, taking into account that all active as well as passive SR SSCs could be affected adversely by spray or wetting from an NSR pressurized system in the same general location of the plant, regardless of the duration of that exposure. Specifically, the

applicant used a "spaces" approach to identify SR SSCs and NSR SSCs within the same "general area," which is defined as a location sharing a common floor and common walls. This definition was expanded during plant walkdowns in the 10 CFR 54.4(a)(2) evaluation to include adjacent areas (i.e., those separated by a wall or barrier), if there could be communication between the two areas. In those instances, the adjacent area was considered part of the general area.

As part of this evaluation, the applicant first listed the SR components and their locations within the plant. Review of plant-controlled documents like P&IDs, DBDs, and CHAMPS identified plant areas where NSR and SR SSCs were located. The applicant performed walkdowns of all accessible locations to identify NSR SSCs within these areas and the types of potential interactions that could occur (i.e., leaking, spraying, physical impact). For inaccessible areas, the applicant relied on controlled plant piping layout drawings and operator knowledge of the plant design and operation to identify potential component interactions. The inaccessible areas included the drywell/suppression chamber, steam chase, reactor water cleanup (RWCU) and traversing incore probe rooms, condenser room, and steam jet air ejector (SJAE) room. Where the applicant identified potential interactions between the NSR SSCs and SR SSCs within a general area, it included those NSR SSCs within the scope of license renewal. The applicant further documented the results on marked-up P&IDs, which highlighted the NSR SCs identified and described the general area, as well as SR SCs that could be affected by the NSR line failure. The staff reviewed a sample of the marked-up P&IDs for the CRD system and reviewed the applicant's determination of areas of no potential interactions between NSR and SR SSCs. The staff determined that the applicant had evaluated the 10 CFR 54.4(a)(2) scoping criterion consistently with the applicant's written instructions for such an evaluation and that the results had been documented with technical supporting justifications. The staff did not identify any specific concerns regarding the implementation of the 10 CFR 54.4(a)(2) scoping methodology for the system sample reviewed.

The applicant also discussed its 10 CFR 54.4(a)(2) scoping evaluation process for NSR SSCs directly attached to SR SSCs to determine equivalent anchor locations required to establish system boundaries for the evaluation. With respect to the equivalent anchor criteria, the applicant identified locations in each relevant system where support and attachment are such that failure of the piping system beyond the boundary point would not adversely affect the SR functions of connected SR components. The applicant relied on its piping stress analysis of record to determine equivalent anchor locations. In most cases, this boundary encompassed at least two levels of supports in each orthogonal direction, and for those few cases where such support was not available, the applicant evaluated the piping stress analysis to determine alternate anchorage locations. The alternate anchorage locations included (1) selected wall penetrations, (2) large pieces of plant equipment, (3) transition points between the piping systems and flexible connections like tubing and ducting, and (4) locations where the piping system moment of inertia ratio exceeds 40:1 between the main and branch lines. In each case, the applicant provided a technical justification for the use of the equivalent anchorage location based on CLB information related to the piping stress analysis of record. The staff reviewed the methodology for a selected sample of mechanical systems and confirmed that the applicant's evaluation was consistent with the guidance and that results had been documented adequately and justified technically.

In addition to reviewing the implementation procedures associated with the applicant's 10 CFR 54.4(a)(2) evaluations, the staff discussed the review process with the applicant's

personnel responsible for performing the review and evaluated a sample of systems and structures to ensure that the methodology was implemented in accordance with the written instructions and that the results were consistent with those evaluations.

The applicant's implementing procedures provided guidance for establishing system boundaries for NSR piping systems connected directly to SR piping systems. The guidance states, in part, that for NSR SSCs connected to SR SSCs, the NSR SSCs should be included up to the first seismic anchor past the SR-NSR interface, and the boundary drawings should also identify the anchor. A review of piping analyses provided information to extend the piping system to the first anchor. Where there was no true anchor, the piping analysis was extended far enough to ensure that the NSR portion would have no effect on the SR portion. Typically, the extension encompassed at least two restraints in each orthogonal direction. Where there were no such restraints in each orthogonal direction, the boundary was extended to an equivalent anchor such as a wall. As an example, the applicant stated that in certain cases of small-bore piping (i.e., 2 inches or less), grouted wall penetrations served as equivalent anchor locations.

The staff's review of LRA Section 2.1 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening methodology. The applicant responded to the staff's RAI as discussed below.

In RAI 2.1-2, dated July 20, 2005, the staff requested that the applicant provide the technical basis for establishing the grouted wall penetrations as equivalent anchor locations for NSR piping systems connected to SR piping systems and confirm that nongrouted wall penetrations were not used as equivalent anchor locations for NSR piping systems connected to SR piping systems.

In its response, by letters dated August 16, 2005, and November 17, 2005, the applicant stated that 10 grouted wall/floor NSR piping penetrations were considered equivalent anchors. The CLB piping analysis addressed 9 of the 10 grouted penetrations, while 1 of the 10 was not addressed. In its response, the applicant provided an acceptable technical justification for crediting this one grouted wall/floor piping penetration not addressed as an equivalent anchor.

The applicant additionally stated that, in five instances, NSR underground piping was used as an equivalent anchor. In three of the five instances, the CLB piping analysis addressed the use of NSR underground piping as an equivalent anchor. The remaining two instances were not addressed. The applicant provided an acceptable technical justification for crediting the two instances in which underground piping was used as an equivalent anchor. The applicant also stated that it had added NSR underground piping to the scope of license renewal, which was subject to an AMR when credited as an equivalent anchor.

Based on its review, the staff found the applicant's response to RAI 2.1-2 acceptable because the applicant adequately described its process for establishing the use of grouted wall penetrations and underground piping as an equivalent anchor termination point. Therefore, the applicant resolved the staff concern described in RAI 2.1-2.

Conclusion

On the basis of the additional information supplied by the applicant, which provides technical justification for identification of certain equivalent anchor locations, and as a result of the NRC

inspection and audit activities, the staff concluded that the applicant has supplied sufficient information to demonstrate that the methodology for identifying systems and structures meeting the scoping criteria of 10 CFR 54(a)(2) is adequate.

Application of the Scoping Criterion in 10 CFR 54.4(a)(3)

In part, 10 CFR 54.4(a)(3) requires applicants to consider in safety analyses or plant evaluations all SSCs relied on to perform functions demonstrating compliance with the Commission's regulations for FP (10 CFR 50.48), EQ (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61, "Fracture Toughness Requirements for Protection against Pressurized Thermal Shock Events"), ATWS (10 CFR 50.62), and SBO (10 CFR 50.63) to be within the scope of license renewal. Pressurized thermal shock is not applicable to BWRs and, therefore, the applicant did not evaluate it. SRP-LR Section 2.1.3.1.3, "Regulated Events," states that all SSCs relied upon in the plant's CLB (as defined in 10 CFR 54.3), plant-specific operating experience, industry-wide operating experience (as appropriate), and safety analyses or plant evaluations to perform functions demonstrating compliance with NRC regulations under 10 CFR 54.4(a)(3) must be included within the scope of license renewal; however, consideration is not required of hypothetical failures from system interdependencies not part of the CLB and not previously experienced.

The staff reviewed the applicant's approach to identifying SSCs relied upon to perform functions related to the four regulated events, as described in 10 CFR 54.4(a)(3). As part of this review, the staff discussed the methodology with the applicant's LRA team, reviewed supporting documentation, and evaluated a sample of the SSCs identified as within scope, pursuant to the 10 CFR 54.4(a)(3) criterion.

The applicant documented its methodology for scoping SSCs in accordance with 10 CFR 54.4(a)(3) in implementation procedures, as described in the audit report. The applicant's initial scoping for regulated events evaluated relevant CLB information to determine whether the structure or system met the scoping criterion of 10 CFR 54.4(a)(3). For the four regulated events, the applicant developed technical reports describing the relevant rule requirements, implementation of the requirements, specific information about systems and components credited for the event, the process to identify the scoping boundaries of the systems credited, a list of CLB information sources for the analysis, and systems and components within the scope of license renewal for the given regulated event. Systems or structures with one or more components credited for demonstrating compliance with one of the regulated events are within the scope of license renewal, pursuant to the 10 CFR 54.4(a)(3) criterion. In addition, the staff determined that identification of SSCs within the scope of license renewal to support 10 CFR 50.63 had been in accordance with the guidance of ISG-02, "Station Blackout Scoping." In summary, the applicant included within the scope of license renewal the SSCs relied upon in safety analyses or plant evaluations to perform intended functions demonstrating compliance with NRC regulations for FP, EQ, ATWS, and SBO, in accordance with the 10 CFR 54.4(a)(3) criterion.

The staff's review of the applicant's scoping methodology included the set of scoping calculations for each regulated event, a sample of the supporting analyses and documentation, discussion of the methodology and results with the applicant's personnel responsible for these evaluations, and a review of ALEX. The staff verified that the applicant had identified and used

pertinent engineering and licensing information to determine the SSCs within the scope of license renewal, in accordance with the 10 CFR 54.4(a)(3) criterion.

Conclusion

Based on this sampling review, discussions with the applicant, and review of the applicant's scoping process, the staff determined that the applicant's methodology for identifying systems and structures meeting the 10 CFR 54.4(a)(3) scoping criterion is adequate.

2.1.3.1.3 Plant-Level Scoping of Systems

The applicant documented its methodology for scoping systems in accordance with 10 CFR 54.4(a) in its implementing procedures. The applicant's approach to scoping systems was consistent with the methodology described in LRA Section 2.1.4. Specifically, the implementing procedure specified that personnel scoping for license renewal use CLB and DBE documents to describe systems, including lists of all functions that the system is required to accomplish. Sources of information included the USAR, DBDs, Q-List and Q-List Extension drawings, CHAMPS, the Maintenance Rule documents, P&IDs, and docketed correspondence. The applicant then compared system function lists to the scoping criteria to determine whether the system functions met the 10 CFR 54.4(a) scoping criteria. The applicant documented the scoping results in ALEX, which included a description of the system, a list of functions performed by the system, identification of intended functions, the 10 CFR 54.4(a) scoping criteria met by the system, references, and a list of components performing intended functions. During the scoping methodology audit, the staff reviewed a sampling of ALEX scoping reports and concluded that they contain an appropriate level of detail to document the scoping process.

The applicant established color-coded boundary P&IDs for each mechanical system within the scope of license renewal. A preparer and an independent reviewer comprehensively evaluated the license renewal color-coded P&IDs for completeness and accuracy of the review results. The staff reviewed several license renewal color-coded boundary P&IDs and verified that ALEX did identify the systems within license renewal boundaries.

Conclusion

On the basis of a review of the LRA, ALEX, scoping and screening implementation procedures, license renewal color-coded P&IDs, and a sampling review of system scoping results, the staff concluded that the applicant's scoping methodology for systems is adequate. In particular, the staff determined that the applicant's methodology reasonably identified systems within the scope of license renewal and their associated intended functions.

2.1.3.1.4 Mechanical Component-Level Scoping

After the applicant had identified systems within the scope of license renewal and their associated intended functions, it identified the components of each system within the scope of license renewal that supported an intended function. As described in LRA Section 2.1.4, the applicant considered a component to be within the scope of license renewal if needed for performance of a system intended function.

The applicant described the methodology used for component scoping in LRA Section 2.1.4, and its implementing procedures, as documented in the audit report. The applicant evaluated CHAMPS, the USAR, DBDs, DBEs, plant walkdowns, training materials, license renewal color-coded boundary P&IDs, specifications, codes/standards, design changes, plant procedures, and CLB documentation to identify components credited with compliance to 10 CFR 54.4(a). Components meeting the requirements of 10 CFR 54.4(a) were considered within the scope of license renewal and the applicant entered this information into ALEX.

The staff reviewed the results of the ALEX scoping reports and discussed the scoping process in detail with the applicant's license renewal project personnel. The staff assessed whether the applicant appropriately applied the LRA scoping methodology and implementation procedures and whether the scoping results were consistent with CLB requirements. The staff determined that the applicant's proceduralized methodology was consistent with the description in LRA Section 2.1.4 and the guidance in SRP-LR Section 2.1 and was adequately implemented.

The staff reviewed the scoping process for the CRD system. The staff verified that the applicant had developed color-coded system boundary P&IDs that identified license renewal CRD system boundaries in accordance with the procedural guidance. The staff verified that CRD system components meeting 10 CFR 54.4(a) requirements were within the scope of license renewal. The staff found the applicant knowledgeable about the process and conventions for establishing boundaries as defined in the license renewal implementation procedures.

Conclusion

On the basis of the applicant's detailed scoping implementation procedures and a sampling review of CRD system mechanical components scoping results, the staff concluded that the applicant's methodology for identifying mechanical components within the scope of license renewal meets 10 CFR 54.4(a) requirements.

Structural Component Scoping

The applicant described the methodology used for structural scoping in LRA Section 2.1.4, and its implementing procedures, as documented in the audit report. The applicant developed a list of SSCs using CHAMPS information. The applicant's technical reports listed all civil/structural SCs within the scope of license renewal. The applicant evaluated CHAMPS, the USAR, DBDs, training materials, drawings, specifications, codes/standards, design changes, plant procedures, and CLB documentation to identify structures credited with compliance to 10 CFR 54.4(a). In addition, the applicant performed walkdowns of plant buildings. Systems which contained components determined to meet 10 CFR 54.4(a) requirements were considered within the scope of license renewal and the applicant entered this information into ALEX. The scope of license renewal included all SR structures and structural components. SR items within the scope of license renewal include walls, piping and equipment supports, conduit, cable trays, electrical enclosures, and instrument panels relied upon in the CLB. The NSR structures and structural components that perform functions required for compliance with FP, ATWS, and SBO regulations were included within the scope of license renewal. NSR structural items within the scope of license renewal include missile shields that protect SR equipment; overhead handling systems that could affect SR equipment; permanently installed walls, curbs, and doors that provide flood protection for SR equipment; and jet impingement shields and blowout panels that protect SR equipment from the effects of an HELB. The staff reviewed the

LRA, procedures, drawings, and the ALEX database. The staff reviewed the results of the scoping methodology for select structures that included the diesel fuel oil transfer house, offgas stack, and the intake structure (flood control).

The audit team reviewed plant procedures which provide instructions for the response of MNGP personnel to extreme natural conditions. These procedures address tornados, external flooding, high river water temperature, low river water flow/level, high-wind conditions, heavy snowfall, and high ambient (outside) air temperature. Plant procedures also provide instructions for protecting structures from flooding in the event that Mississippi River flood waters are predicted to exceed specific elevations. For example, steel plates required to be bolted over specific structure openings are stored on site to accomplish this task. Another example of an action to prevent flooding is the removal of the intake structure Amertap hatch covers and installation of the original floor hatches. The staff noted that equipment stored for use, such as steel plates and floor hatches, was not included within the scope of license renewal.

The staff's review of LRA Section 2.1.4 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening methodology. The applicant responded to the staff's RAI as discussed below.

In RAI 2.1-1, dated July 20, 2005, the staff requested that the applicant provide the technical basis for not including, within the scope of license renewal, equipment stored on site that station procedures require to be installed during emergency or abnormal conditions, in accordance with the CLB, or describe the methodology for ensuring that the license renewal scoping addressed all such equipment.

In its response, by letter dated August 16, 2005, the applicant stated that it had added steel plates stored outside, which are dedicated for use during postulated external events, and steel hatch covers stored in the warehouse, which are dedicated for external flood use to the scope of license renewal and this equipment was subject to an AMR.

Based on its review, the staff found the applicant's response to RAI 2.1-1 acceptable, because the applicant revised its scoping and screening methodology to include the appropriate equipment stored on site that the station procedures require to be installed during emergency or abnormal condition in accordance with the CLB. Therefore, the applicant resolved the staff concern described in RAI 2.1-1.

Conclusion

The staff determined that the applicant's methodology is consistent with the description in LRA Section 2.1.4 and the guidance in SRP-LR Section 2.1. Based on review of information in the LRA, the applicant's detailed scoping implementation procedures, the additional information from the applicant on scoping and screening methodology for equipment stored on site, and a sampling review of structural scoping results, the staff concluded that the applicant's methodology for identification of structural SSCs within the scope of license renewal meets 10 CFR 54.4(a) requirements.

Electrical and I&C Component Scoping

The applicant described the methodology for electrical and I&C scoping in LRA Section 2.1.5.4, and its implementing procedures, as documented in the audit report. The applicant performed electrical and I&C scoping at a system level. The applicant developed information from numerous sources including CHAMPS, the USAR, and the Maintenance Rule program system basis documents. The applicant entered the system description, the applicable design-basis reference, and system functions into ALEX. The applicant evaluated the system functions in accordance with the 10 CFR 54.4(a) criteria to determine whether the system was within the scope of license renewal. Following evaluation of the system functions, the applicant added the reference identifying the system function which placed the system within the scope of license renewal to ALEX. The applicant added systems to the license renewal database which were created to include electrical and I&C components not already specifically identified within an existing system (such as cables) in CHAMPS. The System/Structure Scoping and Screening Output Reports document these activities.

Conclusion

The staff reviewed the LRA, procedures, drawings, ALEX, and a sample of the results of the application of the scoping methodology for select systems. The staff found the applicant's methodology consistent with the description in LRA Section 2.1.5.4 and with the applicant's implementing procedures. Based on review of information in the LRA, the applicant's detailed scoping implementation procedures, and a sampling review of electrical and I&C scoping results, the staff concluded that the applicant's methodology for identifying electrical and I&C components within the scope of license renewal meets 10 CFR 54.4(a) requirements.

2.1.3.2 Screening Methodology

The applicant described its screening process in LRA Section 2.1.5. In general, the applicant's screening consisted of evaluations to determine which SCs within the scope of license renewal were passive and long-lived. Passive and long-lived SCs were then subject to further AMR. The staff reviewed the methodology used by the applicant to determine whether mechanical, structural, and electrical and I&C components within the scope of license renewal would be subject to further AMR. The applicant provided the staff with a detailed discussion of the processes for each discipline and provided administrative documentation that described the screening methodology. The staff also reviewed the screening results report for the CRD system. The staff noted that the applicant's screening process was performed in accordance with its written requirements and was consistent with the guidance of the SRP-LR and NEI 95-10, Revision 4. The staff determined that the screening methodology was consistent with the requirements of the Rule and that the screening methodology identified SCs meeting the 10 CFR 54.21(a)(1) screening criterion.

The staff evaluated the applicant's screening methodology against the 10 CFR 54.21(a)(1) criterion using the review guidance of SRP-LR, Section 2.1.3.2, "Screening." Pursuant to 10 CFR 54.21(a)(1), the applicant's IPA must identify and list SCs subject to an AMR. Further, 10 CFR 54.21(a)(1) requires that SCs subject to an AMR encompass those SCs that (1) perform an intended function, as described in 10 CFR 54.4, without moving parts or changes in configurations or properties and (2) are not subject to replacement based on a qualified life or specified time period. Pursuant to 10 CFR 54.21(a)(2), the applicant must describe and justify

the methods used to meet 10 CFR 54.21(a)(1) requirements. In the LRA, the applicant described screening methodologies unique to the mechanical, structural, and electrical disciplines. The following sections describe the staff's evaluation of the applicant's screening approach for each of these disciplines.

Mechanical Component Screening

The staff reviewed the methodology used by the applicant to determine whether mechanical components within the scope of license renewal would be subject to further AMR. The applicant applied a screening process to each mechanical component in ALEX. Implementing procedures require that each component in ALEX be identified as periodically replaced, no intended function, active, or requiring an AMR. CHAMPS was used to determine whether components are periodically replaced. The applicant had previously entered component intended functions into ALEX. The audit team reviewed technical reports which provided specific guidance for determining whether components were active or passive. Technical reports also referred to Appendix B to NEI 95-10 for component types generally considered active or passive. The applicant provided the staff with a detailed discussion of the process and provided ALEX screening report information describing the screening methodology, as well as a sample of the screening result reports for a selected group of SR and NSR systems.

During the audit, the staff reviewed the methodology used by the applicant to identify and list the mechanical components subject to an AMR, as well as the applicant's technical justification for this methodology. The staff also examined the applicant's results from the implementation of this methodology by reviewing the CRD system. The review included the license renewal color-coded boundary P&IDs and resultant components within the scope of license renewal, the corresponding component-level intended functions, and the resulting list of mechanical components subject to an AMR. The staff reviewed several summary screening reports breaking down the mechanical components within the scope of license renewal into several categories, including component type, AMR requirement, and material, and a comment section. The staff also discussed the process and results with the cognizant engineers who performed the review. The staff did not identify any discrepancies between the methodology documented and the implementation results.

Conclusion

On the basis of a review of the LRA, the scoping and screening implementation procedures, and a sampling review of system and screening results, the staff determined that the applicant's mechanical component screening methodology is consistent with the guidance of the SRP-LR and is adequate for identifying passive, long-lived components within the scope of license renewal subject to an AMR. Therefore, the staff concluded that the applicant's methodology for identification of mechanical components subject to an AMR meets 10 CFR 54.21(a)(1) requirements.

Structural Component Screening

After determining which structural SSCs were within the scope of license renewal, the applicant implemented a process for determining which SSCs would be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1). LRA Section 2.1.5 discusses the screening of SSCs within the scope of license renewal. Screening activities identified passive

components, long-lived components, component intended functions, consumables, and component replacement based on performance or condition. The applicant relied on the guidance of NEI 95-10 to develop the plant-specific listing of passive components of interest during the review.

Conclusion

The staff reviewed the LRA, procedures, drawings, and the ALEX database. The staff also reviewed the results of the scoping and screening methodology for select structures, including the diesel fuel oil transfer house, offgas stack, and intake structure (flood control). The staff found the applicant's methodology consistent with the description in LRA Sections 2.1.4 and 2.1.5 and the guidance of SRP-LR Section 2.1. Based on review of information contained in the LRA, the applicant's detailed scoping implementation procedures, and a sampling review of structural scoping and screening results, the staff concluded that the applicant's methodology for identification of structural SSCs subject to an AMR meets 10 CFR 54.21(a)(1) requirements.

Electrical and I&C Component Screening

The applicant described the electrical and I&C screening methodology in LRA Section 2.1.5.4, and its implementing procedures, as documented in the audit report. The applicant identified evaluation boundaries for the electrical and I&C systems previously determined to be within the scope of license renewal. The applicant also reviewed components within the evaluation boundary to identify SCs performing intended functions, and compiled such SCs into ALEX. The applicant reviewed ALEX to identify the passive and long-lived components subject to an AMR in accordance with 10 CFR 54.21. In addition, the applicant identified and reviewed fuse holders, in accordance with the guidance contained in ISG-05, "Electrical Fuse Holders." The applicant documented the results of these activities in four technical reports, "Electrical Penetrations," "Non-EQ Cables and Connections," "Fuse Holders," and "Offsite Power/SBO Recovery Path."

Conclusion

The staff reviewed the LRA, procedures, drawings, ALEX, and a sample of the results of the screening methodology. The staff found the applicant's methodology consistent with the description in LRA Section 2.1.5.4 and the applicant's implementing procedures. Based on review of information in the LRA, the applicant's detailed screening implementation procedures, and a sampling review of electrical and I&C screening results, the staff concluded that the applicant's methodology for identification of electrical and I&C SCs subject to an AMR meets 10 CFR 54.21(a)(1) requirements.

Insulation

LRA Table 2.1-1 describes the intended function of thermal insulation to "limit heat transfer to maintain temperature within design limits." During the audit, the staff reviewed technical reports, as documented in the audit report, which described how thermal insulation was scoped and screened at MNGP. No insulation at MNGP is classified as SR, so insulation can be within the scope of license renewal only for environment control or seismic II/I intended functions. The applicant stated that thermal insulation to limit room heat-up was within the scope of license renewal in two areas: high pressure coolant injection (HPCI) room piping insulation and residual

heat removal (RHR) room heat exchanger insulation. Therefore, this specific thermal insulation was subject to an AMR.

Conclusion

The staff reviewed the LRA, technical report, and the results of the scoping and screening methodology for thermal insulation. The staff found the applicant's methodology consistent with the description in LRA Table 2.1-1 and the applicant's implementing procedures. Based on review of information in the LRA and the applicant's detailed technical report, the staff determined that the applicant's methodology for identification of insulation subject to an AMR meets 10 CFR 54.21(a)(1) requirements.

Consumables

During the audit, the applicant described the screening review for certain consumable commodities in LRA Section 2.1.5.3, "Component Classification (Passive, long-lived)." Section 2.1.5.3 states that evaluation of items to determine whether they are consumables followed the NRC screening guidance of SRP-LR Table 2.1-3, "Specific Staff Guidance on Screening," for determining whether consumable items are subject to an AMR. For consumables periodically replaced, SRP-LR Table 2.1-3 states that the applicant should identify the standards that are relied on for replacement as part of the methodology description.

The table states that consumables like packing, gaskets, component seals, and O-rings may be excluded from an AMR using a clear basis. Consistent with SRP-LR Table 2.1-3, the applicant divided consumables into four basic categories, (1) packing, gaskets, component seals, and O-rings, (2) structural sealants, (3) oil, grease, and filters (system and component filters), and (4) fire extinguishers, fire hoses, and air packs. The applicant's guidance for performing screening reviews for commodity groups states that, regardless of how consumables associated with components or structures are screened for an AMR, the bases for the determinations made are presented in the respective AMR reports.

The staff selected various AMR reports and verified that each contained a discussion of the treatment of consumables. The staff reviewed several AMRs during its scoping and screening audit and verified that they contained components subject to short-lived/replaceable determinations.

Conclusion

The staff reviewed the LRA, technical report, a sample of the screening methodology results, and AMRs. The staff found the applicant's methodology consistent with the description in LRA Section 2.1.5.3 and the applicant's implementing procedures. Based on review of information contained in the LRA, the applicant's detailed screening implementation procedures and technical report, a sampling review of consumable screening results, and AMRs, the staff concluded that the applicant's methodology for identification of consumables subject to an AMR meets 10 CFR 54.21(a)(1) requirements.

2.1.3.3 QA Controls Applied to LRA Development

The staff reviewed the QA controls used by the applicant for reasonable confidence that the LRA scoping and screening methodologies were adequately implemented. Although the applicant did not develop the LRA under a 10 CFR Part 50, Appendix B QA program, the staff determined that the applicant utilized the following QA processes during the LRA development:

- Written procedures and guidelines governed implementation of the scoping and screening methodology.
- The Offsite Review Committee and the Plant Operations Review Committee reviewed and approved the LRA before its submission to the staff.
- The applicant planned to retain certain license renewal documents as quality records or controlled documents.
- The applicant performed an industry peer review of license renewal activities.
- The applicant's Nuclear Oversight Department performed a self-assessment in the area of implementation of license renewal procedures.

Conclusion

On the basis of review of pertinent LRA development guidance, discussion with the applicant's license renewal personnel, and review of the Nuclear Oversight quality audit report, the staff concluded that such QA activities provide reasonable assurance that LRA development activities were consistent with LRA descriptions.

2.1.3.4 Training

The staff reviewed the applicant's training process to ensure that guidelines and methodology for scoping and screening activities were consistent and appropriate. The applicant had developed 10 license renewal lesson plans to train all technical leads and site personnel in license renewal activities. The applicant developed and used implementing procedures to train contract personnel supporting the license renewal effort. The applicant also required contract personnel to review the applicable regulations, NEI 95-10, the applicable administrative work instruction, and the License Renewal Project Plans. In addition, the applicant created "Documentation of Information Sharing" on specific license renewal topics as they were developed and conducted periodic training sessions for all license renewal personnel.

Conclusion

On the basis of discussions with the applicant's license renewal project team responsible for the scoping and screening process and a review of selected documentation in support of the process, the staff concluded that the applicant's personnel understood the requirements and guidance and adequately implemented the scoping and screening methodology documented in the LRA. The staff concluded that license renewal personnel were adequately trained and qualified to perform the applicable license renewal activities.

2.1.4 Conclusion

The staff reviewed the information in LRA Section 2.1, the supporting information in the scoping and screening implementation procedures and reports, and the information presented during the scoping and screening methodology audit. The staff verified that the applicant's scoping and screening methodology is consistent with the requirements of the Rule. On the basis of this review, the staff concluded that, with the exceptions noted above, the applicant's methodology for identifying SSCs within the scope of license renewal and the SCs requiring an AMR is consistent with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.2 Plant-Level Scoping Results

2.2.1 Introduction

In LRA Section 2.1, the applicant described the methodology for identifying the SSCs within the scope of license renewal. In LRA Section 2.2, the applicant used the scoping methodology to determine which SSCs are required to be included within the scope of license renewal. The staff reviewed the plant-level scoping results to determine whether the applicant had properly identified all plant-level systems and structures relied upon to remain functional during and following DBEs, as required by 10 CFR 54.4(a)(1), or whose failure could prevent satisfactory accomplishment of any of the SR functions of SSCs within the scope of license renewal, as required by 10 CFR 54.4(a)(2), as well as the systems and structures relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with one of the regulations referenced in 10 CFR 54.4(a)(3).

2.2.2 Summary of Technical Information in the Application

In LRA Table 2.2-1, the applicant provided a list of the plant-level scoping results, identifying those systems, structures, and commodities that are within the scope of license renewal. Based on the DBEs considered in the plant's CLB, other CLB information relating to NSR systems and structures, and certain regulated events referenced in 10 CFR 54.4(a)(3), the applicant identified those plant-level systems and structures that are within the scope of license renewal, as defined by 10 CFR 54.4.

2.2.3 Staff Evaluation

In LRA Section 2.1, the applicant described its methodology for identifying the systems and structures that are within the scope of license renewal and subject to an AMR. The staff reviewed the scoping and screening methodology and provided its evaluation in Section 2.1 of this SER. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results, as shown in LRA Table 2.2-1, to confirm that no plant-level systems and structures were omitted from the scope of license renewal.

The staff determined whether the applicant properly identified the systems and structures within the scope of license renewal, in accordance with 10 CFR 54.4. The staff reviewed selected systems and structures that the applicant did not identify as falling within the scope of license renewal to verify whether the systems and structures have any intended functions that would require their inclusion within the scope of license renewal. The staff conducted its review of the

applicant's implementation in accordance with the guidance described in SRP-LR Section 2.2, "Plant-Level Scoping Results."

In reviewing LRA Section 2.2, the staff identified areas for which it needed additional information to complete its evaluation of the applicant's plant-level scoping results. Therefore, the staff issued RAIs concerning each specific issue to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4. The following paragraphs describe the staff's RAIs and the applicant's related responses.

In RAI 2.2-1, dated June 21, 2005, the staff noted that the control rod velocity limiters described in USAR Section 6.4 are integral parts of each control rod providing hydraulic damping to reduce the freefall velocity of the rod and reduce consequences if the control rod becomes detached from its drive and drops from the core. The LRA does not mention this component, nor does it appear to refer to USAR Section 6.4; therefore, the staff requested that the applicant clarify whether these components are included within the scope of license renewal or state the basis for their exclusion.

In its response, by letter dated July 21, 2005, the applicant stated that control rod velocity limiters are plant-engineered safety features (ESFs), as described in USAR Chapter 6. Control rod velocity limiters are provided as an integral part of each control rod. They provide hydraulic damping to reduce the freefall velocity of the rod and thereby reduce the consequences if the control rod becomes detached from its drive and drops from the core. Since the control rod velocity limiters are an integral part of each control rod, the velocity limiters are within the scope of license renewal; however, the control rods (including the velocity limiters) are screened out of the AMR process since they are replaced periodically.

Based on its review, the staff found the applicant's response to RAI 2.2-1 acceptable. The applicant stated that all ESFs are within the scope of license renewal and are in addition to the safety features included in the design of the reactor, reactor primary system, plant and reactor control systems, and other instrumentation or process systems. Most of the ESFs serve no function during normal plant operation, but are included for the sole purpose of reducing the consequences of DBAs described in USAR Section 14. The applicant stated that LRA Section 2.3.3.4 includes a discussion of the control rod velocity limiters. Therefore, the applicant resolved the staff concern described in RAI 2.2-1.

In RAI 2.2-2, dated June 21, 2002, the staff noted that the safety parameter display system (SPDS) is described in USAR Section 7.13. The SPDS provides a concise display of critical plant variables to control room operators to aid them in rapidly and reliably determining the safety status of the plant. The LRA does not mention this system, nor does it appear to refer to USAR Section 7.13 in the text; therefore, the staff requested that the applicant clarify whether this system is within the scope of license renewal or state the basis for its exclusion.

In its response, by letter dated July 21, 2005, the applicant stated that it included the process computer system (PCS) in the license renewal system under "Computer." The LRA lists the computer system in Table 2.2-1, "Plant Level Scoping Results," page 2-47, which states that the system is not within the scope of license renewal. The PCS provides input to the SPDS and the SPDS is considered a PCS subsystem.

The applicant further stated that the purpose of the PCS system is to aid the operator in timely determination of the plant's operability status during all plant conditions by providing a real-time presentation of operational data, including input to the SPDS, pertaining to the reactor core and other plant equipment. USAR Section 7.13 states that the SPDS is not essential to safe operation of the plant, prevention of events that endanger public health and safety, or mitigation of the consequences of an accident. The PCS also records plant operational data, which can be recalled for evaluation of abnormal and unusual events.

The applicant stated that the USAR discusses the PCS in relation to such topics as the rod worth minimizer, accident monitoring instrumentation, and the SPDS. The process computer is not SR and its failure will not cause an SR function to fail (USAR Section 7.8.3). SR isolation devices between the PCS, neutron monitoring, and the plant protection system (PPS) signal inputs are parts of these other systems for purposes of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.2-2 acceptable. The applicant stated that the process computer is not on the MNGP Q-list. The process computer is not required for any of the regulated events referenced in 10 CFR 54.4(a)(3). The 250-volts-direct current (VDC) system battery that powers the process computer is not required to function during an SBO event. The FP system does not rely on the computer to process fire detection and alarm signals. The required ATWS monitoring instrumentation does not rely on the PCS; thus, the PCS, including the SPDS, was determined to be outside the scope of license renewal. Therefore, the staff's concern described in RAI 2.2-2 is resolved.

2.2.4 Conclusion

The staff reviewed LRA Section 2.2, the RAI responses described above, and the supporting information in the MNGP USAR to determine whether the applicant had failed to identify any systems and structures that should be within the scope of license renewal. The staff's review did not identify any omissions. On the basis of this review, the staff concluded that the applicant properly identified the systems and structures that are within the scope of license renewal in accordance with 10 CFR 54.4.

2.3 Scoping and Screening Results: Mechanical Systems

This section documents the staff's review of the applicant's scoping and screening results for mechanical systems. Specifically, this section discusses the following mechanical systems:

- reactor vessel, internals, and reactor coolant system (RCS)
- ESFs
- auxiliary systems
- steam and power conversion system

In accordance with the requirements of 10 CFR 54.21(a)(1), the applicant must identify and list passive, long-lived mechanical SSCs that are within the scope of license renewal and subject to an AMR. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results. This approach allowed the staff to confirm that no mechanical system components that meet the scoping criteria and are subject to an AMR were omitted.

Staff Evaluation Methodology. The staff performed its evaluation of the information in the LRA in the same manner for all mechanical systems. The objective of the review was to determine whether the applicant had identified the components and supporting structures for a specific mechanical system, that appeared to meet the scoping criteria specified in the Rule, as within the scope of license renewal, in accordance with 10 CFR 54.4. Similarly, the staff evaluated the applicant's screening results to verify that all long-lived, passive components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

Scoping. To perform its evaluation, the staff reviewed the applicable LRA section and associated component drawings, focusing its review on components that had not been identified as within the scope of license renewal. The staff reviewed relevant licensing-basis documents, including the USAR, for each mechanical system to determine whether the applicant had omitted components with intended functions delineated under 10 CFR 54.4(a) from the scope of license renewal. The staff also reviewed the licensing-basis documents to determine whether the LRA specified all intended functions delineated under 10 CFR 54.4(a). If omissions were identified, the staff requested additional information to resolve the discrepancies.

Screening. Once the staff completed its review of the scoping results, the staff evaluated the applicant's screening results. For those systems and components with intended functions, the staff sought to determine (1) if the functions are performed with moving parts or a change in configuration or properties or (2) if the components are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1). For those systems and components that did not meet either of these criteria, the staff sought to confirm that these mechanical systems and components were subject to an AMR, as required by 10 CFR 54.21(a)(1). If discrepancies were identified, the staff requested additional information to resolve them.

2.3.1 Reactor Vessel, Internals, and Reactor Coolant System

In LRA Section 2.3.1, the applicant identified the SCs of the reactor vessel, internals, and RCS that are subject to an AMR for license renewal.

The applicant described the supporting SCs of the reactor vessel, internals, and RCS in the following sections of the LRA:

- 2.3.1.1 reactor head vent system
- 2.3.1.2 reactor pressure vessel
- 2.3.1.3 reactor pressure vessel internals
- 2.3.1.4 reactor recirculation system
- 2.3.1.5 reactor vessel instrumentation

SER Sections 2.3.1.1–2.3.1.5 present the staff's review findings regarding LRA Sections 2.3.1.1–2.3.1.5, respectively.

2.3.1.1 Reactor Head Vent System

2.3.1.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.1, the applicant described the reactor head vent system. The reactor head vent system maintains the reactor pressure boundary. The reactor head vent system provides a means to (1) permit venting the RPV during filling for hydrostatic test, (2) permit remote venting of noncondensable gases which may accumulate in the vessel head space during reactor cooldown after the main steamlines have been flooded, and (3) permit venting of noncondensable disassociated gases which might accumulate in the vessel head space during reactor operation to one of the main steamlines.

The reactor head vent system contains SR components that are relied upon to remain functional during and following DBEs.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.1-1, the applicant identified the following reactor head vent system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- piping and fittings
- valve bodies

2.3.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.1 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.1.1.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the reactor head vent system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the reactor head vent system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.2 Reactor Pressure Vessel

2.3.1.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.2, the applicant described the RPV system. The RPV system consists of the RPV top head enclosure, vessel shell, nozzles, nozzle safe ends, penetrations, bottom head, and support skirt and attachment welds. RPV internals are included in the reactor internals system. The RPV serves as a high-integrity barrier against leakage of radioactive materials to the drywell.

The RPV system contains SR components that are relied upon to remain functional during and following DBEs. In addition, the RPV system performs functions that support FP, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provide a pressure-retaining boundary
- provide structural support to SR components (vessel internals)

In LRA Table 2.3.1-2, the applicant identified the following RPV system component types that are within the scope of license renewal and subject to an AMR:

- bottom head components—bottom head dollar plate, bottom head torus
- nozzle safe ends—control rod drive return line cap
- nozzle safe ends—core spray
- nozzle safe ends—feedwater (FW) nozzle
- nozzle safe ends—instrument and standby liquid control (SLC)
- nozzle safe ends—jet pump instrument
- nozzle safe ends—main steam
- nozzle safe ends—recirculating water
- nozzle safe ends and flanges—instrument
- nozzles—CRD return line
- nozzles—FW
- nozzles—main steam
- nozzles—recirculation outlet, recirculation inlet, core spray, jet pump instrument, instrument and SLC
- penetration—bottom head drainline
- penetration—CRD stub tubes
- penetration—flux monitor
- penetration—instrument

- RPV external surface
- support skirt and attachment welds
- top head enclosure—closure studs and nuts
- top head enclosure—head spray cap
- top head enclosure—instrument nozzle (head spare)
- top head enclosure—instrument nozzle flange (head spare)
- top head enclosure—top head dollar plate
- top head enclosure—top head flange
- top head enclosure—top head torus
- top head enclosure—vent nozzle
- vessel shell attachment welds
- vessel shell—upper intermediate shell, lower intermediate shell, lower shell, beltline welds
- vessel shell—vessel flange, upper shell

2.3.1.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.2 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.1.2.3 Conclusion

The staff reviewed the LRA to determine whether the applicant failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the RPV system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the RPV system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.3 Reactor Pressure Vessel Internals

2.3.1.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.3, the applicant described the RPV internals. The RPV internals consist of all the SCs within the reactor vessel that provide support for the core, control rod system support, instrumentation support, and steam quality enhancement and that direct coolant flow.

The RPV internals contain SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RPV internals could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the RPV internals perform functions that support FP, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provide a pressure-retaining boundary
- provide structural support to SR components (vessel internals)
- provide adequate flow in a specified distribution spray pattern

In LRA Table 2.3.1-3, the applicant identified the following RPV internals component types that are within the scope of license renewal and subject to an AMR:

- access hole covers
- control rod drive housing
- control rod guide tube (CRGT)
- CRGT base
- core plate
- core plate bolts
- core shroud (upper, central, lower)
- core spray lines and spargers, piping supports, clamp modification, core spray lines (headers), spray rings, spray nozzles, thermal sleeves
- intermediate-range monitor dry tubes, source range monitor dry tubes, incore flux monitor guide tubes, low-power range monitor (LPRM) dry tubes
- jet pump assembly—riser pipe
- jet pump assemblies—castings (elbow, collar, flare, flange, transition piece)
- jet pump assemblies—diffuser
- jet pump assemblies—holddown beams
- jet pump assemblies—inlet header
- jet pump assemblies—inlet elbow
- jet pump assemblies—mixing assembly
- jet pump assemblies—riser brace arm

- jet pump assemblies—thermal sleeves
- LPRM dry tubes
- orificed fuel support
- shroud support structure (shroud support cylinder, shroud support plate, shroud support legs)
- standby liquid control distribution pipe
- steam dryer
- top guide

2.3.1.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.3 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive, long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.3 identified areas for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.1-1, dated September 15, 2005, the staff noted that LRA Section 3.1.2.2.4.2 states the jet pump sensing lines internal to the reactor vessel are not within the scope of license renewal; however, it is unclear whether the portion of the jet pump sensing line external to the reactor vessel that can provide a pressure boundary and structural support is within the scope of license renewal. The staff requested that the applicant indicate whether it had included the external jet pump sensing line piping within the scope of license renewal and identify the LRA table and subcomponent group including the subject component or justify the exclusion.

In its response, by letter dated October 14, 2005, the applicant stated the following:

> Jet Pump Sensing Lines external to the vessel are in scope for license renewal. The sentence on page 3-30 of the LRA was intended to indicate that only internal lines are outside scope. The sensing lines are 1-inch stainless steel pipes in the Reactor Vessel Instrumentation (RVI) system. The aging management for the internal (Treated Water) environment is shown in LRA Table 3.1.2-5 Reactor Coolant System—Reactor Vessel Instrumentation, on Page 3-82. The applicable aging effects are cracking and loss of material which are managed by American Society of Mechanical Engineers (ASME) Section XI Subsections IWB, IWC, and IWD, the Plant Chemistry Program, and the One-Time Inspection Program. No

aging management is required for the external surfaces of the stainless steel sensing lines exposed to primary containment and plant indoor air.

Based on its review, the staff found the applicant's response to RAI 2.3.1-1 acceptable based on the inclusion of the subject component; therefore, the applicant resolved the staff concern described in RAI 2.3.1-1.

In RAI 2.3.1-2, dated September 15, 2005, the staff noted that in LRA Table 2.3.1-3, "Reactor Pressure Vessel Internals," core spray (CSP) lines and spargers have been identified as a component type within the scope of license renewal; however, for these components, pressure boundary was identified as the only intended function requiring aging management and not their function of providing adequate flow in a properly distributed spray pattern. The staff requested that the applicant clarify why it had not identified the spray pattern function, in addition to pressure boundary function, as an intended function needing maintenance during the extended period of operation.

In its response, dated October 14, 2005, the applicant stated the USAR Section 3.6.2.10, "Core Spray Spargers," states, "The supply line pairs terminate at a common vessel nozzle. Each half has distribution nozzles pointed radially inward and downward at a slight angle to achieve a specified distribution pattern." Therefore, an intended function of 'spray pattern' is assigned to the CSP lines and spargers by revision to LRA Tables 2.3.1-3, "Reactor Pressure Vessel Internals," and 3.1.2-3, "Reactor Coolant System-Reactor Pressure Vessel Internals." There are no changes to the aging effects or the aging management programs (AMPs). The applicant added the component intended function, "spray pattern—to provide adequate flow in a specified distribution spray pattern," by revising LRA Table 2.1-1, "Intended Function Definitions."

Based on its review, the staff found the applicant's response to RAI 2.3.1-1 acceptable based on the inclusion of the spray pattern intended function for the above component; therefore, the applicant resolved the staff concern described in RAI 2.3.1-2.

2.3.1.3.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant had adequately identified the RPV internals components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the RPV internals components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.4 Reactor Recirculation System

2.3.1.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.4, the applicant described the reactor recirculation (REC) system. The REC system includes the recirculation flow control (RFC) subsystem for license renewal purposes. The REC system forces water through the reactor core to provide forced convection cooling of the reactor core. The system consists of two recirculation pump loops outside the vessel and twenty jet pumps inside the vessel. The jet pumps are part of the reactor internals

system. Each REC system loop outside the vessel consists of a motor-driven recirculation pump, two motor-operated gate valves for pump isolation, piping, and required recirculation flow measurement devices. Jet pump flow instrumentation outside the reactor vessel is included within the license renewal boundary of the REC system. The REC system (via the recirculation flow control subsystem) also functions as a method of controlling the reactor power level. The REC system pumps, motors, and loop piping are located in the drywell outside the biological shield.

The REC system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the REC system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the REC system performs functions that support EQ and ATWS.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.1-4, the applicant identified the following REC system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- filters/strainers
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- tanks
- thermowells
- valve bodies

2.3.1.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.4 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.4 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.1-3, dated September 15, 2005, the staff noted that, in LRA Table 2.3.1-4, "Reactor Recirculation System," and for a few other systems (for example the CSP and CRD systems), heat exchangers were identified as a component type within the scope of license renewal; however, for these heat exchangers, pressure boundary was identified as the only intended function requiring aging management and not their heat transfer function. Therefore, the staff requested that the applicant clarify why it did not identify the heat transfer function, in addition to the pressure boundary function, as an intended function needing maintenance during the extended period of operation.

In its response, by letter dated October 14, 2005, the applicant stated the following:

The heat exchangers in scope for the Reactor Recirculation (REC) system are:

- The No. 11 and No.12 REC Motor/Generator Set Oil Coolers - These heat exchangers are shown on License Renewal (LR) drawing LR-36041 and are in scope for non-safety related components that could adversely affect safety related systems, structures, and components (SSCs) and are only required to maintain a pressure boundary. Therefore, no heat transfer function is required for these components to meet their intended functions.

- The REC Pump Lower Seal Cooler and REC Pump Upper Seal Cooler - These heat exchangers are shown on drawing LR-36243-1. The heat exchanger tubes serve as a reactor coolant pressure boundary, whereas the shells are in scope for non-safety related components that could adversely affect safety related SSCs and are only required to maintain a pressure boundary. Therefore, no heat transfer function is required for these components to meet their intended functions.

The heat exchangers in scope for the Core Spray (CSP) System are:

- The CSP Pump Motor Oil Coolers - The heat exchangers are shown on drawing LR-36664. An analysis concluded that the core spray motors are operable if motor cooling water is reduced to zero under worst case room temperatures. Therefore the heat exchanger does not have an intended function of providing heat transfer. The heat exchanger serves only a pressure boundary function.

The heat exchangers in scope for the Control Rod Drive (CRD) system are:

- The CRD Pump Thrust Bearing Cooler and the Lube Oil Cooler for the CRD Pump Speed Increaser Assemblies - These heat exchangers are shown on drawing LR-36244. The heat exchangers are in scope as non-safety related components that could adversely affect safety related SSCs. They are only required to maintain a pressure boundary. Therefore, no heat transfer function is required for these components to meet their intended safety functions.

Based on its review, the staff found the applicant's response to RAI 2.3.1-3 acceptable. Heat transfer is not an intended function for the REC system heat exchangers; therefore, the applicant resolved the staff concern described in RAI 2.3.1-3.

2.3.1.4.3 Conclusion

The staff reviewed the LRA to determine whether the applicant failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the REC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the REC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.5 Reactor Vessel Instrumentation

2.3.1.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.5, the applicant described the RVI system. The RVI system is designed to fulfill a number of requirements pertaining to the vessel itself or the reactor core. The instrumentation must (1) provide the operator with sufficient information in the control room to protect the vessel from undue stresses, (2) provide information which can be used to assure that the reactor core remains covered with water and that the steam separators are not flooded, (3) provide redundant, reliable inputs to the reactor protection system to shut the reactor down when fuel damage limits are approached, and (4) provide a method of detecting leakage from the reactor vessel head flange. The RVI system also includes the reference leg backfill subsystem. This subsystem provides a constant backfill of water from the CRD system's charging water header to the safeguards and FW reference legs to flush any gas-laden water through the condensate chambers and back to the reactor vessel to eliminate level errors resulting from the degassing phenomenon.

The RVI system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RVI system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the RVI system performs functions that support FP, EQ, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provide a pressure-retaining boundary
- provide flow restriction

In LRA Table 2.3.1-5, the applicant identified the following RVI system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- manifolds
- piping and fittings
- restricting orifices
- thermowells

- valve bodies

2.3.1.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.5 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.1.5.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the RVI system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the RVI system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2 Engineered Safety Features

In LRA Section 2.3.2, the applicant identified the SCs of the ESFs that are subject to an AMR for license renewal.

The applicant described the supporting SCs of the ESFs in the following sections of the LRA:

- 2.3.2.1 automatic pressure relief system
- 2.3.2.2 combustible gas control system
- 2.3.2.3 core spray system
- 2.3.2.4 high pressure coolant injection system
- 2.3.2.5 primary containment mechanical system
- 2.3.2.6 reactor core isolation cooling system
- 2.3.2.7 residual heat removal system
- 2.3.2.8 secondary containment system

SER Sections 2.3.2.1–2.3.1.8 present the staff's review findings regarding LRA Sections 2.3.2.1–2.3.1.8, respectively.

2.3.2.1 Automatic Pressure Relief System

2.3.2.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.1, the applicant described the automatic pressure relief (APR) system. The APR system is designed to prevent overpressurization and provide depressurization of the reactor vessel during DBEs. Two safety relief valves (SRVs) on each of the four steamlines are equipped to operate by automatic or manual initiation to blow down the reactor. Steam is passed through the valves, down a tailpipe, and through the torus vent headers to discharge underwater through T-quenchers in the event of SRV activation. The automatic depressurization system (ADS) is an APR subsystem that provides backup to the high pressure coolant injection (HPC) system and is designed to reduce reactor vessel pressure to a range suitable for low-pressure emergency core cooling pumps to operate. The low-low set system is an APR subsystem designed to control post-shutdown overpressure with progressive SRV pressure release setpoints. The alternate shutdown (ASD) system panel provides for manual operation of four APR system SRVs. The APR system is also used to implement the ASD cooling method. To use the ASD cooling method, the reactor is depressurized using the automatic depressurization subsystem of the APR system.

The APR system contains SR components that are relied upon to remain functional during and following DBEs. In addition, the APR system performs functions that support FP, EQ, and SBO.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.2-1, the applicant identified the following APR system component types that are within the scope of license renewal and subject to an AMR:

- accumulators
- fasteners/bolting
- manifolds
- piping and fittings
- thermowells
- valve bodies

2.3.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.1 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.1.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the APR system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the APR system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.2 Combustible Gas Control System

2.3.2.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.2, the applicant described the combustible gas control (CGC) system. In its letter, dated March 15, 2006, the applicant stated that the CGC system was deactivated by cutting and capping process lines connecting to interfacing systems during the 2005 refueling outage, in accordance with the NRC's approval of License Amendment 138, which eliminated the requirements for hydrogen recombiners and relaxed the requirements for hydrogen and oxygen monitoring. Therefore, the system has been removed from the scope of license renewal.

2.3.2.2.2 Conclusion

On the basis of the isolation and capping of the CGC system due to License Amendment 138, the staff concluded that the applicant appropriately characterized the system as outside the scope of license renewal.

2.3.2.3 Core Spray System

2.3.2.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.3, the applicant described the CSP system. The CSP system restores and maintains the coolant in the RPV in combination with other emergency core cooling systems (ECCS) such that the core is adequately cooled to preclude fuel damage. Two independent CSP system loops are provided for use under loss-of-coolant accident (LOCA) conditions associated with large pipe breaks and reactor vessel depressurization. Suction water is normally supplied from the suppression pool, but can also be supplied by the condensate storage tank (CST). The CSP system provides adequate cooling along with low-pressure coolant injection (LPCI) for intermediate and large line break sizes up to and including the design-basis, double-ended recirculation line break, without assistance from any other ECCS. In conjunction with the LPCI mode of the RHR system, the HPC system, and the APR, the CSP system can act automatically (in response to signals indicative of a LOCA) to reflood the reactor core and maintain core cooling following a LOCA event. Initiation of the CSP system occurs on signals indicating (1) reactor low-low water level coincident with low reactor pressure, or (2) sustained reactor low-low water level, or (3) high drywell pressure. The reactor low-low water level signal or the high drywell pressure signal also initiate the emergency diesel generators (EDGs). Cooling water to the CSP system pump motor coolers is supplied by the

emergency service water (ESW) system. The power source for each CSP system is located on separate emergency buses. The EDGs can supply power for these emergency buses.

The CSP system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the CSP system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the CSP system performs functions that support FP, EQ, and SBO.

The intended functions within the scope of license renewal include the following:

- provide flow restriction
- provide a pressure-retaining boundary

In LRA Table 2.3.2-3, the applicant identified the following CSP system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- gauges (flow, level, and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- thermowells
- valve bodies

2.3.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.3 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.3.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant had adequately identified the CSP system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the CSP system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.4 High Pressure Coolant Injection System

2.3.2.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.4, the applicant described the HPC system. The HPC system is part of the ECCS. The ECCS provides for continuity of reactor core cooling over the entire range of postulated breaks in the reactor primary system. The HPC system provides adequate core cooling for all break sizes less than those sizes for which the LPCI subsystem or CSP system can adequately protect the core, without assistance from other safeguards systems. The HPC system performs this function without reliance on offsite power or a water source for the injection. The HPC system can pump water into the RPV under LOCA conditions that do not result in rapid depressurization of the RPV. The HPC system is a high-head, low-flow system that pumps water into the RPV when the reactor primary system is at high pressure. If the HPC system fails to deliver the required flow of cooling water to the RPV, the automatic depressurization feature of the reactor APR system functions to reduce system pressure so that the LPCI subsystem can operate to inject water into the RPV. The HPC turbine trips when the turbine steam supply pressure has decreased to the isolation setpoint. All these operations are performed automatically.

The HPC system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the HPC system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the HPC system performs functions that support EQ and SBO.

The intended functions within the scope of license renewal include the following:

- provide filtration
- provide flow restriction
- provide for heat transfer
- provide a pressure-retaining boundary
- limit heat transfer to maintain temperature

In LRA Table 2.3.2-4, the applicant identified the following HPC system component types that are within the scope of license renewal and subject to an AMR:

- fan/blower/housings
- fasteners/bolting
- filters/housings
- gauges (flow, level, and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- steam traps
- tanks
- thermowells
- turbines
- valve bodies

2.3.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.4 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.4.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the HPC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the HPC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.5 Primary Containment Mechanical System

2.3.2.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.5, the applicant described the primary containment mechanical (PCM) system. The PCM system includes the containment atmosphere control and nitrogen control components, the hydrogen-oxygen analyzing, the post-accident sampling (PAS), and the hard pipe vent subsystems. The PCM system was created to separate out the mechanical components of the primary containment (PCT) system for license renewal evaluation purposes. The mechanical components, and the associated electrical and I&C components, were transferred from the PCT system to the PCM system. The resulting PCT system contains only the structural components of the primary containment system. For license renewal evaluations, the PCM system also includes the portions of the mechanical containment penetration assemblies that are extensions of the mechanical piping. These are the flued heads and guard pipes of the mechanical containment penetration assemblies. The other components of the containment penetration assemblies (e.g., the sleeves) are evaluated in the PCT system. The PAS subsystem consists of a liquid and gas sample station located outside the secondary containment in the turbine building near the control room access door. The system is designed to provide samples under all conditions ranging from normal shutdown and power operation to the design-basis LOCA. The hard pipe vent subsystem provides a vent path from the pressure suppression chamber (wetwell) vapor space to a release point above the reactor building.

The PCM system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the PCM system could potentially prevent the

satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the PCM system performs functions that support FP, EQ, and SBO.

The intended functions within the scope of license renewal include the following:

- provide filtration
- provide a pressure-retaining boundary
- provide pressure boundary or fission product retention

In LRA Table 2.3.2-5, the applicant identified the following PCM system component types that are within the scope of license renewal and subject to an AMR:

- accumulators
- fasteners/bolting
- filters/strainers
- flow element
- manifolds
- piping and fittings
- rupture disks
- thermowells
- valve bodies

2.3.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.5 and USAR Sections 5.2.1.3, 5.2.2.3, 5.2.2.7, 5.2.3.10, 5.2.3.11, and 10.3.10.1 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.5.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the PCM system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the PCM system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.6 Reactor Core Isolation Cooling System

2.3.2.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.6, the applicant described the reactor core isolation cooling (RCI) system. The MNGP licensing basis does not include the RCI system as an ESF system The RCI system is included within this section, and the related aging management section, for consistency with the SRP-LR and NUREG-1801, "Generic Aging Lessons Leaned (GALL) Report," issued July 2001. The RCI system uses a steam-driven turbine to drive a pump to inject water into the reactor vessel so that the core is not uncovered in the event of a loss of FW. While the system is not credited in the SBO analysis for mitigating loss of offsite power (LOOP) events, the system may be used to cope with such events. The RCI pump is supplied demineralized makeup water from the CST and can use the suppression pool as an alternate SR source of water. All components necessary for the initiation and operation of the RCI system are completely independent of any auxiliary alternating current (AC) power, plant service air, and external cooling water systems, requiring only direct current (DC) control and instrument power from the plant batteries. The RCI system also provides for primary containment isolation. The pumping capacity of the RCI system is sufficient to maintain the water level above the core without any other makeup water system in operation.

The RCI system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RCI system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the RCI system performs functions that support EQ.

The intended functions within the scope of license renewal include the following:

- provide filtration
- provide flow restriction
- provide for heat transfer
- provide a pressure-retaining boundary

In LRA Table 2.3.2-6, the applicant identified the following RCI system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- filters/strainers
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- steam traps
- tanks
- thermowells
- turbines
- valve bodies

2.3.2.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.6 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.6.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the RCI system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the RCI system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.7 Residual Heat Removal System

2.3.2.7.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.7, the applicant described the RHR system. The RHR system restores and maintains the reactor coolant inventory in the reactor core so that the reactor core is adequately cooled after depressurization during a LOCA. The RHR system also provides cooling for the suppression pool to ensure condensation of the steam resulting from the blowdown from the design-basis LOCA. The RHR system further extends the redundancy of the ECCS by providing for primary containment spray/cooling. In addition, the RHR system provides for primary containment isolation. The RHR system is designed for essentially three modes of operation, (1) LPCI, (2) containment spray/cooling, and (3) reactor shutdown cooling. The shutdown cooling subsystem is used for routine operations. The LPCI subsystem is an integral part of the RHR system. It operates to restore and maintain the reactor coolant inventory in the reactor core after a LOCA so that the core is sufficiently cooled. The LPCI subsystem operates in conjunction with the HPC system, the APR system, and the CSP system to achieve this goal. The RHR system provides a means to remove decay heat and residual heat from the reactor so that refueling and reactor systems servicing can be performed. In addition, the RHR system provides the means to supplement the spent fuel pool cooling system when necessary to provide additional cooling capacity.

The RHR system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RHR system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the RHR system performs functions that support FP, EQ, and SBO.

The intended functions within the scope of license renewal include the following:

- provide filtration
- provide for heat transfer
- provide a pressure-retaining boundary
- limit heat transfer to maintain temperature

In LRA Table 2.3.2-7, the applicant identified the following RHR system component types that are within the scope of license renewal and subject to an AMR:

- accumulators
- fasteners/bolting
- filters/strainers
- heat exchangers
- manifolds
- nozzles
- piping and fittings
- pump casings
- restricting orifices
- thermowells
- valve bodies

2.3.2.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.7 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.7.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the RHR system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the RHR system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.8 Secondary Containment System

2.3.2.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.8, the applicant described the secondary containment (SCT) system. The SCT system completely encloses the reactor and its pressure suppression primary containment. The secondary containment enclosure structure provides secondary containment when the primary containment is closed and in service and primary containment when the primary containment is open, as during refueling. The reactor building houses the refueling and reactor servicing equipment, new and spent fuel storage facilities, and other reactor auxiliary systems or service equipment. The primary purposes for the secondary containment are to minimize ground-level release of airborne radioactive materials to the environs and to provide means for a controlled, elevated release of the building atmosphere, if an accident should occur. The standby gas treatment system (SGTS) is a subsystem of the SCT system and is provided to maintain, whenever secondary containment isolation conditions exist, a small negative pressure to minimize ground-level escape of airborne radioactivity. Filters are in the system to remove radioactive particulates, and charcoal adsorbers are provided to remove radioactive halogens. All flow from the standby gas treatment system is released through the elevated offgas vent stack and continuously monitored by the stack gas monitoring system.

The SCT system contains SR components that are relied upon to remain functional during and following DBEs. In addition, the SCT system performs functions that support EQ.

The intended functions within the scope of license renewal include the following:

- provide flow restriction
- provide a pressure-retaining boundary

In LRA Table 2.3.2-8, the applicant identified the following SCT system component types that are within the scope of license renewal and subject to an AMR:

- damper housings
- ductwork
- fan/blower/housings
- fasteners/bolting
- filters/housings
- flow element
- manifolds
- piping and fittings
- restricting orifices
- thermowells
- valve bodies
- ventilation seal

2.3.2.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.8 and USAR Section 5.3 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.8.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the SCT system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the SCT system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3 Auxiliary Systems

In LRA Section 2.3.3, the applicant identified the SCs of the auxiliary systems that are subject to an AMR for license renewal.

The applicant described the supporting SCs of the auxiliary systems in the following sections of the LRA:

- 2.3.3.1 alternate nitrogen system
- 2.3.3.2 chemistry sampling system
- 2.3.3.3 circulating water system
- 2.3.3.4 control rod drive system
- 2.3.3.5 demineralized water system
- 2.3.3.6 emergency diesel generators system
- 2.3.3.7 emergency filtration train system
- 2.3.3.8 emergency service water system
- 2.3.3.9 fire system
- 2.3.3.10 fuel pool cooling and cleanup system
- 2.3.3.11 heating and ventilation system
- 2.3.3.12 instrument and service air system
- 2.3.3.13 radwaste solid and liquid system
- 2.3.3.14 reactor building closed cooling water system
- 2.3.3.15 reactor water cleanup system
- 2.3.3.16 service and seal water system
- 2.3.3.17 standby liquid control system
- 2.3.3.18 wells and domestic water system

SER Sections 2.3.3.1–2.3.3.18 present the staff's review findings regarding LRA Sections 2.3.3.1–2.3.3.18, respectively.

2.3.3.1 Alternate Nitrogen System

2.3.3.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.1, the applicant described the alternate nitrogen system (AN2). The AN2 system consists of two separate SR trains providing an SR backup pneumatic source from nitrogen bottle racks located in the turbine building. The AN2 system interfaces with the instrument and service air (AIR) system through a check valve, with the nitrogen side held at a slightly lower pressure to allow the AIR system to be used during normal operation. In the event of an accident, which also disables the AIR system, the AN2 system would automatically supply the required pneumatic loads. Manifold and system pressures of each train are monitored by pressure switches, which give control room annunciation on low pressure. The nitrogen supply bottles connected to the distribution rack are not long-lived components, and therefore, are not subject to an AMR.

The AN2 system contains SR components that are relied upon to remain functional during and following DBEs. In addition, the AN2 system performs functions that support FP, EQ, and SBO.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-1, the applicant identified the following AN2 system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- flexible connections
- piping and fittings
- valve bodies

2.3.3.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.1 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.1 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.1-1, dated September 16, 2005, the staff noted that the license renewal drawing LR-36049-10 at location B-8 and C-8 shows the nitrogen supply bottles as within the scope of

license renewal; however, LRA Table 2.3.3-1 does not list these nitrogen supply bottles as a component type subject to an AMR. These nitrogen supply bottles provide a pressure boundary intended function and are passive and long-lived; therefore, the staff requested that the applicant clarify whether these nitrogen supply bottles are included with another component type (i.e., tanks) and if not, the applicant should justify why they are not listed in Table 2.3.3-1 or update the table to include these components.

In its response, by letter dated October 14, 2005, the applicant stated that nitrogen supply bottles are periodically replaced and therefore are not long-lived and are not subject to an AMR, pursuant to the requirements of 10 CFR 54.21(a).

Based on its review, the staff found the applicant's response to RAI 2.3.3.1-1 acceptable because the nitrogen supply bottles are periodically replaced and thus are not subject to AMR; therefore, the applicant resolved the staff concern described in RAI 2.3.3.1-1.

2.3.3.1.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the AN2 system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the AN2 system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.2 Chemistry Sampling System

2.3.3.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.2, the applicant described the chemistry sampling (CHM) system. The CHM system provides for sampling the process fluid of various systems to obtain representative data to evaluate the performance of the plant systems and equipment. The sampling locations are chosen to ensure that representative samples can be obtained. The sample streams are routed by the shortest route to a common sample collection area. There is a collective sample station for each building in the plant—radwaste building sample station, located in the radwaste building; reactor building sample station, located in the reactor building; and turbine building sample station, located in the turbine building. The stations are provided with closed-loop process lines that discharge to the equipment drain tanks and then to the waste collector tank for reprocessing. Each sample station typically consists of a sample rack with sample shutoff valves; sample coolers; sample chillers; sample modules; instrumentation for conductivity, pH, dissolved oxygen, dissolved hydrogen, and total organic carbon, as well as a local data acquisition system panel. There is a ventilated fume hood for collection of grab samples adjacent to the sample rack.

The failure of NSR SSCs in the CHM system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-2, the applicant identified the following CHM system component types that are within the scope of license renewal and subject to an AMR:

- chillers
- fasteners/bolting
- filters/housings
- flow element
- heat exchangers
- manifolds
- piping and fittings
- thermowells
- valve bodies

2.3.3.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.2 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.2.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the CHM system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the CHM system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.3 Circulating Water System

2.3.3.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.3, the applicant described the circulating water (CWT) system. The CWT system removes the heat from the main condenser that is rejected by the turbine or turbine bypass system over the full range of operating loads. The CWT system is a flexible multi-cycle system with the capability of once-through circulation of river water, recirculation in a closed cycle with cooling towers, and several variations of these basic modes. Selection of the operating mode will be determined by the prevailing river flow rate and river temperature to provide economic plant operation and conformance with restrictions on river water use. The system is equipped with two half-capacity CWT pumps located at the intake structure. The

pumps are designed to circulate cooling water through the main condenser. Two half-capacity cooling tower pumps, located at the discharge structure, are used during cooling tower operation. The pumps are designed to operate in series with the CWT pumps, discharging flow to each of two induced-draft cooling towers.

The failure of NSR SSCs in the CWT system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-3, the applicant identified the following CWT system component types that are within the scope of license renewal and subject to an AMR:

- condenser water box
- expansion joints
- fasteners/bolting
- filters/strainers
- gauges (flow, level, and sight)
- manifolds
- piping and fittings
- pump casings
- tanks
- thermowells
- valve bodies

2.3.3.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.3 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.3.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the CWT system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the CWT system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.4 Control Rod Drive System

2.3.3.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.4, the applicant described the CRD system. The CRD system is designed to allow control rod withdrawal or insertion at a limited rate, one control rod at a time, for power-level control and flux shaping during reactor operation. Stored energy available from gas-charged accumulators and/or from reactor pressure provides hydraulic power for rapid simultaneous insertion of all control rods for rapid (scram) reactor shutdown. Each control rod has its own separate drive mechanism, control, and scram devices. The CRD system is designed so that sufficient energy is available to force the control rods into the core under conditions associated with abnormal operational transients and accidents. Control rod insertion speed is sufficient to prevent fuel damage as a result of any abnormal operational transient. The CRD system also supplies water to the RVI reference-leg backfill subsystem. This subsystem provides a constant backfill of water from the CRD system's charging water header to the safeguards and FW reference legs to flush any gas-laden water through the condensate chambers and back to the reactor vessel to eliminate level errors from the degassing phenomenon.

The CRD system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the CRD system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the CRD system performs functions that support FP, EQ, ATWS, and SBO.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-4, the applicant identified the following CRD system component types that are within the scope of license renewal and subject to an AMR:

- accumulators
- fasteners/bolting
- filters/strainers
- flow element
- gauges (flow, level, and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- speed increaser assembly
- tanks
- thermowells
- valve bodies

2.3.3.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.4 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.4.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the CRD system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the CRD system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.5 Demineralized Water System

2.3.3.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.5, the applicant described the demineralized water system (DWS). The DWS provides for storage and distribution of high-quality, nonradioactive demineralized water for use as makeup to the CST system and other systems requiring high-quality demineralized water. The DWS is NSR and is not required during or following DBEs. The DWS includes the makeup demineralizer (MUD) subsystem. The MUD subsystem is a double-pass, reverse-osmosis system used to purify and demineralize well water. This demineralized water is used for various plant services which require quality water to (1) minimize damage to components because of chemical and corrosive attack, (2) minimize the fouling of heat transfer surfaces and mechanical parts, and (3) minimize impurities available for activation in neutron flux zones. The MUD subsystem is also NSR and is not required during or following DBEs. The DWS provides for primary containment isolation.

The DWS contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the DWS could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-5, the applicant identified the following DWS component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- filters/housings
- flow element
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- tanks
- thermowells
- ultraviolet light housings
- valve bodies

2.3.3.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.5 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.5.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the DWS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the DWS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.6 Emergency Diesel Generators System

2.3.3.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.6, the applicant described the EDG system (DGN). The DGN system provides a dependable, onsite power source capable of automatically starting and supplying the loads necessary to safely shut down the plant and maintain it in a safe-shutdown condition upon the loss of offsite power simultaneous with a DBA. The EDGs are normally in the standby mode of operation and remain in this mode unless called upon to start by receipt of appropriate automatic signals or by a manual start. The DGN system contains two identical electromotive, turbocharged, 20-cylinder EDGs, each supplying 4160 volts-alternating current (VAC) to its respective emergency bus. The following subsystems within the DGN system support operation

of the EDGs—(1) an engine fuel oil system, (2) an engine lubricating oil system, (3) a starting air system, (4) a closed-cycle engine cooling water system, and (5) an air intake and exhaust system. The engine fuel oil system provides clean, water-free fuel oil to the diesel cylinders. The engine lubricating oil system provides filtered lubricating oil to the diesel engine to ensure adequate lubrication during engine startup and operation. The starting air system consists of two independent air-starting systems for each diesel that provide the motive force to initially put the diesel engine in motion and begin the diesel cycle. The closed-cycle engine cooling water system provides cooling to the diesel cylinders and heads and the aftercooler of the turbocharger via two engine-driven centrifugal pumps. The EDG air intake and exhaust system removes exhaust gases from the diesel cylinders and supplies fresh air for the combustion process. The DGN system includes the diesel oil (DOL) system as a subsystem for license renewal purposes. The DOL subsystem provides for the storage and distribution of fuel oil used in the operation of the plant EDGs, diesel fire pump, and heating boiler.

The DGN system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the DGN system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the DGN system performs functions that support FP.

The intended functions within the scope of license renewal include the following:

- provide filtration
- provide for heat transfer
- provide a pressure-retaining boundary

In LRA Table 2.3.3-6, the applicant identified the following DGN system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- filters/housings
- filters/strainers
- flame arrestors
- flow element
- gauges (flow, level, and sight)
- heat exchangers
- heaters/coolers
- manifolds
- piping and fittings
- pump casings
- silencer
- tanks
- thermowells
- valve bodies

2.3.3.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.6 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.6 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.6-1, dated September 16, 2005, the staff noted that the DGN system includes a DOL subsystem which stores and supplies diesel fuel oil for the operation of the plant diesel generators, diesel fire pump, and heating boiler. The DOL subsystem (except such portions as the heating boiler oil storage tank and its day tank) is SR and within the scope of license renewal; however, license renewal drawing LR-36051 sheet 1 shows the truck fill connection at location B-5 and the diesel oil receiving tank (T-83) subsystem (including pump, piping, and other components) at location A-7 as outside the scope of license renewal. Therefore, the staff requested that the applicant clarify whether these components are within the scope of license renewal and subject to an AMR, in accordance with the applicable requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively, or justify their exclusion.

In its response, by letter dated October 14, 2005, the applicant stated that the diesel oil receiving tank (T-83) and truck fill connection are utilized for receiving, storing, and sampling diesel fuel oil before transfer of the fuel oil to the diesel oil storage tank (T-44) and that these components are not SR. The applicant explained that failure of the truck fill connection and the diesel oil receiving tank (T-83) and connecting piping outside the diesel fuel oil transfer house (pump house) would not impact the intended function of any SR SCs. The applicant, therefore, concluded that the NSR fill connection, diesel oil receiving tank, and connecting piping outside the pump house performed no license renewal function as defined by 10 CFR 54.4(a) and, therefore, were not within the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.3.6-1 acceptable because the applicant provided a satisfactory explanation as to why the components are outside the scope of license renewal; therefore, the applicant resolved the staff concern described in RAI 2.3.3.6-1.

The staff's review of LRA Section 2.3.3.6 identified an area in which information provided in the LRA needed to be verified by the NRC Regional Inspection Team to complete the review of the applicant's scoping and screening results.

Inspection Item 2.3.3.6-1

LRA Section 2.3.3.6 states that DGN air-starting subsystem components within the scope of license renewal are located between the air compressor discharge check valves and the diesel engine air start motors; however, license renewal drawing LR-36051 shows, at locations A-3, B-3, C-3, and D-3, that the license renewal boundaries terminate in the middle of those pipes connected between the compressor air dryers and discharge check valves (GSA-32-2,

GSA-32-1, GSA-32-4, and GSA-32-3). The actual locations of the license renewal scope boundaries for these components are not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundaries for these components satisfy the 10 CFR 54.4(a)(2) criterion.

The inspection team determined that the scope boundaries are just upstream of the respective check valves, as indicated. The actual boundaries are where the carbon steel pipe connects to the copper alloy tubing at the nipple to the air dryers. Because of the relative flexibility between the piping and tubing, the boundary is the tubing transition point. The boundary drawing depicts this transition point between the check valve and the air dryer. The inspectors determined that the license renewal boundaries satisfy the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.6-1 is resolved.

2.3.3.6.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant had adequately identified the DGN system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant had adequately identified the DGN system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.7 Emergency Filtration Train System

2.3.3.7.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.7, the applicant described the emergency filtration train (EFT) system. The MNGP licensing basis considers the EFT system as an ESF system. This section includes the EFT system, and the related aging management section, for consistency with the SRP-LR and GALL Report. The heating, ventilation, and air conditioning system that serves the main control room (MCR) and the EFT building is designed to provide cool air in the summer and warm air for heating in the winter. Ductwork is used to distribute air. The airflow in the MCR and portions of the EFT building is normally recirculated with return air arranged to pass back to the air conditioning unit, while supplemental outside air is drawn through filtration units. The EFT system will serve the MCR and EFT building during normal or emergency conditions. An emergency condition is defined as a condition caused by a high radiation level or detection of toxic chemical vapors in the outside air. The air handling units are self-contained package units complete with electric coils for heating and cooling coils for air conditioning. In the normal operating mode, the MCR and EFT building's first and second floors, excluding the battery room, are served by one of the redundant seismic Class 1 air conditioning units. Filtered outside air from an EFT is available on demand. The EFT system operates in the recirculation mode from offsite AC power. If offsite power is not available, the diesel generators will automatically supply the system.

The EFT system contains SR components that are relied upon to remain functional during and following DBEs. In addition, the EFT system performs functions that support FP.

The intended functions within the scope of license renewal include the following:

- provide structural support to SR components (all other systems)
- provide for heat transfer
- provide a pressure-retaining boundary

In LRA Table 2.3.3-7, the applicant identified the following EFT system component types that are within the scope of license renewal and subject to an AMR:

- chillers
- damper housings
- ductwork
- fan/blower/housings
- fasteners/bolting
- filters/housings
- heat exchangers
- piping and fittings
- valve bodies
- ventilation seal

2.3.3.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.7 and USAR Section 6.7 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.7.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the EFT system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the EFT system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.8 Emergency Service Water System

2.3.3.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.8, the applicant described the ESW system, which includes the following three plant subsystems—(1) EDG-ESW subsystem, (2) ESW subsystem, and (3) RHR service water subsystem. These subsystems are combined into the ESW system for license renewal purposes. The EDG-ESW subsystem consists of two separate and independent emergency cooling water loops that provide cooling water to the EDGs. The loops are capable of providing cooling water during a loss of offsite power and during accident conditions. Each loop contains one full capacity pump that supplies strained cooling water to one of the EDGs. The ESW subsystem consists of two separate and independent emergency cooling water loops that provide cooling water to the ECCS pump motor coolers, ECCS room coolers, and the EFT. Each loop is capable of providing cooling water during a loss of offsite power and/or a loss of normal service water. Each loop contains one full capacity pump that supplies strained cooling water to the cooling loads. The RHR service water subsystem (RSW) consists of two separate and independent emergency cooling water loops that provide cooling water to the RHR heat exchangers. Each loop is capable of providing cooling water during a loss of offsite power and during accident conditions. The RHR auxiliary air compressors are included in the RHR service water subsystem. The RHR auxiliary air compressors provide an SR backup air supply to the RHR heat exchanger residual heat removal service water (RSW) outlet control valves and the CGC system isolation valves upon occurrence of low pressure in the AIR system. The RHR auxiliary air compressors are normally in standby mode of operation.

The ESW system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the ESW system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the ESW system performs functions that support FP and EQ.

The intended functions within the scope of license renewal include the following:

- provide filtration
- provide flow restriction
- provide for heat transfer
- provide a pressure-retaining boundary

In LRA Table 2.3.3-8, the applicant identified the following ESW component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- filters/housings
- filters/strainers
- flow element
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- tanks

- thermowells
- valve bodies

2.3.3.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.8 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.8 identified an area in which information provided in the LRA needed to be verified by the NRC Regional Inspection Team to complete the review of the applicant's scoping and screening results.

Inspection Item 2.3.3.8-1

License renewal drawing LR-36665 at location C-5 shows a continuation of NSR ESW piping within the scope of license renewal from the valve (ESW-12-4"-JBD-GT) to the desilting line on LR-36665 at location A-5; however, the continuation desilting line at location A-5 is designated as SW28-4"-JF and not identified as within the scope of license renewal. Consequently, the actual location of the license renewal boundary for this pipe is not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary for this pipe satisfies the 10 CFR 54.4(a)(2) criterion.

The inspection team determined that the continuation of NSR ESW piping from the valve ESW-12 to the desilting line on LR-36665 at location A-5 should have been shown within the scope of license renewal. The applicant will revise license renewal drawing LR-36665 to show line SW28-4"-JF, the continuation to the desilting line, within the scope of license renewal, up to where the line enters the column in the intake structure. The inspectors confirmed through walkdowns that the scoping boundary is where this line passes into the column shown at coordinates A-5 on the drawing. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.8-1 is resolved.

2.3.3.8.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the ESW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and

that the applicant adequately identified the ESW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.9 Fire System

2.3.3.9.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.9, the applicant described the fire system. The fire system provides assurance, through defense-in-depth design, that a fire will not prevent the performance of necessary safe-shutdown functions or significantly increase the risk of radioactive release to the environment during a postulated fire. The fire system provides fire suppression by fixed water spray and sprinkler systems, fixed gas (Halon 1301) systems, hose stations, and portable extinguishers located in various areas of the MNGP site. MNGP has a fire detection and alarm system that alarms locally in selected areas of the plant and transmits various alarm, supervisory, and trouble signals to the control room. The fire system ensures compliance with the regulated event for FP. The Mississippi River supplies the water for the fire system. The fire system also provides alternate sources of water to other plant systems.

The failure of NSR SSCs in the fire system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. The fire system also performs functions that support FP.

The intended functions within the scope of license renewal include the following:

- provide filtration
- provide flow restriction
- provide for heat transfer
- provide a pressure-retaining boundary

In LRA Table 2.3.3-9, the applicant identified the following fire system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- filters/strainers
- fire hydrants
- flexible connections
- gauges (flow, level, and sight)
- heat exchangers
- manifolds
- nozzles
- piping and fittings
- pump casings
- restricting orifices
- sprinkler heads
- tanks
- valve bodies

2.3.3.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.9 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff also reviewed the approved FP SERs, dated August 29, 1979, February 12, 1981, and October 2, 1985. These reports are referenced directly in the MNGP FP CLB and summarize the FP program and commitments to 10 CFR 50.48 using the guidance of Appendix A to Branch Technical Position (BTP) Chemical and Mechanical Engineering Branch (CMEB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants." The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.9 identified areas for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.9-1, dated August 18, 2005, the staff noted that license renewal drawing LR-36051 highlights the diesel fire pump, diesel fire pump day tank, and interconnecting piping as within the scope of license renewal; however, the diesel fire pump day tank fill line is not highlighted. The staff requested that the applicant clarify whether the diesel fire pump day tank fill line is within the scope of license renewal, in accordance with 10 CFR 54.4(a), and subject to an AMR, in accordance with 10 CFR 54.21(a)(1), or justify its exclusion.

In its response, by letter dated September 16, 2005, the applicant stated the following:

> The diesel fire pump day tank fill line is not within the scope of license renewal and is not subject to an AMR. The diesel fire pump day tank (T-100) is a 120-gallon capacity tank. The tank conservatively provides about ten hours of operation of the diesel-driven fire pump before makeup is required. This satisfies the requirements of NFPA-20, 'Standard for the Installation of Centrifugal Fire Pumps,' which states that the day tank capacity '...shall be sufficient to operate the engine for at least eight hours.' In accordance with the Operations Manual for the diesel oil subsystem, the nominal fuel oil consumption of the diesel-driven fire pump is eight (8) gallons per hour. An alternate method of transferring fuel oil from the Diesel Oil Storage Tank (T-44) to the Diesel Fire Pump Day Tank is provided during emergencies and is governed by abnormal procedures in accordance with the MNGP Operations Manual. Under these situations, the Portable Gasoline Engine Powered Fuel Oil Pump (P-229) that is normally stored in Warehouse 2 is utilized. This portable pump is within the scope of license renewal and is subject to AMR. P-229 is evaluated in AMR-DGN, Emergency Diesel Generators System, since the diesel oil subsystem including fuel oil to the diesel-driven fire pump, is evaluated within this AMR. Under these emergency

situations, P-229 is connected to the Diesel Oil Storage Tank using portable hoses. T-100 is filled by removing the 8" manhole cover from this tank and inserting the discharge hose from P-229. Consequently, utilizing the Portable Gasoline Engine Powered Fuel Oil Pump provides an alternate method of filling the Diesel Fire Pump Day Tank and the Diesel Fire Pump Day Tank fill line is excluded from the scope of license renewal and is not subject to AMR.

Based on its review, the staff found the applicant's response to RAI 2.3.3.9-1 acceptable because the diesel fire pump day tank can be filled using an alternate method (i.e., the portable gasoline engine powered fuel oil pump) which is within the scope of license renewal and subject to an AMR; therefore, the staff's concern described in RAI 2.3.3.9-1 is resolved.

In RAI 2.3.3.9-2, dated August 18, 2005, the staff identified that license renewal drawing LR-36664 (coordinates C-7) shows the KB/GB boundary and the system boundary break (Fire Protection ESW) at opposite ends of valve RHRSW-46, which is the only valve on the drawing at which they are at opposite ends. The staff requested that the applicant verify whether this depiction is correct.

In its response, by letter dated September 16, 2005, the applicant stated, "This is correct due to the fact that valve RHRSW-46 is within scope in the Fire Protection (FIR) System. There is typically no correlation between License Renewal system boundary breaks and piping classifications."

Based on its review, the staff found the applicant's response to RAI 2.3.3.9-2 acceptable because it adequately explains the scoping of valve RHRSW-46; therefore, the staff's concern described in RAI 2.3.3.9-2 is resolved.

In RAI 2.3.3.9-3, dated August 18, 2005, the staff identified that on license renewal drawing LR-36664 the piping on the KB side (outlet) of valve RHRSW-46 (coordinates C-7) is highlighted as within the scope of license renewal, in accordance with 10 CFR 54.4(a)(2). On the continuation license renewal drawing LR-36048, the same piping is shown highlighted as within the scope of license renewal pursuant to 10 CFR 54.4(a)(1) and (a)(3). The staff requested that the applicant clarify which paragraph of 10 CFR 54.4 applies to this piping for the LRA.

In its response, by letter dated September 16, 2005, the applicant stated the following:

> The piping on the 'KB' side of valve RHRSW-46 on LRA drawing LR-36664 is highlighted in 'green' since it is in the scope of license renewal in accordance with 10 CFR 54.4(a)(2) for non-safety connected to safety (FIR to ESW) and, non-safety affecting safety (NSAS) with respect to potential leakage/spray. It is also in the scope of license renewal in accordance with 10 CFR 54.4(a)(3) for the fire protection regulated event. The continuation of this piping is highlighted on LRA drawing LR-36048 in 'red' and is in the scope of license renewal per 10 CFR 54.4(a)(3) due to the Fire Protection regulated event. The color-coding was performed in this manner to indicate these two separate criteria yet provide differentiation between the two criteria due to this particular piping segment in the FIR System being identified on two separate LR drawings.

Based on its review, the staff found the applicant's response to RAI 2.3.3.9-3 acceptable because it adequately explains that the piping on the KB side of valve RHRSW-46 is within the scope of license renewal, pursuant to 10 CFR 54.4(a)(2) and 10 CFR 54.4(a)(3); therefore, the staff's concern described in RAI 2.3.3.9-3 is resolved.

In RAI 2.3.3.9-4, dated August 18, 2005, the staff identified that GALL Report Section XI.27, "Fire Water System," describes the requirement for aging management of the FP water system and recommends that an AMP be established to evaluate the aging effects of corrosion, microbiologically influenced corrosion (MIC), and biofouling of carbon steel and cast iron components in the FP systems exposed to water.

LRA Section 2.3.3.9 addresses requirements for the Fire Detection and Protection Program, but does not mention trash racks and traveling screens for the fire pump suction water supply. Neither LRA Section 2.3.3.3, "Circulating Water System," nor Section 2.4.8, "Intake Structure," mention trash racks and traveling screens.

The USAR states, in part, the following:

> River water is turned through an angle of 81° to approach the plant along a channel excavated to elevation 898 feet. It enters the Intake Structure through a trash rack before dividing into two separate streams to the circulating water pump chambers. Each stream passes through two parallel automatically operated traveling screens, the service water pump bay and two parallel motor-operated sluice gates before reaching a circulating water pump. The center dividing wall permits dewatering of either pump bay. A normally closed gate in the wall can be manually opened during normal operation if a traveling screen is out of service for maintenance. Taking suction from the service pump bay are two 14,000 gpm make-up pumps and pumps for the station cooling, screen wash, and fire protection.

Trash racks and traveling screens are necessary to remove debris and prevent clogging for the FP water supply system. Trash racks and traveling screens are typically considered passive, long-lived components. Trash racks are located in a freshwater environment. Traveling screens are located in a freshwater/air environment. Although not specifically addressed in the USAR or LRA, trash racks and traveling screens are typically constructed of carbon steel material. Carbon steel in a freshwater environment or a freshwater/air environment is subject to corrosion; therefore, the staff requested that the applicant explain the apparent exclusion of the trash racks and traveling screens located upstream of the fire pump suctions from the scope of license renewal and an AMR.

In its response, by letter dated September 16, 2005, the applicant stated the following:

> The trash racks are installed to remove large debris from entering the Intake Structure. Since the trash racks are an integral part of the Intake Structure, they were included within the scope of license renewal and are subject to an AMR as part of the Intake Structure, for conservatism. They are identified in Table 3.5.2-8 (Structures and Component Supports-Intake Structure) of the LRA as carbon steel (Component Type) in both an atmosphere/weather and raw water environment and are subject to an AMR due to loss of material. The Structures

Monitoring Program manages the aging effect of loss of material for this component. The traveling screens are part of the non-safety related Circulating Water System that supports normal plant operation. The traveling screens are provided for trash, fish, and vegetation removal to minimize the fouling and clogging of the Circulating Water System water box tube sheets and piping. However, for both the trash racks and the traveling water screens, build-up of debris is considered event-driven and not age-related. Both the trash racks and traveling screens are non-safety related, non-QA, and non-seismic components.

During normal plant operation, the Circulating Water pumps (two pumps in operation) draw a significant flow of cooling water (292,000 gpm) through the bays of the Intake Structure to support the main condenser cooling requirements. This high flow rate (not including the normal Service Water flow rate that equates to an additional 10,000 gpm with two pumps in operation) creates the potential for debris and sediment to enter the bays. During emergency operation, when the Circulating Water pumps are not in operation, the Fire Pumps draw a small flow (1500 gpm/pump) of water through the bays with a corresponding low velocity. The low flow velocity creates an insignificant amount of debris and sediment to accumulate and the traveling water screens are able to pass a sufficient amount of water to support operation of the Fire Pumps. Additionally, the Fire Pumps themselves are equipped with suction strainers. Basket strainers are provided in the main fire pump discharge headers. Any significant degradation or failure of the traveling screens during normal power operation would be evident and detected by plant operators far in advance of a complete failure. Even in the case of total failure, floating or heavy debris would not affect the operation of the Fire pumps due to the low velocities at the suction of these pumps. The screens are subject to periodic maintenance and replacement and are continuously monitored through main control room annunciation. Additionally, the river and atmospheric environments for these components are relatively non-aggressive. The traveling screens and trash racks are not required to perform a function during or following a design basis event, and therefore do not meet the scoping criteria of 10 CFR 54.4(a)(1)(i), (ii), or (iii). There is no credible failure mode of the traveling screens and trash racks that could prevent satisfactory accomplishment of any of the functions identified in paragraphs 10 CFR 54.4(a)(1)(i), (ii), or (iii). Therefore, the traveling screens and trash racks do not meet the scoping criteria of 10 CFR 54.4(a)(2). The traveling screens and trash racks are not required to perform a function in support of the regulated events of 10 CFR 54.4(a)(3).

Based on the above, the traveling screens and trash racks are not considered to meet the scoping criteria of 10 CFR 54.4(a) and do not perform a license renewal intended function per 10 CFR 54.4(b). Consequently, although the trash racks are within the scope of license renewal and are subject to AMR since they are an integral part of the Intake Structure and were included for conservatism, the traveling screens are not within the scope of license renewal and are not subject to AMR.

Based on its review, the staff found the applicant's response to RAI 2.3.3.9-4 acceptable because the trash racks are integral parts of the intake structure and were included within the

scope of license renewal and are subject to an AMR for conservatism. The traveling screens are subject to periodic maintenance and replacement and are continuously monitored through main control room annunciation. Even in the case of total failure, floating or heavy debris would not affect the operation of the fire pumps because of the low velocities (compared to the velocities of the flow for the CWT pumps) at the suction of these pumps; therefore, the staff's concern described in RAI 2.3.3.9-4 is resolved.

In RAI 2.3.3.9-5, dated August 18, 2005, the staff noted that Section 3.1.2(3) of the NRC "Fire Protection Safety Evaluation Report," dated August 29, 1979, states that "a sprinkler system will be installed to provide a means to cool hot gases that enter the cable tray area in the water treatment and ESF motor control center area." This sprinkler system is not shown on the license renewal boundary drawings; therefore, the staff requested that the applicant verify that this sprinkler system is within the scope of license renewal pursuant to 10 CFR 54.4(a)(3).

In its response, by letter dated September 16, 2005, the applicant stated the following:

> The sprinkler system installed to provide a means to cool the hot gases that enter the cable tray area in the water treatment and ESF motor control center areas as addressed in the Fire Protection Safety Evaluation Report dated August 29, 1979, Section 3.1.2(3), is not shown in the Fire System LR boundary drawings (P&IDs). However, the isolation valves to this sprinkler system are shown on License Renewal Boundary Drawing LR-36048, Fire Protection System (coordinates C, 7). Valve FP-142 is located at the Turbine Building 951' elevation and valve FP-145 is located at the Turbine Building 911' elevation. These locked-open valves are noted on the drawing as 'FIREWALL SPRINKLER ABOVE LUBE OIL STORAGE TANKS.' These two valves and the remainder of this sprinkler system (water curtain) are in the scope of license renewal per 10 CFR 54.4(a)(3) and are subject to AMR. These components are addressed in Table 3.3.2-9, Auxiliary Systems - Fire System - Summary of Aging Management Evaluation, of the MNGP LRA. The aging effects associated with these components are managed by both the Fire Water System and System Condition Monitoring (external environment) AMPs. However, in addition to the installation of this sprinkler system and in compliance with Appendix R of 10 CFR 50, Section III.G.2(c), the cable, equipment and associated non-safety circuits of the redundant trains are separated by a fire barrier (wall) having a minimum one-hour rating (two-hour barrier actually installed). This fire barrier (Walls T324 and T331) is addressed in Table 3.5.2-17, Structures and Component Supports - Turbine Building - Summary of Aging Management Evaluation, of the MNGP LRA. Both the Fire Protection and Structures Monitoring AMPs manage the aging effects associated with this component.

Based on its review, the staff found the applicant's response to RAI 2.3.3.9-5 acceptable because it adequately explains that the sprinkler system, installed as a means to cool the hot gases that enter the cable tray area in the water treatment and ESF motor control center (MCC) areas, is within the scope of license renewal, pursuant to 10 CFR 54.4(a)(3) and subject to an AMR; therefore, the staff's concern described in RAI 2.3.3.9-5 is resolved.

In RAI 2.3.3.9-6, dated August 18, 2005, the staff noted that Section 4.3.1(17) of the NRC's "Fire Protection Safety Evaluation Report," dated August 29, 1979, states that, "The licensee

will provide foam application equipment for use in fighting potential lube oil fires in the turbine building." The license renewal drawings do not show this foam application equipment; therefore, the staff requested that the applicant clarify whether this foam application equipment is within the scope of license renewal, pursuant to 10 CFR 54.4(a)(3).

In its response, dated September 16, 2005, the applicant stated the following:

> The foam application equipment addressed in the Fire Protection Safety Evaluation Report dated August 29, 1979, Section 4.3.1(7) concerns the two (2) sets of portable foam applicators for use in fighting potential lube oil fires in the Turbine Building. This portable equipment is not shown in the Fire System LR boundary drawings (P&IDs) since it is portable equipment. This equipment is within the scope of license renewal per 10 CFR 54.4(a)(3) and is stored in the Fire Brigade Room in the Plant Administration Building basement at MNGP. This equipment is not subject to AMR since it is inspected periodically (quarterly) under the Fire Protection Program procedures for fire brigade equipment and replaced on condition.
>
> This issue is also addressed in Section 2.1.4.2.4, Fire Protection, of the MNGP LRA that states:
>
> > Items such as fire extinguishers, fire hoses, portable lighting, and air packs were subjected to the MNGP's scoping and screening process. This process is consistent with the NRC Staff's guidance on consumables provided in NUREG-1800, Table 2.1-3.
>
> This issue is further defined in Section 2.1.5.3, Component Classification (Passive, long-lived), of the MNGP LRA that states:
>
> > C. Fire Extinguishers, Fire Hoses, and Air Packs
> >
> > Components such as fire hoses, fire extinguishers, self-contained breathing apparatus (SCBA), and SCBA cylinders are consumables that are routinely tested or inspected. The Fire Protection Program complies with the applicable NFPA safety standards, which specify performance and condition monitoring programs for these specific components. They are replaced as necessary. Therefore, while these consumables are in the scope of license renewal, they do not require an AMR.
> >
> > A component (or component commodity group) that was determined to be active or short-lived is not subject to an AMR, and is screened out by the process.
>
> Consequently, this foam application equipment is within the scope of license renewal per 10 CFR 54.4(a)(3) but is not subject to an AMR.

Based on its review, the staff found the applicant's response to RAI 2.3.3.9-6 acceptable because it adequately explains that the foam application equipment is within the scope of license renewal, pursuant to 10 CFR 54.4(a)(3), but is not subject to an AMR because it is

inspected periodically (quarterly) under the Fire Protection Program's procedures for fire brigade equipment and replaced as necessary. Therefore, the staff's concern described in RAI 2.3.3.9-6 is resolved.

In RAI 2.3.3.9-7, dated August 18, 2005, the staff noted that Section 5.2.6 of the NRC's "Fire Protection Safety Evaluation Report," dated August 29, 1979, states that the cable spreading room "will be provided with an automatic gas suppression system." The license renewal drawings do not show this automatic gas suppression system; therefore, the staff requested that the applicant clarify whether this automatic gas suppression system is within the scope of license renewal, pursuant to 10 CFR 54.4(a)(3).

In its response, dated September 16, 2005, the applicant stated the following:

> The Cable Spreading Room, addressed in the Fire Protection Safety Evaluation Report dated August 29, 1979, Section 5.2.6.3, is provided with a total flooding automatic gas suppression system consisting of cylinder storage units pressurized with Halon 1301. Halon is discharged into the room through wide-angle nozzles. As stated in Section 2.1.4.4 (Evaluation Boundaries - License Renewal Boundary Drawings) of the MNGP LRA, the in-scope boundaries are depicted in the License Renewal Boundary Drawings. 'The drawings consist of simplified process and instrumentation drawings (for the mechanical systems)' or P&IDs. The Halon gas suppression system does not appear in any of the MNGP P&IDs for the Fire System but rather in individual vendor drawings which are not included as part of the license renewal boundary drawing submittal package. The Cable Spreading Room Halon automatic gas suppression system is in the scope of license renewal. This is confirmed by and discussed in Section 2.3.3.9 (Fire System), Table 3.0-1 Mechanical and Civil Service Environments, Table 3.3.2-9, (Auxiliary Systems - Fire System - Summary of Aging Management Evaluation), Appendix A2.1.17 (Fire Protection) and Appendix B2.1.17 (Fire Protection) of the MNGP LRA. Therefore, the Cable Spreading Room automatic gas suppression system is in the scope of license renewal per 10 CFR 54.4(a)(3) and is subject to AMR.

Based on its review, the staff found the applicant's response to RAI 2.3.3.9-7 acceptable because it adequately explains that the automatic gas suppression system is within the scope of license renewal, pursuant to 10 CFR 54.4(a)(3), and is subject to an AMR; therefore, the staff's concern described in RAI 2.3.3.9-7 is resolved.

2.3.3.9.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the fire system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the fire system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.10 Fuel Pool Cooling and Cleanup System

2.3.3.10.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.10, the applicant described the fuel pool cooling and cleanup (FPC) system. The FPC system is designed to handle the spent fuel cooling load and to maintain pool water purity and clarity. The system provides sufficient filtering capacity to filter the entire spent fuel pool water volume every 12 hours. The fuel pool temperature is normally maintained at 125 °F or less to ensure a reasonable working environment in the pool area, to keep the demineralizer at an operable temperature, and to maintain visual clarity of the air above the pool; however, operation at temperatures up to 140 °F is acceptable to remove decay heat from the spent fuel. The fuel pool cooling and cleanup system consists of circulating pumps, heat exchangers, filter/demineralizers, piping, valves, and instrumentation. The pumps take suction from the skimmer surge tank, located at the top of the spent fuel storage pool water level, which continuously skims the water from the surface and circulates the water to the heat exchangers and filter/demineralizers before discharging the water through the diffusers at the bottom of the spent fuel pool. This arrangement of taking suction from the top and discharging to the bottom of the pool provides a crossflow which tends to sweep the pool and to carry off dirt and small particles. This system may also be used to drain the steam-separator storage pool and the reactor well after refueling.

The failure of NSR SSCs in the FPC system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-10, the applicant identified the following FPC system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- tanks
- thermowells
- valve bodies

2.3.3.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.10 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant

had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

In reviewing LRA Section 2.3.3.10, the staff identified areas for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.10-1, dated September 16, 2005, the staff noted that LRA Section 2.3.3.10 states that components in the FPC system are NSR and that their failure could affect the capability of SR SSCs to perform their safety function; therefore, they are within the scope of license renewal, in accordance with 10 CFR 54.4(a)(2). License renewal drawing LR-36256, Note 2, also states that the spent fuel pool liner is within the scope of license renewal as part of the reactor building structure. This spent fuel pool liner interfaces with the weirs and their associated connecting surface, FPC system, and fuel pool drains. License renewal drawing LR-36256 at location D-2 shows the adjustable weir and associated connecting surfaces to the south skimmer surge tank, T-48B, to be within the scope of license renewal. License renewal drawing LR-36256 at location D-4 shows similar components, the adjustable weir and connecting surfaces to the north skimmer surge tank, T-48A, as not within the scope of license renewal. Therefore, the staff requested that the applicant clarify whether the adjustable weir and associated connecting surfaces to the north skimmer surge tank, T-48A, at location D-4 are within the scope of license renewal and subject to an AMR, in accordance with the applicable requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively, or justify their exclusion.

In its response, by letter dated October 14, 2005, the applicant stated that only those portions of skimmer surge tanks T-48A and T-48B not embedded in concrete are within the scope of license renewal. The adjustable weir is an NSR component located inside the concrete wall adjacent to the spent fuel pool. Its failure could not affect the intended function of SR SSCs. The adjustable weir for the south skimmer surge tank T-48B was shown incorrectly as within the scope of license renewal. In addition, the adjustable weir for the south skimmer surge tank T-48B is not within the scope of license renewal; however, the connecting portion of skimmer tank T-48A at location D-3 is within the scope of license renewal from the skimmer tank up to the concrete wall.

Based on its review, the staff found the applicant's response to RAI 2.3.3.10-1 acceptable because failure of the components embedded in concrete could not affect the intended function of SR SSCs and therefore are outside the scope of license renewal. In addition, the applicant added the connecting portion of skimmer tank T-48A from the skimmer tank up to the concrete wall to the scope of license renewal; therefore, the staff's concern described in RAI 2.3.3.10-1 is resolved.

In RAI 2.3.3.10-2, dated September 16, 2005, the staff noted, as shown on license renewal drawing LR-36256 at location D-4, that diffusers A and B serve as a distribution point for returning cooling water for the FPC system to the fuel storage pool. Their failure could affect the capability of SR SSCs to perform their safety function; therefore, the staff requested that the applicant justify why these diffusers are not within the scope of license renewal.

In its response, by letter dated October 14, 2005, the applicant stated that the FPC system is within the scope of license renewal only because it contains NSR components which must

maintain sufficient integrity to prevent spray, leakage, or spatial interaction from affecting intended functions of the SR SSCs adversely. The diffusers are located underwater (spent fuel pool) and the failure of these NSR diffusers would not affect SR SSC intended functions. The diffusers are, therefore, not within the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.3.10-2 acceptable because the diffusers are not FPC system components that could affect the capability of SR SSCs to perform their safety function and, therefore, are not within the scope of license renewal; therefore, the staff's concern described in RAI 2.3.3.10-2 is resolved.

In RAI 2.3.3.10-3, dated September 16, 2005, the staff determined that license renewal drawing LR-36256 shows an unisolable pipe (FPW17B-3"-MR) between the fuel storage pool and the skimmer surge tank, T-48B, as not within the scope of license renewal. All other piping and components entering the skimmer tank within the same apparent area of the plant are shown as within the scope of license renewal. Failure of this unisolable section of pipe could affect the intended license renewal pressure boundary function for the skimmer tank; therefore, the staff requested that the applicant justify why this pipe is not included within the scope of license renewal.

In its response, by letter dated October 14, 2005, the applicant stated that only the connecting portions of both of the skimmer surge tanks, T-48A and T-48B, not embedded in concrete are within the scope of license renewal. Pipe FPW17B-3"-MR is located along side the spent fuel pool and is embedded in concrete. It drains the wave suppression scupper into the portion of the skimmer surge tank embedded in concrete. This NSR component could not impact the intended function of SR SSCs and, therefore, is not within the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.3.10-3 acceptable because pipe FPW17B-3"-MR is embedded in concrete and the failure of this NSR component could not impact the intended function of SR SSCs; therefore, the staff's concern described in RAI 2.3.3.10-3 is resolved.

The staff's review of LRA Section 2.3.3.10 identified areas in which information provided in the LRA needed to be verified by the NRC Regional Inspection Team to complete the review of the applicant's scoping and screening results.

Inspection Item 2.3.3.10-1

License renewal drawing LR-36256 at locations D-4 and D-2 does not clearly define the system boundaries between the fuel storage pool and the FPC system and between the fuel storage pool and the fuel pool drains and associated piping. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundaries for the above cited systems satisfy the 10 CFR 54.4(a)(2) criterion.

The inspection team found that this item addresses the wave suppression scupper, which is embedded in concrete. Detailed drawings for the reactor building and spent fuel pool provided further definition. The applicant recently revised license renewal drawing LR-36256 as a result of RAI 2.3.3.10-3 to better illustrate the wave suppression scupper drain piping. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.10-1 is resolved.

Inspection Item 2.3.3.10-2

License renewal drawing LR-36256 at location B-3 shows the license renewal scope boundary for the pipe FPW13-4"-HB terminating at a nonspecific location on the piping run (between the pipe FPW13-6"-HB and the valve AO-4"-HB). The actual location of the license renewal scope boundary for this pipe is not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary of this pipe satisfies the 10 CFR 54.4(a)(2) criterion.

The inspection team confirmed that the license renewal boundary ends as the line enters the 985' pump room. There are no SR components within the 985' pump room. P&IDs do not typically show walls and floors. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criteria. Therefore, the staff's concern described in Inspection Item 2.3.3.10-2 is resolved.

2.3.3.10.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the FPC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the FPC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.11 Heating and Ventilation System

2.3.3.11.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.11, the applicant described the heating and ventilation (HTV) system. The HTV system consists of the equipment required to affect and control the following space-air processes—supply and exhaust, distribution and recirculation (where applicable), differential and static pressure control, filtration, and cooling and heating. It also includes sampling and fume hood exhausting and process tank venting. The applicant scoped the reactor building isolation under the secondary containment system. The portion of the HTV system serving the HPCI building and the RHR/CSP corner rooms is within the scope of license renewal; the equipment is designed to provide cool air during normal operation and DBEs. General plant heating is provided by a network of carbon steel pipes originating at the plant heating boiler and extending throughout most of the plant to supply heated water and/or steam to various unit heaters. Three notable locations not directly served are the drywell, offgas storage building, and portions of the plant serviced by the EFT system.

The HTV system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the HTV system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the HTV system performs functions that support FP and EQ.

The intended functions within the scope of license renewal include the following:

- provide filtration
- provide for heat transfer
- provide a pressure-retaining boundary

In LRA Table 2.3.3-11, the applicant identified the following HTV system component types that are within the scope of license renewal and subject to an AMR:

- chillers
- damper/housings
- ductwork
- fan/blower/housings
- fasteners/bolting
- filters/strainers
- gauges (flow, level, and sight)
- heaters/coolers
- HVAC units
- instrumentation
- piping and fittings
- pump casings
- steam traps
- tanks
- valve bodies

2.3.3.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.11 and USAR Sections 5.3.4 and 10.3.1.3.2 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.11 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.11-1, dated September 15, 2005, the staff requested that the applicant clarify whether all the associated components of "HVAC units," such as ductwork (equipment frames and housing), filters (housing and supports), ventilation seals, cooling coils, and I&C, are within the scope of license renewal, in accordance with 10 CFR 54.4(a), and subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

In its response, by letter dated October 14, 2005, the applicant stated the following:

Certain components indicated on the LR boundary drawings for the HTV System are in scope to license renewal in accordance with 10 CFR 54.4(a)(1). Certain air conditioners and many of the unit heaters with their associated steam and/or hot water supply lines are in scope to license renewal in accordance with 10 CFR 54.4(a)(2). In addition, certain air handling units and exhaust fans are in scope to license renewal for the Fire Protection and Environmental Qualification regulated events in accordance with 10 CFR 54.4(a)(3). Other components within the HTV System are excluded from the scope of license renewal since they do not perform any license renewal intended function(s).

Component groups such as ductwork, filters, instrumentation, etc, that are listed in Table 2.3.3-11 include those associated with the HVAC units within scope for license renewal in accordance with the scoping criteria listed above.

Based on its review, the staff found the applicant's response to RAI 2.3.3.11-1 acceptable because all applicable associated components of "HVAC units" consisting of ductwork (equipment frames and housing), filters (housing and supports), and instrumentation are within the scope of license renewal, in accordance with 10 CFR 54.4(a), and subject to an AMR, in accordance with 10 CFR 54.21(a)(1); therefore, the staff's concern described in RAI 2.3.3.11-1 is resolved.

During the scoping inspection, the inspectors identified a 1-inch branch line from HS12-3"-JB to V-RF-1 (including BH-323, ST-9027, and BH-328) that was outside the scope of license renewal on license renewal drawing LR-36259-1. The applicant stated the line was contained under the steel deck plating of the EDG room foyer, effectively isolated from the SR equipment in the EDG room. However, the steam branch line entry point through the steel plating was not a grouted or robust penetration. A break in the line under the deck plating could cause heating steam to enter the EDG room, potentially challenging the room ambient temperature to stay within the maximum allowable temperature for EDG operability. The applicant placed this portion of piping, along with the two valves and the steam trap, within the scope of license renewal, pursuant to 10 CFR 54.4(a)(2).

The inspectors also noted heating steamline HS5-6"-JB from valve BH-316-1 through BH-722 on license renewal drawing LR-36664 as outside the scope of license renewal. The inspectors identified a seismic Class I support, SR-389, about 6 feet from BH-316-1 in the section of pipe outside the scope of license renewal. The applicant stated this portion of pipe was determined to be outside the scope of license renewal because it contained air/gas. However, guidance described in NEI 95-10 requires NSR piping attached to SR piping to be within scope up to and including the first equivalent anchor. Seismic Class I support SR-389 is the first equivalent anchor in this line. Therefore, the applicant placed the section of heating steamline HS5-6"-JB between valve BH-316-1 and up to and including support SR-389 within the scope of license renewal, pursuant to 10 CFR 54.4(a)(2).

2.3.3.11.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its

review, the staff concluded that the applicant adequately identified the HTV system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the HTV system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.12 Instrument and Service Air System

2.3.3.12.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.12, the applicant described the AIR system. The AIR system is designed to provide the plant with a continuous supply of oil-free compressed air. The instrument air portion of the system supplies dried compressed air for most of the pneumatic instruments and controls in the plant. The service air portion of the system supplies undried service air to plant components that do not require dry air and to hose stations throughout the plant for miscellaneous use by maintenance and operations personnel. The AIR system includes three nonlubricated air compressors that discharge to air receivers through aftercoolers with moisture separator/traps. The AIR system is normally in continuous operation during normal plant operation and shutdown. In addition to the AIR system, the plant includes other pneumatic systems. The other pneumatic systems comprise an outboard main steam isolation valve air supply which is part of the MST system, an AN2 system which is a separate mechanical system, an instrument nitrogen supply to containment which is part of the primary containment mechanical system, and the control room breathing air system which is part of the EFT system. The AN2 system interfaces with the AIR system through a check valve, with the nitrogen side held at a slightly lower pressure to allow the AIR system to be used during normal operation. In the event of an accident, which also disables the AIR system, the AN2 system would automatically pick up the required pneumatic loads.

The AIR system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the AIR system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the AIR system performs functions that support EQ.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-12, the applicant identified the following AIR system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- gauges (flow, level, and sight)
- piping and fittings
- pump casings
- tanks
- valve bodies

2.3.3.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.12 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.12 identified an area in which information provided in the LRA needed to be verified by the NRC Regional Inspection Team to complete the review of the applicant's scoping and screening results.

Inspection Item 2.3.3.12-1

License renewal drawing LR-36049-10 at locations D-6 and B-6 have line continuations (air lines upstream of valves AI-704 and AI-715) outside the scope of license renewal to LR-36049-12 at location B-6. The actual locations of the license renewal scope boundaries of these components are not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundaries of these components satisfy the 10 CFR 54.4(a)(2) criterion.

License renewal drawing LR-36049-10 shows stainless steel instrument air lines at locations D-6 and B-6 (air lines upstream of valves AI-704 and AI-715). These lines continue to LR-36049-12 at location B-6 where they join via a "T" to form one line and then continue to the vertical header shown on the drawing. Between the "T" joining these lines and the connection to the main vertical header, the line transitions from stainless steel to copper. This transition is the license renewal scoping boundary. The applicant will revise license renewal drawing LR-36049-12 to show the continuation text to license renewal drawing LR-36049-10 and the piping up to the stainless steel/copper transition point (located between the "T" and the vertical header) as being within the scope of license renewal. In addition, license renewal drawing LR-36049-10 at locations D-6 and B-6 will be revised to show the continuation to license renewal drawing LR-36049-12 as being within the scope of license renewal. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.12-1 is resolved.

2.3.3.12.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the AIR system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the AIR system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.13 Radwaste Solid and Liquid System

2.3.3.13.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.13, the applicant described the radwaste solid and liquid (RAD) system. The RAD system contains the solid radwaste subsystem and the liquid radwaste subsystem. The solid radwaste system is designed to process, package, store, monitor, and provide shielded storage facilities for solid radioactive wastes to allow for radioactive decay and/or temporary storage before shipment for offsite disposal. The liquid radwaste subsystem is designed to collect, process, and dispose of all radioactive liquid wastes generated during operation of the plant. The system is designed to accommodate the radioactive input resulting from the design-basis maximum fuel leakage condition. Either filtration or filtration followed by mixed deep-bed demineralization is used to remove the radioactive and chemical contaminants from the liquid waste streams. The filters remove insoluble particulate contaminants and the demineralizer is used to remove soluble materials. The filter and demineralizer sludge are backwashed into receiving tanks, dewatered, and packaged as solid waste for disposal off site at NRC-approved sites.

The RAD system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RAD system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the RAD system performs functions that support EQ.

The intended functions within the scope of license renewal include the following:

- provide flow restriction
- provide a pressure-retaining boundary
- provide structural support to NSR components (mechanical)

In LRA Table 2.3.3-13, the applicant identified the following RAD system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- heat exchangers
- piping and fittings
- pump casings
- restricting orifices
- tanks
- valve bodies

2.3.3.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.13 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions

delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.13 identified areas for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.13-1, dated September 16, 2005, the staff noted that the following cases represent unisolable piping defined as outside the scope of license renewal; however, the piping is attached or interfaces with components defined as within the scope of license renewal that perform a pressure-boundary function. Failure of these components outside the scope of license renewal could adversely impact the intended pressure-boundary function of components within the scope of license renewal; therefore, the staff requested that the applicant justify the exclusion of the following unisolable components from the scope of license renewal:

- License renewal drawing LR-36043 at location C-6 shows a 3-inch vent line on the top of machine shop drain tank T-103.
- License renewal drawing LR-36043 at location C-6 shows a 4-inch vent line on the top of reactor building floor drain sump S-37.
- License renewal drawing LR-36043 at location C-6 shows line RWN46-4"-MR entering the reactor building floor drain sump S-37 from the equipment drain sump S-42 overflow.
- License renewal drawing LR-36043 at location C-3 shows a 4-inch vent line on the top of drywell floor drain sump S-38.
- License renewal drawing LR-36044 at location C-2 shows a 4-inch vent line on the top of drywell equipment drain sump S-43.
- License renewal drawing LR-36044 at location C-2 shows a 4-inch vent line on the top of drywell equipment drain sump S-43.
- License renewal drawing LR-36044 at location A-3 shows a 4-inch vent line on the top of turbine building normal waste sump S-45.
- License renewal drawing LR-36044 at location C-5 shows piping to an obsolete sensing line on the top of reactor building equipment drain tank T-56.
- License renewal drawing LR-36044 at location A-5 shows a 4-inch vent line and piping to an obsolete sensing line on the top of the condensate drip tank T-22.
- License renewal drawing LR-36044 at location A-7 shows 4-inch vent line and RWN48-4"-MR exiting the turbine building equipment drain sump S-44.
- License renewal drawing LR-36044 at location C-7 shows 4-inch vent line and RWN46-4"-MR exiting the reactor building equipment drain sump S-42.

In its response, by letter dated October 14, 2005, the applicant stated that the vent lines for the drain tanks, floor drain sumps, equipment drain tanks, normal waste sumps, drip tanks, and

equipment drain sumps are NSR, open to the atmosphere, and not relied upon for a pressure boundary. Their failure would not adversely affect the intended function of SR SSCs. Piping RWN46-4"-MR and RWN48-4"-MR are embedded in concrete and act as overflows between sumps. This piping is NSR and its failure could not impact the intended function of SR SSCs. The sensing lines located on top of the tanks for level indication are filled with air. These sensing lines are NSR and their failure could not impact the intended function of SR SSCs.

Based on its review, the staff found the applicant's response to RAI 2.3.3.13-1 acceptable because (1) the vent lines are open to the atmosphere and not relied upon for a pressure boundary, (2) piping RWN46-4"-MR and RWN48-4"-MR are embedded in concrete, and (3) the sensing lines located on top of the tanks for level indication are filled with air. The vent lines, piping RWN46-4"-MR and RWN48-4"-MR, and sensing lines are all NSR. Their failure could not impact the intended function of SR SSCs and, thus, are not within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.13-1 is resolved.

In RAI 2.3.3.13-2, dated September 16, 2005, the staff determined that license renewal drawing LR-36044 at location D-7 identified a 10 CFR 54.4(a)(2) boundary for the RAD system as the section of piping before a normally open isolation valve, CRW-1, which is outside the scope of license renewal, from the CST overflow tank T-67. Failure of the unisolable piping could adversely impact the license renewal pressure-boundary function for the radwaste solid and liquid system; therefore, the staff requested that the applicant justify the location of the license renewal scope boundary at valve CRW-1, in accordance with the requirements of 10 CFR 54.4(a).

In its response, by letter dated October 14, 2005, the applicant stated that NSR valve CRW-1 is located outside the reactor building near the CST tanks. The piping connecting to valve CRW-1, which is shown within the scope of license renewal, is located inside the HPCI building, which houses SR components. Failure of this connecting piping could impact the intended function of SR SSCs. Failure of valve CRW-1 located outside the building could not impact the intended function of SR SSCs; therefore, valve CRW-1 and the connecting piping to the CST overflow tank T-67 are not within the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.3.13-2 acceptable because CRW-1 and the connecting piping are located outside the building and could not impact the intended function of SR SSCs, and as such, are not within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.13-2 is resolved.

In RAI 2.3.3.13-3, dated September 16, 2005, the staff noted that license renewal drawings LR-36044 at locations A-7, C-7, C-3, and A-3 and LR-36043 at locations A-6, A-5, C-6, and C-3 show the turbine building equipment drain sump (S-44), reactor building equipment drain sump (S-42), drywell equipment drain sump (S-43), turbine building normal waste sump (S-45), condensate pump area sump (S-53), turbine building floor drain sump (S-40), reactor floor drain sump (S-37), and drywell floor drain sump (S-38) as not within the scope of license renewal. LRA Section 2.3.3.13 states that all radwaste solid and liquid system components in either the turbine or reactor buildings, and constituting a liquid pressure boundary, are within the scope of license renewal. Failure of the liners for these sumps can negatively impact the intended liquid pressure-boundary functions of the components; therefore, the staff requested that the applicant clarify whether the sumps and their associated liners are within the scope of license

renewal and subject to an AMR, in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively, or justify their exclusion.

In its response, by letter dated October 14, 2005, the applicant stated that the nonlined sumps are NSR, embedded in concrete, and at the lowest elevations of the turbine and reactor buildings. Their failure could not impact the intended function of SR SSCs and they are not within the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.3.13-3 acceptable because the nonlined sumps embedded in concrete are NSR, located at the lowest elevations of the turbine and reactor buildings, and their failure could not impact the intended function of SR SSCs. As such, they are not within the scope of license renewal; therefore, the staff's concern described in RAI 2.3.3.13-3 is resolved.

The staff's review of LRA Section 2.3.3.13 identified areas in which information provided in the LRA needed to be verified by the NRC Regional Inspection Team to complete the review of the applicant's scoping and screening results.

Inspection Item 2.3.3.13-1

License renewal drawing LR-36043 shows a 1.5-inch line at location B-1 within the scope of license renewal for the RAD system. The drawing specifies the line continues at location E-3, but license renewal drawing LR-36043 has no location E-3. Consequently, the actual location of the license renewal scope boundary for this line is not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary for this line satisfies the 10 CFR 54.4(a)(2) criterion.

The applicant determined license renewal drawing LR-36043 requires revision to change the continuation of this line from coordinates E-3 to D-4. The NRC Regional Inspection Team verified the accuracy of the corresponding plant P&ID (M-137) as currently drawn. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.13-1 is resolved.

Inspection Item 2.3.3.13-2

License renewal drawing LR-36043 shows piping RWN12-4"-HC at location C-4 as within the scope of license renewal continuing to an undefined location. The actual location of the license renewal scope boundary for this pipe is not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary for this pipe satisfies the 10 CFR 54.4(a)(2) criterion.

The applicant will revise license renewal drawing LR-36043 to show the continuation of the drainline, RWN12-4"-HC, to license renewal drawing LR-36044, reactor building equipment drain sump, S-42. The applicant will revise license renewal drawing LR-36044 to show the drains from the reactor building floor drain tank, T-55, as one of the lines discharging into the reactor building equipment drain sump, S-42. The drainline is within the scope of license renewal, pursuant to 10 CFR 54.4(a)(2). The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criteria. Therefore, the staff's concern described in Inspection Item 2.3.3.13-2 is resolved.

Inspection Item 2.3.3.13-3

License renewal drawing LR-36044 at location B-1 shows the boundary for license renewal terminating at the unisolable junction of piping from the EDG room 11 floor drain to the flow controller just downstream of check valve NW-7. Failure of the unisolable piping can adversely impact the license renewal pressure-boundary function for the RAD system. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary for this component satisfies the 10 CFR 54.4(a)(2) criterion.

The inspection team determined that valves NW-7, 8, and 9 are FP-related, with each pipe connection buried in concrete, although not shown on the drawing. The buried pipe acts as the anchor, therefore the boundary terminates at that point. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.13-3 is resolved.

Inspection Item 2.3.3.13-4

License renewal drawing LR-36045 shows several lines entering the drawing from other sheets, RWN20-4"-HC (at location D-8), RWN5-3"-HC (at location D-8), RWN36-3"-HC (at location D-8), FPW13-4"-HP (at location B-8), TW37-4"-HC (at location B-8), SC15-3"-HB (at location D-7), and SC25-3"-HB (at location C-5) as within the scope of license renewal; however, for each of these lines, the boundary terminates at a nonspecific location on license renewal drawing LR-36045. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundaries for the cited components satisfy the 10 CFR 54.4(a)(2) criterion.

During walkdowns, the inspection team verified that the NSR piping enters the radwaste building or the 985' pump room and is, therefore, not within the scope of license renewal. There are no SR components in the radwaste building or the 985' pump room, and P&IDs do not typically depict walls. The applicant will revise license renewal drawing LR-36045 to change line numbers RWN20-4"-HC (at location D-8), RWN5-3"-HC (at location D-8), FPW13-4"-HP (at location B-8), SC15-3"-HB (at location D-7), and SC25-2"-HB (at location C-5) from within the scope of license renewal to outside the scope of license renewal. The continuation drawings already show the transition into the radwaste building or the 985' pump room.

The applicant will revise license renewal drawing LR-36044 to extend the wall at location B-1 to encompass line RWN5-3"-HC and to show the transition into the 985' pump room at the wall. The license renewal boundary ends as the piping enters the 985' pump room.

Line number TW37-4"-HC (at location B-8) on license renewal drawing LR-36045 has been verified by walkdown and shows the transition to be where the line enters the radwaste building wall. The applicant will revise license renewal drawing LR-36045 to change the portion of this line to outside the scope of license renewal. The applicant will also revise license renewal drawing LR-36247 (at location C-4) to show the transition of this line through the radwaste building wall. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criteria. Therefore, the staff's concern described in Inspection Item 2.3.3.13-4 is resolved.

Inspection Item 2.3.3.13-5

License renewal drawing LR-36046 shows several lines entering the drawing from other sheets, turbine building floor sump drain (at location D-8), drywell and reactor building floor drain sump (at location D-8), machine shop drain (at location B-8), laboratory drain (at location B-8), laundry drain waste (at location B-4), and machine shop drain (at location B-4), as within the scope of license renewal; however, for each of these lines, the license renewal scope boundary terminates at a nonspecific location on license renewal drawing LR-36046. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundaries for the cited components satisfy the 10 CFR 54.4(a)(2) criterion.

The inspection team determined that the boundaries end as the lines enter the radwaste building wall (locations B-8 & D-8) or 985' pump room wall (location B-4). There are no SR components in the radwaste building or the 985' pump room. P&IDs at MNGP do not typically depict walls. The applicant will revise license renewal drawing LR-36046 (at location D-8) to show lines RWN19-4"-HC and RWN8-3"-HC outside the scope of license renewal since the scoping boundary ends as the pipes enter the wall, which is already shown on LR-36043 (at location B-1). The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.13-5 is resolved.

Inspection Item 2.3.3.13-6

License renewal drawing LR-36241 at location D-7 shows a 1" line, V15-1"-HB, within the scope of license renewal exiting to license renewal drawing LR-36049-12 at location D-5. Continuation of V15-1"-HB is not shown on license renewal drawing LR-36049-12 at the location specified. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary for this line satisfies the 10 CFR 54.4(a)(2) criterion.

The inspection team determined the continuation to license renewal drawing LR-36049-12, shown on license renewal drawing LR-36241, is for the instrument air system and should be shown as outside the scope of license renewal. The applicant will revise license renewal drawing LR-36241 to change the continuation to license renewal drawing LR-36049-12 from within scope to outside the scope of license renewal.

In addition, the applicant will revise license renewal drawing LR-36241 to show that line V15-1"-HB discharges to the drywell equipment drain sump, S- 43, on license renewal drawing LR-36044. The applicant will also revise license renewal drawing LR-36044 to show the "Reactor Head Vent" as one of the drains discharging into the drywell equipment drain sump, S-43. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.13-6 is resolved.

Inspection Item 2.3.3.13-7

Treated/processed and sampled liquid wastes collected in sumps and drain tanks in various buildings may be returned to the CSTs via the appropriate waste sample pump (P-36A or P-36B) and effluent transfer line C19-3"-HS. A portion of this line is shown as within the scope of license renewal on the license renewal drawings LR-36039 at location A-3 and LR-36045 at

location B-1; however, the license renewal scope boundaries terminate in the middle of the pipe runs (at the junctions of lines C19-3"-HS and DW17–3"-HS and C19-3"-HS and SC16–10"-HB). The actual locations of the license renewal scope boundaries for these components are not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundaries for these components satisfy the 10 CFR 54.4(a)(2) criterion.

The inspection team determined that this line is within the scope of license renewal, pursuant to the 10 CFR 54.4(a)(2) criteria, as an equivalent anchor (buried piping). The in-scope boundary begins where the pipe connects to line SC16-10"-HK on LR-36039 (at location B-4) and extends to the radwaste building floor. There are no SR components in the radwaste building. All P&IDs do not typically depict walls. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.13-7 is resolved.

2.3.3.13.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the RAD system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the RAD system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.14 Reactor Building Closed Cooling Water System

2.3.3.14.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.14, the applicant described the reactor building closed cooling water (RBC) system. The RBC system is a treated water system designed to remove heat from the reactor auxiliary systems' equipment. The RBC system consists of a closed cooling water loop containing two pumps and three heat exchangers in parallel, and the associated piping, valves, and instrumentation. The system temperature is maintained by heat rejection from the RBC system heat exchangers to the service and seal water system. The RBC system is monitored continuously for radioactivity by a process radiation monitor (PRM). An increase in the radiation level would indicate leakage of contaminated water into the RBC system. Leakage may also be indicated by a level change in the RBC system surge tank with no associated reactor power change, equipment change, or makeup water addition. Any potential leakage from the reactor auxiliary systems' equipment is to the RBC system closed loop where it is confined or isolated.

The RBC system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RBC system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the RBC system performs functions that support EQ.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-14, the applicant identified the following RBC system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- flexible connections
- flow element
- gauges (flow, level, and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- tanks
- thermowells
- valve bodies

2.3.3.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.14 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.14.3 Conclusion

The staff reviewed the LRA to determine whether the applicant failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the RBC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the RBC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.15 Reactor Water Cleanup System

2.3.3.15.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.15, the applicant described the reactor water cleanup (RWC) system. The RWC system is a filtering and ion exchange system that maintains water purity in the reactor and recirculation lines during all modes of plant operation. This minimizes changes in the core heat transfer characteristics by reducing the deposition of impurities on fuel surfaces by reducing the amount of waterborne impurities in the reactor primary system. It also reduces sources of beta and gamma radiation by removing corrosion products, fission products, and

impurities in the reactor primary system. The RWC system provides for primary containment isolation and is also isolated on initiation of the SLC system. The RWC system provides for continuous purification of a portion of the REC system flow with a minimum of heat loss and water loss from the cycle.

The RWC system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RWC system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the RWC system performs functions that support EQ and ATWS.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-15, the applicant identified the following RWC system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- flow element
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- thermowells
- valve bodies

2.3.3.15.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.15 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.13 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.15-1, dated September 16, 2005, the staff noted that license renewal drawing LR-36254 at location C-8 contained two references (line REW3-4" EBD from REC loop B and line REW31-2"-ED from reactor vessel drain) to license renewal drawing LR-36243 at location C-5; however, license renewal drawing LR-36243 only shows one reference (line REW31-2"-ED which is also capped) to license renewal drawing LR-36254. Therefore, the staff requested that

the applicant clarify this discrepancy and confirm which portions of the piping are within the scope of license renewal and subject to an AMR, in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively, or justify their exclusion.

In its response, by letter dated October 14, 2005, the applicant clarified the drawing annotations showing the convergence of the two lines REW3-4"-EBD and REW31-2"-ED on license renewal drawing LR-36243 grid location C-6. The extension of line REW3-4"-EBD is shown as a dashed line on license renewal drawing LR-36243, instructing the reviewer to look at license renewal drawing LR-36254 for the details on that pipe. The applicant confirmed that the drawings were correct and that both lines are within the scope of license renewal and subject to an AMR, in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively.

Based on its review, the staff found the applicant's response to RAI 2.3.3.15-1 acceptable because the applicant confirmed that the lines are within the scope of license renewal; therefore, the staff's concern discussed in RAI 2.3.3.15-1 is resolved.

The staff's review of LRA Section 2.3.3.15 identified an area in which information in the LRA needed to be verified by the NRC Regional Inspection Team to complete the review of the applicant's scoping and screening results.

Inspection Item 2.3.3.15-1

License renewal drawing LR-36254 at location B-8 shows two RWN36-3"-HC lines as within the scope of license renewal. One continues to waste collector tank, T-24, shown in license renewal drawing LR-36045, and one continues to waste surge tank, T-23, also shown in license renewal drawing LR-36045; however, the license renewal scope boundaries for these lines terminate in the middle of the pipe runs. The actual locations of the license renewal scope boundaries for these lines are not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundaries for these lines satisfy the 10 CFR 54.4(a)(2) criterion.

The inspection team conducted walkdowns, which confirmed that the two RWN36-3"-HC lines pass into the 985' pump room and the radwaste building. There are no SR components in the 985' pump room or the radwaste building. The applicant will revise license renewal drawing LR-36045 to change the two RWN36-3"-HC lines (at location D-8) to outside the scope of license renewal. The continuation license renewal drawing LR-36254 will show the transition into the 985' pump room. The inspectors determined that the license renewal boundaries satisfy the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.15-1 is resolved.

2.3.3.15.3 Conclusion

The staff reviewed the LRA to determine whether the applicant failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the RWC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the RWC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.16 Service and Seal Water System

2.3.3.16.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.16, the applicant described the service and seal water (SSW) system. The SSW system supplies screened and strained cooling water (raw water from the Mississippi River) to various nonessential plant heat loads and services during all modes of operation. The service water portion of the SSW system consists of three 50-percent capacity service water pumps, an auto strainer, a bypass basket strainer and associated valves, piping, and instrumentation. Normally two service water pumps are in operation and one service water pump is in auto-standby; however, during cold winter months, only one service water pump is required. The seal water portion of the SSW system provides filtered well water (service water serves as backup to the well water) to the shaft seals for various pumps, including the service water pumps, RSW pumps, and the CWT pumps. The seal water portion consists of two pumps, two filters, and associated valves, piping, and instrumentation. The service water pumps take suction from the pump suction bay in the intake structure and discharge to the turbine building through the intake structure access tunnel. Service water is used to remove heat from various heat exchangers and coolers located in the reactor building and turbine building. The SSW system also supplies water to the sodium hypochlorite subsystem (part of the CWT system) and the fire system jockey pump. Service water flow is returned to the river. The SSW system is normally in service during plant operation and shutdown.

The failure of NSR SSCs in the SSW system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. The SSW system also performs functions that support FP.

The intended functions within the scope of license renewal include the following:

- provide flow restriction
- provide a pressure-retaining boundary

In LRA Table 2.3.3-16, the applicant identified the following SSW system component types that are within the scope of license renewal and subject to an AMR:

- expansion joints
- fasteners/bolting
- filters/strainers
- gauges (flow, level, and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- thermowells
- valve bodies

2.3.3.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.16 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.16 identified an area in which information in the LRA needed to be verified by the NRC Regional Inspection Team to complete the review of the applicant's scoping and screening results.

Inspection Item 2.3.3.16-1

License renewal drawing LR-36665 at location D-7 shows the line SW21-6"-JF, which continues to the sodium hypochlorite system shown in license renewal drawing LR-36666, as within the scope of license renewal with the license renewal scope boundary terminating in the middle of the pipe run (downstream of the valve SW-10-6"-54); however, license renewal drawing LR-36666 at location C-6 shows the continuation of the line SW21-6"-JF as within the scope of license renewal and defines the boundary for license renewal at check valve SHC-26. The actual location of the license renewal scope boundary for this pipe is not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary for this pipe satisfies the 10 CFR 54.4(a)(2) criterion.

The inspection team confirmed through a walkdown that the line SW21-6"-JF passes through a concrete ceiling in the intake structure, which acts as the scoping boundary. All P&IDs do not typically depict ceilings. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.3.16-1 is resolved.

2.3.3.16.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the SSW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the SSW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.17 Standby Liquid Control System

2.3.3.17.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.17, the applicant described the SLC system. The MNGP licensing basis includes the SLC system as an ESF system. This section, as well as the related aging management section, includes the SLC system for consistency with the SRP-LR and GALL Report. The SLC system provides a means of inserting negative reactivity into the reactor core by the injection of neutron-absorbing boron in the form of liquid sodium pentaborate. A key lock switch that starts the SLC system pumps and opens the squib-operated valves provides control of injection. The boron solution is capable of shutting down the reactor and providing a sufficient shutdown margin to overcome void and temperature coefficients, as well as the effects of xenon, assuming that none of the withdrawn control rods can be inserted. Service air and demineralized water are provided to the SLC tank for mixing of the boron solution, as well as instrument air to various instrumentation.

The SLC system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the SLC system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the SLC system performs functions that support ATWS.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-17, the applicant identified the following SLC system component types that are within the scope of license renewal and subject to an AMR:

- accumulators
- fasteners/bolting
- manifolds
- piping and fittings
- pump casings
- tanks
- thermowells
- valve bodies

2.3.3.17.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.17 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.17.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the SLC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the SLC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.18 Wells and Domestic Water System

2.3.3.18.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.18, the applicant described the wells and domestic water (WDW) system. The WDW system includes the domestic water, sanitary sewer, acid drain, storm drain, and turbine building normal drain subsystems as described below. The domestic water subsystem supplies well water to the demineralized water system, the service and seal water system, hot and/or cold water to lavatories, the laundry, and showers throughout the plant's protected area. The sanitary sewer subsystem removes wastewater from lavatories, showers, and sinks in the protected area, site administration building, and warehouse No. 5. It carries the wastewater to the city of Monticello sewage system. The acid drain subsystem removes water from such things as the demineralized water system area drain and heating boiler blowdown, which is unfit for direct discharge to the river. Drainage from these sources is carried to the discharge retention basin where it is treated and monitored before release to the river. The storm drain subsystem carries water from building roofs and normal surface drainage to the river. The turbine building normal drain subsystem removes water from areas in the turbine building where there is no potential for radioactive contamination and transports it to the river.

The failure of NSR SSCs in the WDW system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. The WDW system also performs functions that support FP.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.3-18, the applicant identified the following WDW system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- piping and fittings
- pump casings
- valve bodies

2.3.3.18.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.18 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.18.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the WDW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the WDW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4 Steam and Power Conversion System

In LRA Section 2.3.4, the applicant identified the SCs of the steam and power conversion system that are subject to an AMR for license renewal.

The applicant described the supporting SCs of the steam and power conversion system in the following sections of the LRA:

- 2.3.4.1 condensate storage system
- 2.3.4.2 condensate and feedwater system
- 2.3.4.3 main condenser system
- 2.3.4.4 main steam system
- 2.3.4.5 turbine generator system

SER Section 2.3.4.1–2.3.4.5 present the staff's review findings regarding LRA Sections 2.3.4.1–2.3.4.5, respectively.

2.3.4.1 Condensate Storage System

2.3.4.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.1, the applicant described the condensate storage (CST) system. The condensate storage system provides a large storage capacity of reactor quality water. The normal plant uses for condensate storage water include (1) hotwell makeup and reject, (2) CRD supply, (3) fuel storage pool makeup, (4) demineralizer and radwaste processing, (5) filling the refueling wells, (6) miscellaneous plant flushing and decontamination services, (7) pressurizing RHR and CSP piping, and (8) normal suction supply for HPC and RCI systems. In addition to the above, the condensate storage system provides storage for reclaimed water from the radwaste system. The suppression pool is the SR source of water for HPCI.

The condensate storage system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the condensate storage system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the condensate storage system performs functions that support EQ and SBO.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.4-1, the applicant identified the following condensate storage system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- filters/housings
- flow element
- gauges (flow, level, and sight)
- heat exchangers
- instrumentation
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- thermowells
- valve bodies

2.3.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.1 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.1 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.4.1-1, dated September 16, 2005, the staff noted that the HPCI pump normally is lined up to the CSTs and the suction is switched to the suppression pool when the level in either CST falls to the TS low level or when a high water level is sensed in the suppression pool. LRA Section 2.3.4.1 states that the portion of the condensate storage system within the scope of license renewal consists of piping and valves which supply the fuel storage pool, HPCI, RCI, RHR, CRD, condensate, FW, CSP, main condenser, and radwaste systems. In addition, the

instrumentation associated with the automatic transfer from the CST to the suppression pool is SR and the components are within the scope of license renewal, in accordance with 10 CFR 54.4(a)(1). LRA Table 2.3.4-1 shows that the intended function of all condensate storage system component groups is "pressure boundary."

License renewal drawing LR-36039 shows the piping within the scope of license renewal, associated with the SR level instrumentation for the north and south CSTs, at locations B-3 and B-6. For each CST, the portion within the scope of license renewal includes the portion of the CST connection piping C22-4"-HJ and C23-4"-HJ between the reactor building and the CST-level instruments. This license renewal drawing does not show the remaining portion of these lines from the reactor building to the CST as within the scope of license renewal. Failure of the piping outside the scope of license renewal would have the same effect as a pressure boundary failure of the portion within the scope of license renewal. Therefore, the staff requested that the applicant justify why it did not include the portion of lines C22-4"-HJ and C23-4"-HJ between the reactor building and the CST within the scope of license renewal.

In its response, by letter dated October 14, 2005, the applicant stated the following:

> Line segments C22-4"-HJ and C23-4"-HJ, shown on license renewal boundary drawing LR-36039, include the level switches for the north and south condensate storage tanks (CSTs). The level instrumentation is safety-related because of the automatic transfer feature from the nonsafety-related condensate storage tanks to the safety-related suppression pool.
>
> Portions of the line segments connecting to lines C22-4"-HJ and C23-4"-HJ located between the Reactor Building wall and just prior to valves CST-1-1 and CST-1-2 on LR drawing LR-36039 are buried and are in scope for license renewal. The buried piping is in scope for the reason that it serves as an equivalent anchor for the attached safety related piping. For the purposes of clarification of LR drawing LR-36039, this in scope buried piping is now included in the highlighted segments for C22-4"-HJ/HK and C23-4"-HJ/HK.
>
> The remaining line segments which include valves CST-1-1 and CST-1-2 and continue to the CSTs between the Reactor Building and the CSTs are above ground and outside the Reactor Building. This piping is considered non-safety related and its failure would only cause the level instrumentation to fail in a safe position by switching suction to the safety-related suppression pool. Therefore, this portion of the CST piping is not in the scope of license renewal.

Based on its review, the staff found the applicant's response acceptable because it addresses equivalent seismic restraint and identifies the portions of the system within the scope of license renewal and subject to an AMR, in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively. The staff reviewed the applicant's use of underground piping as a seismic restraint in SER Section 2.1.3.1.2. Therefore, the staff's concern described in RAI 2.3.4.1-1 is resolved.

2.3.4.1.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the CST system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the CST system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.2 Condensate and Feedwater System

2.3.4.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.2, the applicant described the condensate and feedwater (CFW) system. The CFW system supplies condensate from the main condenser to the reactor vessel at an elevated temperature and pressure. The CFW system includes the condensate demineralizer, the reactor FW pump seal, and zinc injection passivation subsystems. Two motor-driven condensate pumps pump condensate through the SJAE intercondensers and the steam-packing exhauster. After leaving the steam-packing exhauster, condensate passes through the full-flow condensate demineralizer subsystem to ensure a supply of high-purity water to the reactor. Demineralizer effluent is then split into two parallel paths, each with three stages of low-pressure FW heating, to the suction of the reactor FW pumps. The condensate demineralizer subsystem consists of five demineralizer vessels operating in parallel and sized for full-condensate flow at reactor-rated conditions. The demineralizer vessels are located in shielded cells. Wastes from an exhausted unit are transferred to the RAD system for disposal.

The zinc injection passivation subsystem provides a zinc oxide suspension from a continuously stirred supply tank, which is diluted with demineralized water, and fed to one of two zinc injection pumps. The diluted suspension is continuously injected into the suction of the reactor feed pump just downstream of the reactor feed pump suction valves. Small concentrations of zinc in the reactor water result in a reduction in the amount of cobalt incorporated into the oxide film established on stainless steel piping. This reduction in cobalt-60 incorporation provides substantial reductions in dose rates, particularly in primary containment.

The CFW system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the CFW system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the CFW system performs functions that support SBO.

The intended functions within the scope of license renewal include the following:

- provide flow restriction
- provide a pressure-retaining boundary

In LRA Table 2.3.4-2, the applicant identified the following CFW system component types that are within the scope of license renewal and subject to an AMR:

- expansion joints

- fasteners/bolting
- filters/strainers
- flow element
- gauges (flow, level, and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- tanks
- thermowells
- valve bodies

2.3.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.2 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.2 identified areas for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.4.2-1, dated September 16, 2005, the staff noted that LRA Table 2.3.4-2 identifies "Pressure Boundary" as the intended function of all the heat exchangers within the scope of license renewal in the CFW system. License renewal drawings LR-36034 and LR-36035 show that the shells for FW heaters E-11A, E-11B, E-12A, and E-12B are NSR and included within the scope of license renewal, in accordance with the 10 CFR 54.4(a)(2) criterion; however, several turbine and extraction steamlines connected to the heat exchanger shell pressure boundary are not shown within the scope of license renewal. These lines include the following:

- lines E9-26"-HCD, E10-26"-HCD, E11-26"-HCD, and E12-26"-HCD for L.P. heater E-11A on LR-36034 (quadrant B4)
- lines E1-20"-HCD and E2-20"-HCD for L.I.P. heater E-12A on LR-36034 (quadrant B4)
- lines E13-26"-HCD, E14-26"-HCD, E15-26"-HCD, and E16-26"-HCD for L.P. heater E-11B on LR-36035 (quadrant B-6)
- lines E2-20"-HCD and E4-20"-HCD for L.I.P. heater E-12B on LR-36035 (quadrant C-6)

Therefore, the staff requested that the applicant justify why it did not include the turbine generator system piping connected to the CFW system heaters within the scope of license renewal, considering the component's intended function as defined in LRA Table 2.3.4-2 and the scoping criterion specified in 10 CFR 54.4(a)(2).

In its response, by letter dated October 14, 2005, the applicant stated the following:

> The shells for feedwater heaters E-11A, E-11B, E-12A and E-12B are non-safety related and are included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). These heaters are mounted in the 'neck' of the condenser with only a portion of the heater protruding from the condenser. It is only the ends of the feedwater heater shells which protrude outside of the condenser and have the capability of impacting the intended function of safety-related SSCs due to potential leakage or spray that are of concern. The turbine extraction steam lines connected to these heat exchanger shells are located inside the condenser and, therefore, do not pose a potential leak or spray hazard. The failure of these non-safety related components could not impact safety-related SSCs per the criteria specified in 10 CFR 54.4(a)(2) and, therefore, are not included in the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.4.2-1 acceptable because the main condenser shell should preclude leakage or spray impacts on SR SSCs from the failure of NSR extraction steamlines inside the main condenser; therefore, the staff's concern described in RAI 2.3.4.2-1 is resolved.

In RAI 2.3.4.2-2, dated September 16, 2005, the staff noted that license renewal drawing LR-36036 at locations C-5, C-6, D-5, and D-6 identifies the shells for FW heaters E-11A, E-11B, E-12A, and E-12B as NSR and within the scope of license renewal, in accordance with the 10 CFR 54.4(a)(2) criteria; however, the drawing also shows a connecting steamline to each heater shell as being outside the scope of license renewal with references to license renewal drawings LR-36035 (C-5), LR-36035 (B-5), LR-36034 (B-4), and LR-36034 (C-4), which could not be found on the indicated license renewal drawings. Therefore, the staff requested that the applicant identify the correct drawings and locations for these references. In addition, the staff requested that the applicant justify the determination that the steam piping connected to the CFW system heaters is not within the scope of license renewal, considering the component's intended function as defined in LRA Table 2.3.4-2 and the scoping criteria specified in 10 CFR 54.4(a)(2).

In its response, by letter dated October 14, 2005, the applicant stated that, for the FW heaters, license renewal drawings LR-36034 and LR-36035 show the extraction steam details and license renewal drawing LR-36036 shows the condensate and FW details. The applicant stated that the continuation between the drawings is shown only for information and refers to the general area where the extraction steam piping connects to the heaters. Consistent with the extraction steamline noted in RAI 2.3.4.2-1, the applicant stated that the turbine extraction steamlines identified in RAI 2.3.4.2-2 are inside the condenser and pose no potential leak or spray hazard. The applicant concluded that failure of these NSR extraction steamlines would not impact SR SSCs pursuant to the 10 CFR 54.4(a)(2) criteria and, therefore, are not included within the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.4.2-2 acceptable, because the main condenser shell should prevent leakage or spray impacts on SR SSCs from the failure of NSR extraction steamlines inside the main condenser; therefore, the applicant resolved the staff concern described in RAI 2.3.4.2-2.

The staff's review of LRA Section 2.3.4.2 identified areas in which information in the LRA needed to be verified by the NRC Regional Inspection Team to complete the review of the applicant's scoping and screening results.

Inspection Item 2.3.4.2-1

LRA Section 2.3.4.2 states that the portion of the CFW system within the scope of license renewal consists of pumps, condensate demineralizers, heat exchangers, tanks, and associated piping, valves, and instrumentation from the condensate pump suction to the FW injection nozzles. LRA Table 2.3.4-2 identifies "Pressure Boundary" as the intended function for all piping and fittings in the CFW system within the scope of license renewal. License renewal drawing LR-36038-2 shows the CFW system piping associated with the condensate demineralizer subsystem as NSR and included within the scope of license renewal, in accordance with the 10 CFR 54.4(a)(2) criterion. Accordingly, license renewal drawing LR-36038-2 at location A-6 identifies a portion of line CH5-3"-HC to the chemical waste tank as within the scope of license renewal. Because the license renewal scope boundary for this line terminates in the middle of the pipe run, the actual location of the license renewal scope boundary for this pipe is not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary for this pipe satisfies the 10 CFR 54.4(a)(2) criterion.

The inspection team conducted a walkdown and confirmed that the license renewal boundary ends as line CH5-3"-HC enters the 985' pump room. There are no SR components in the 985' pump room. All P&IDs do not typically show walls and floors. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.4.2-1 is resolved.

2.3.4.2.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the CFW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the CFW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.3 Main Condenser System

2.3.4.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.3, the applicant described the main condenser (CDR) system. The CDR system provides a heat sink for the steam cycle, removes noncondensable gases, and serves as a central collection point for system drains. The system is NSR, but is credited for post-

accident plateout and holdup of radioactive iodine in the LOCA and control rod drop accident analyses conducted pursuant to USAR Sections 14.7.2.4.1 and 14.7.1.6, respectively. Also included in the nonsafety affecting safety function is the automatic closure of mechanical vacuum pump suction valves that isolate the condenser lines to the mechanical vacuum pump on primary containment isolation system (PCIS) Division 1 logic, which includes detection of high activity in the main steamlines. The CDR system consists principally of the CDR, which condenses steam exhausted from the turbine and turbine bypass system (TGS system). The CDR is a twin-shell, dual-pressure surface condenser. Each of the two low-pressure turbines exhausts into a condenser shell. Condenser structural integrity is continuously demonstrated during normal operation when the condenser is required to maintain vacuum. Following a DBA, when the condenser is required to perform its intended function, the main steam isolation valves will be closed and vacuum will be lost. The condenser will not be required to perform a pressure-boundary function because atmospheric conditions will exist inside the condenser.

The failure of NSR SSCs in the CDR system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended functions within the scope of license renewal include the following:

- provide plateout and holdup of radioactive material
- provide a pressure-retaining boundary

In LRA Table 2.3.4-3, the applicant identified the following CDR system component types that are within the scope of license renewal and subject to an AMR:

- condenser complex
- expansion joints
- fasteners/bolting
- filters/strainers
- gauges (flow, level, and sight)
- heat exchangers
- LP turbine hood
- piping and fittings
- pump casings
- tanks
- thermowells
- valve bodies

2.3.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.3 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not

omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.3 identified areas for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.4.3-1, dated September 16, 2005, the staff noted that on license renewal drawing LR-36035-2 at location B-2, pipe section line number OG6-8"-HC at separator T-72 and downstream piping are not within the scope of license renewal. All other piping and components within the apparent plant area are within the scope of license renewal. Failure of this unisolable section of pipe could affect the license renewal intended pressure-boundary function for the CDR system; therefore, the staff requested that the applicant justify why it did not include these sections of unisolable piping and components within the scope of license renewal.

In its response, by letter dated October 14, 2005, the applicant stated that pipe line number OG6-8-HC at separator T-72 and the downstream piping have an internal environment of air. The failure of these NSR components could not impact the intended function of SR SSCs and therefore, are not included within the scope of license renewal. All other piping and components within the plant area are within the scope of license renewal because they contain water and have the ability to impact the intended function of SR SSCs because of the potential for leakage or spray.

Based on its review, the staff found the applicant's response to RAI 2.3.4.3-1 acceptable, because pipe line number OG6-8-HC and the downstream piping have an internal environment of air, which does not have the ability to impact the intended function of SR SSCs, and as such, are not within the scope of license renewal; therefore, the staff's concern described in RAI 2.3.4.3-1 is resolved.

In RAI 2.3.4.3-2, dated September 16, 2005, the staff noted that license renewal drawing LR-54817-4 at location A-7 is not listed in LRA Section 2.3.4.3 as a license renewal drawing for the CDR system; therefore, the staff requested that the applicant clarify why it did not include LR-54817-4 in LRA Section 2.3.4.3 as a license renewal drawing for the CDR system.

In its response, by letter dated October 14, 2005, the applicant stated that license renewal drawing LR-54817-4 shows the flow diagram for the recombiner building. There are no CDR components within the scope of license renewal inside the recombiner building. Consequently, license renewal drawing LR-54817-4 is not included in LRA Section 2.3.4.3 as a license renewal drawing for the CDR system.

Based on its review, the staff found the applicant's response to RAI 2.3.4.3-2 acceptable because license renewal drawing LR-54817-4 shows no CDR components within the scope of license renewal; therefore, the staff's concern described in RAI 2.3.4.3-2 is resolved.

The staff's review of LRA Section 2.3.4.3 identified areas in which information in the LRA needed to be verified by the NRC Regional Inspection Team to complete the review of the applicant's scoping and screening results.

Inspection Item 2.3.4.3-1

The CDR system is NSR, but is credited for post-accident plateout and holdup of radioactive iodine in the LOCA and control rod drop accident analyses, per USAR Sections 14.7.2.4.1 and 14.7.1.6, respectively. License renewal drawing LR-36035-2 at locations C-6 and B-6 has piping outside the scope of license renewal with continuations to condenser E-1B connection 29 on license renewal drawing LR-36035 at location D-6. The portion of piping on LR-36035 is within the scope of license renewal. Consequently, the actual locations of the license renewal boundary for these pipes are not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary for these pipes satisfies the 10 CFR 54.4(a)(2) criterion.

Lines RV34-6"-HB and RV33-6"-HB connect to condenser E-1B at connection 29 on LR-36035. The intended function of the piping is not for post-accident plateout and holdup of radioactive iodine, but for pressure boundary for NSR affecting SR components, as shown in LRA Table 2.3.4-3, "Main Condenser System." Lines RV34-6"-HB and RV33-6"-HB shown on LR-36035-2 are in the SJAE room. There are no SR components in the SJAE room and, therefore, this piping is not required to be within the scope of license renewal.

Piping PS9-2"-ED, shown on LR-36035-2, is also in the SJAE room; however, this piping is a HELB line and, therefore, is within the scope of license renewal. The boundary for the HELB line ends at the valves, as stated in USAR Appendix I, Table I.2-1, page 8.

The applicant will revise license renewal drawing LR-36035-2 to depict a wall that lines RV34-6"-HB and RV33-6"-HB pass through into the SJAE room. The lines will be shown within the scope of license renewal as they continue from license renewal drawing LR-36035 and condenser E-1B connection 29, and outside the scope of license renewal after they pass through the wall into the SJAE room. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.4.3-1 is resolved.

Inspection Item 2.3.4.3-2

License renewal drawing LR-36035 at location A-8 has a piping continuation, pipe line number CN-125-4"-EN1C, from the recombiner, license renewal drawing LR-54817-4 at location A-7, that is within the scope of license renewal. The continuation on license renewal drawing LR-54817-4 at location A-7 is outside the scope of license renewal. Consequently, the actual location of the license renewal boundary for this pipe is not clear. The NRC Regional Inspection Team performed an inspection to ensure that the license renewal scope boundary for this pipe satisfies the 10 CFR 54.4(a)(2) criterion.

The inspection team confirmed through walkdown that the license renewal boundary ends as the line, CN-125-4"-EN1C, enters the recombiner building on license renewal drawing LR-54817-4. There are no SR components in the recombiner building; therefore, license renewal drawing LR-54817-4 does not depict any components within the scope of license renewal in that building.

The applicant will revise license renewal drawing LR-54817-4 (at location A-7) to show the continuation of line CN-125-4"-EN1C to license renewal drawing LR-36035 as being within the

scope of license renewal, with the scoping boundary at the wall labeled turbine building. No components shown to the right of the turbine building wall are within scope, as these are all in the recombiner building. The inspectors determined that the license renewal boundary satisfies the 10 CFR 54.4(a)(2) criterion. Therefore, the staff's concern described in Inspection Item 2.3.4.3-2 is resolved.

2.3.4.3.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the CDR system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the CDR system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.4 Main Steam System

2.3.4.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.4, the applicant described the main steam (MST) system. The MST system transports steam produced in the reactor to the main turbine for the production of electricity. This steam is supplied to the high-pressure section of the turbine. Steam leaving the high-pressure turbine is divided, the bulk of it passing through moisture separators before its admission to the low-pressure sections. A portion of the steam is extracted and is condensed as it is cascaded through FW heaters en route to the CDR. Normally, the turbine uses all the steam being generated by the reactor; however, automatic, pressure-controlled, bypass valves are supplied, which can discharge excess steam directly to the condenser. The MST system also supplies steam to the HPCI and RCI turbines. The MST system includes an inline flow restrictor for each of the four main steamlines. These flow restrictors minimize water losses and protect the fuel barrier before main steam isolation valve closure for steamline ruptures outside of primary containment. Drains are provided to remove condensate from the steamlines. The majority of the components for the MST system are located in the turbine building and reactor building steam chase, with additional piping and valves located in the primary containment. The majority of the system components are made of stainless steel and carbon steel, although some cast austenitic stainless steel and copper alloy material is used.

The MST system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the MST system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the MST system performs functions that support FP and EQ.

The intended functions within the scope of license renewal include the following:

- provide filtration
- provide flow restriction
- provide a pressure-retaining boundary

In LRA Table 2.3.4-4, the applicant identified the following MST system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- filters/strainers
- flow element
- manifolds
- piping and fittings
- restricting orifices
- thermowells
- valve bodies

2.3.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.4 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.4 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.4.4-1, dated September 16, 2005, the staff noted that license renewal drawing LR-36035-2 at locations D-7 and B-7 indicates that pipe line numbers D109-1"-EF and D108-1"-EF (steam supply lines to Air Ejectors E-2B and E-2A) are not within the scope of license renewal. Table 2.3.4-4 states that piping, fittings, and valves are within the scope of license renewal with intended pressure-boundary function. Failure of this section of pipe could affect the license renewal intended pressure-boundary function for the MST system piping; therefore, the staff requested that the applicant justify why it did not include these sections of unisolable piping and components within the scope of license renewal.

In its response, by letter dated October 14, 2005, the applicant stated that lines D109-1"-EF and D 108-1"-EF are inside the SJAE room. These 1-inch pipes are not considered high-energy lines and there are no SR components inside the SJAE room whose intended function could be impacted by this NSR piping; therefore, line numbers D109-1"-EF and D108-1"-EF are not within the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.4.4-1 acceptable because NSR lines D109-1"-EF and D 108-1"-EF are inside the SJAE, are not considered high-energy lines, and as such, are not within the scope of license renewal; therefore, the staff's concern described in RAI 2.3.4.4-1 is resolved.

2.3.4.4.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the MST system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the MST system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.5 Turbine Generator System

2.3.4.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.5, the applicant described the turbine generator system. The turbine generator system includes the turbine generator unit and the steam sealing, turbine lube oil, hydrogen cooling, hydrogen seal oil, and stator cooling subsystems. The function of the turbine is to convert the thermodynamic energy of the steam from the nuclear reactor into mechanical energy that drives the generator. The generator in turn converts that energy to an electrical output to the power grid. The turbine consists of one single-flow, high-pressure section with two double-flow, low-pressure sections of the non-reheat design on a single shaft. The generator consists of three major parts—the rotor, stator, and exciter. The rotor is turned by the turbine shaft and is the source of the moving magnetic field. The stator consists of windings which form a conductive path for the current induced by the rotating magnetic field of the rotor. The exciter is a separate and smaller generator driven by the turbine to provide power for the main generator rotor magnetic field. The steam sealing subsystem prevents steam leakage past the turbine shaft seals into the turbine building and limits air in-leakage to the turbine casings. The turbine generator shaft is supported by 10 journal bearings. All bearing oil is supplied by the turbine lube oil subsystem, which also provides high-pressure oil to the hydraulic turbine control mechanisms. The hydrogen gas of the hydrogen cooling subsystem is contained within the generator casing. The hydrogen cooling subsystem is designed to reduce the heat generated from windage resistance and provide a good heat transfer medium for generator cooling. The hydrogen seal oil subsystem supplies vacuum treated oil between the rotor shaft and the generator end housing hydrogen seals to prevent hydrogen from escaping into the turbine building. The stator cooling subsystem removes heat from the generator stator by circulating low-conductivity water through the hollow metal bars forming the stator windings. The subsystem also supplies cooling water to the generator exciter rectifier banks. The stator cooling subsystem consists of a storage tank feeding two parallel pumps, two heat exchangers, a filter, and connecting piping with the generator stator.

The failure of NSR SSCs in the turbine generator system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.4-5, the applicant identified the following turbine generator system component types that are within the scope of license renewal and subject to an AMR:

- expansion joints
- fasteners/bolting
- filters/housings
- filters/strainers
- gauges (flow, level and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- steam traps
- tanks
- thermowells
- turbines
- valve bodies

2.3.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.5 and the USAR using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.5 identified areas for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.4.5-1, dated September 16, 2005, the staff noted that license renewal drawing LR-36034 at location B-4 shows a portion of the sensing line to PT-1217 attached to pipe E2-20"-HCD as within the scope of license renewal; however, the remaining portion of the sensing line and pressure transmitter is shown as outside the scope of license renewal. In addition, license renewal drawing LR-36035 at location D-7 shows pressure transmitters PT-1222 and PT-1223 and portions of the sensing lines to these transmitters as within the scope of license renewal; however, the remaining portions of the sensing line to pipes E3-20"-HCD and E16-26"-HCD are shown as outside the scope of license renewal. LRA Section 2.3.4.5 states that the license renewal function for turbine generator piping and gauges is to maintain a pressure boundary and that NSR structures and/or components of the turbine generator system that could affect SR SSCs must maintain sufficient integrity so that the intended function of the SR SSCs is not adversely affected. Failure of the sensing lines noted above could affect the license renewal intended pressure-boundary function of this turbine generator piping and have a negative impact on the SR SSCs; therefore, the staff requested

that the applicant justify why it did not include portions of the sensing lines and associated pressure transmitters within the scope of license renewal.

In its response, by letter dated October 14, 2005, the applicant stated that the portion of the sensing line to PT-1217 attached to pipe E2-20"-HCD is inside the condenser and should not have been shown as within the scope of license renewal. PT-1222 and PT-1223 and portions of the sensing lines to these transmitters are within the scope of license renewal because they are on the exterior of the condenser. The sensing lines inside the condenser to pipes E3-20"-HCD and E16-26"-HCD are not within the scope of license renewal. The failure of these NSR lines could not impact the intended function of SR SSCs, and therefore, the applicant did not include them within the scope of license renewal. During its review, the applicant found that it should have shown the portions of the sensing lines from condenser penetration No. 60 to PT-1216 and PT-1217 on the exterior of the condenser as within the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.4.5-1 acceptable because failure of those NSR portions of sensing lines within the condenser could not impact the intended function of SR SSCs, and consequently, those portions are not within the scope of license renewal; therefore, the staff's concern described in RAI 2.3.4.5-1 is resolved.

In RAI 2.3.4.5-2, dated September 16, 2005, the staff noted that LRA Section 2.3.4.5 states that the license renewal function for turbine generator piping is to maintain a pressure boundary and that NSR structures and/or components of the turbine generator system that could affect SR SSCs must maintain sufficient integrity so that the intended function of the SR SSCs is not adversely affected.

License renewal drawings LR-36034 at location B-4 and LR-36035 at locations B-6, B-7, and C-7 show piping to LIP Heater 12-A&B and LP Heater 11-A & B (E9-26"-HCD, E10-26"-HCD, E11-26"-HCD, E12-26"-HCD, E1-20"-HCD, E2-20"-HCD, E14-26"-HCD, E13-26"-HCD, E15-26"-HCD, E16-26"-HCD, E4-20"-HCD, E3-20"-HCD) as outside the scope of license renewal; however, the sensing lines to pressure transmitters attached to these pipes are shown as within the scope of license renewal. Failure of the cited pipes could affect the license renewal intended function of pressure boundary for the turbine generator piping and have a negative impact on the SR SSCs. Therefore, the staff requested that the applicant justify why it did not include the above cited pipes within the scope of license renewal.

In its response, dated October 14, 2005, the applicant stated that portions of the sensing lines to these transmitters are within the scope of license renewal because they are on the exterior of the condenser and could impact the intended function of SR SSCs. The remaining portions of the sensing lines and heater piping to which they are attached are located in the condenser and are not within the scope of license renewal. The failure of this NSR piping could not impact the intended function of SR SSCs. During its review, the applicant found that the portions of the sensing lines from condenser penetration No. 25 to piping E4-20"-HCD and E3-20"-HCD on license renewal drawing LR-36035 (at location C-7) and condenser penetration No. 31 to piping E1-20"-HCD and E2-20"-HCD should not have been shown within the scope of license renewal because they are within the condenser.

Based on its review, the staff found the applicant's response to RAI 2.3.4.5-2 acceptable, because those portions of sensing lines within the condenser are not within the scope of license

renewal. The failure of these NSR lines could not impact the intended function of SR SSCs; therefore, the staff's concern described in RAI 2.3.4.5-2 is resolved.

2.3.4.5.3 Conclusion

The staff reviewed the LRA to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the turbine generator system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the turbine generator system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4 Scoping and Screening Results: Containments, Structures, and Component Supports

This section documents the staff's review of the applicant's scoping and screening results for containments, structures, and component supports. Specifically, this section discusses the following containments, structures, and component supports:

- cranes, heavy loads, rigging
- diesel fuel oil transfer house
- emergency diesel generator building
- emergency filtration train building
- fire protection barriers commodity group
- hangers and supports commodity group
- HPCI building
- intake structure
- miscellaneous SBO yard structures
- offgas stack
- offgas storage and compressor building
- plant control and cable spreading structure
- primary containment
- radioactive waste building
- reactor building
- structures affecting safety
- turbine building
- underground duct bank

In accordance with the requirements of 10 CFR 54.21(a)(1), the applicant must identify and list passive, long-lived SCs that are within the scope of license renewal and subject to an AMR. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results. This approach allowed the staff to confirm that there were no omissions of containments, structures, and component supports components that meet the scoping criteria and are subject to an AMR.

Staff Evaluation Methodology. The staff performed its evaluation of the information in the LRA in the same manner for all containments, structures, and component supports. The objective of the review was to determine whether the applicant had identified the components and supporting structures for a specific containment, structure, or component support, that appeared to meet the scoping criteria specified in the Rule, as within the scope of license renewal, in accordance with 10 CFR 54.4. Similarly, the staff evaluated the applicant's screening results to verify that all long-lived, passive components were subject to an AMR in accordance with 10 CFR 54.21(a)(1).

Scoping. To perform its evaluation, the staff reviewed the applicable LRA section and associated component drawings, focusing its review on components that had not been identified as within the scope of license renewal. The staff reviewed relevant licensing-basis documents, including the USAR, for each containment, structure, and component support to determine whether the applicant had omitted components with intended functions delineated under 10 CFR 54.4(a) from the scope of license renewal. The staff also reviewed the licensing-basis documents to determine whether the LRA specified all intended functions delineated under 10 CFR 54.4(a). If omissions were identified, the staff requested additional information to resolve the discrepancies.

Screening. Once the staff completed its review of the scoping results, it evaluated the applicant's screening results. For those containments, structures, and components supports with intended functions, the staff sought to determine (1) if the functions are performed with moving parts or a change in configuration or properties or (2) if they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1). For those that did not meet either of these criteria, the staff sought to confirm that these containments, structures, and components supports and components were subject to an AMR, as required by 10 CFR 54.21(a)(1). If discrepancies were identified, the staff requested additional information to resolve them.

2.4.1 Cranes, Heavy Loads, Rigging

2.4.1.1 Summary of Technical Information in the Application

In LRA Section 2.4.1, the applicant described the cranes, heavy loads, and rigging system. The cranes, heavy loads, and rigging system consists of the reactor building and turbine building cranes, numerous hoists, lifting fixtures and devices, and other miscellaneous smaller cranes. Included in this system are the reactor components' handling equipment, such as the refueling bridge, various tools, controls, lifting devices, and fixtures. The refueling rod block interlocks are also included under the reactor manual control system.

The failure of NSR SSCs in the cranes, heavy loads, and rigging system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended function, within the scope of license renewal, is to provide structural support to NSR components (civil and structural).

In LRA Table 2.4.1-1, the applicant identified the following cranes, heavy loads, and rigging system component types that are within the scope of license renewal and subject to an AMR:

- aluminum in air/gas (fuel preparation machine aluminum frame)
- aluminum in treated water (fuel preparation machine aluminum frame)
- carbon steel, low-alloy steel in air/gas (reactor building crane rails, turbine building crane rails, refueling platform rails)
- carbon steel, low-alloy steel in air/gas (reactor building crane, turbine building crane, refueling platform, reactor vessel head lifting device, dryer and steam separator sling lifting device, and hook box)

2.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.1.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the cranes, heavy loads, and rigging system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the cranes, heavy loads, and rigging system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2 Diesel Fuel Oil Transfer House

2.4.2.1 Summary of Technical Information in the Application

In LRA Section 2.4.2, the applicant described the diesel fuel oil transfer house. The diesel fuel oil transfer house, located north of the diesel generator building and west of the intake structure, is a reinforced concrete building on a mat foundation that provides protective enclosure to the SR diesel oil transfer pump and the diesel oil service pump.

The diesel fuel oil transfer house contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the diesel fuel oil transfer

house could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the diesel fuel oil transfer house performs functions that support FP.

The intended functions within the scope of license renewal include the following:

- provide flood protection barrier
- provide missile barrier
- provide structural support to NSR components (civil and structural)
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components

In LRA Table 2.4.2-1, the applicant identified the following diesel fuel oil transfer house component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (structural steel, steel embeds, etc.)
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, etc.))
- carbon steel, low-alloy steel in atmosphere/weather (door)
- concrete in air/gas (foundation, walls, slabs)
- concrete in air/gas (foundation, walls, slabs, grout)
- concrete in atmosphere/weather (walls, slab)
- concrete in below grade (foundation, walls)

2.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.2 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.4.2-1, dated September 28, 2005, the staff noted that two component groups, (1) concrete in air/gas (foundation, walls, slabs) and (2) concrete in air/gas (foundation, walls, slabs, grout), have identical intended functions in Tables 2.4.2-1, 2.4.3-1, 2.4.4-1, 2.4.7-1, 2.4.8-1, 2.4.11-1, 2.4.12-1, 2.4.14-1, 2.4.15-1, 2.4.16-1, and 2.4.17-1. Therefore, the staff

requested that the applicant explain the need for the first component group since it appeared to be contained in the second component group. The staff also noted that, in addition to those two component groups, concrete in air/gas (walls, slabs) is listed in Tables 2.4.3-1, 2.4.4-1, 2.4.8-1, 2.4.12-1, and 2.4.17-1 as a component group with the same intended function for which the staff requested a similar explanation.

In its response, by letter dated October 28, 2005, the applicant stated the following:

> To explain the difference between component groups, first an explanation of how Table 2.4.x-1 was assembled is needed. Tables in Section 2.4 of the License Renewal Application (LRA) were assembled by copying the component group and intended functions for each 3.5.2-x Table line entry into the 2.4.x-1 Table. This format was consistently used throughout the LRA. Many line entry component group descriptions appear similar but there are subtle differences that are evident upon review of the 3.5.2-x Table aging management program (AMP), aging effects/mechanisms, material, etc.
>
> For this specific question, Table 2.4.x-1 component groups, 'concrete in air/gas (foundation, walls, slabs)' and 'concrete in air/gas (foundation, walls, slabs, grout)' have different component group descriptions (one component group includes grout and the other did not). Review of Table 3.5.2-x reveals that the component group without grout is evaluated for the aging effect, 'cracking, loss of bond, loss of material due to corrosion of embedded steel.' The mechanism of corrosion of embedded steel is not applicable to grout but is applicable to reinforced concrete.
>
> For part two of this question, the Table 2.4.x-1 component groups, 'concrete in air/gas (walls, slabs),' 'concrete in air/gas (foundation, walls, slabs),' and 'concrete in air/gas (foundation, walls, slabs, grout)' have different component group descriptions. The same rationale discussed above is applicable here as well.

Based on its review, the staff found the applicant's response to RAI 2.4.2-1 acceptable. The applicant explained that (1) tables in Section 2.4 were copied from the component group and intended function from tables in Section 3.5, (2) one component group includes grout and the other does not, and (3) the mechanism of corrosion of embedded steel is applicable to reinforced concrete but not to grout. Because of these minor differences, tables in Section 2.4 appear repetitious. Therefore, the staff's concern described in RAI 2.4.2-1 is resolved.

2.4.2.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the diesel fuel oil transfer house components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the diesel fuel oil transfer house components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.3 Emergency Diesel Generator Building

2.4.3.1 Summary of Technical Information in the Application

In LRA Section 2.4.3, the applicant described the EDG building. The principal function of the EDG building is to provide a safe enclosure and protection for the standby diesel generators and portions of the power distribution systems enclosed therein. The building is primarily a single-story structure of reinforced concrete construction. A partial second story extends over a portion of the structure. The ground floor consists of a concrete slab which is independent of the building structure and placed on compacted select fill. Exterior walls are of reinforced concrete and support the lower roof and second story framing. The roof over the single-story portion of the structure and over the penthouse consists of a thick, reinforced concrete slab supported by structural steel framing. A north-south interior wall of reinforced concrete extends the full height of the structure providing physical separation of the diesel generator systems. The exterior and interior walls extend 6 feet below grade to form a continuous wall footing supported on select fill. The standby diesel generators are located at grade and are supported on a 3-foot thick reinforced concrete mat which is physically independent of the ground floor slab and building structure.

The EDG building contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the EDG building could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the EDG building performs functions that support FP.

The intended functions within the scope of license renewal include the following:

- provide rated fire barrier
- provide flood protection barrier
- provide missile barrier
- provide structural support to NSR components (civil and structural)
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components

In LRA Table 2.4.3-1, the applicant identified the following EDG building component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (fire-rated doors)
- carbon steel, low-alloy steel in air/gas (structural steel, steel embeds, etc.)
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, etc.))
- carbon steel, low-alloy steel in atmosphere/weather (doors, ventilation assemblies)
- concrete in air/gas (foundation, walls, slabs)
- concrete in air/gas (foundation, walls, slabs, grout)
- concrete in air/gas (walls, slabs)
- concrete in atmosphere/weather (walls, slab)

- concrete in below grade (foundation, walls)
- masonry walls in air/gas

2.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.3 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.3.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the EDG building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the EDG building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.4 Emergency Filtration Train Building

2.4.4.1 Summary of Technical Information in the Application

In LRA Section 2.4.4, the applicant described the EFT building. The function of the EFT building is to provide safe enclosure and protection for the main components of the MCR air conditioning system (including the EFT units for the MCR air conditioning system) and for other SR equipment as necessary. The EFT building is an L-shaped reinforced concrete structure supported by a mat foundation. The west section is supported by two reinforced concrete caissons. The east section is three stories high, and the west section is two stories high.

The EFT building contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the EFT building could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the EFT building performs functions that support FP, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provide rated fire barrier
- provide flood protection barrier

- provide missile barrier
- provide structural support to NSR components (civil and structural)
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components

In LRA Table 2.4.4-1, the applicant identified the following EFT building component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (fire-rated doors)
- carbon steel, low-alloy steel in air/gas (structural steel, steel embeds, etc.)
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, etc.))
- concrete in air/gas (foundation, walls, slabs)
- concrete in air/gas (foundation, walls, slabs, grout)
- concrete in air/gas (walls, slabs)
- concrete in atmosphere/weather (walls, slab)
- concrete in below grade (foundation, walls)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (EFT control volume seals)

2.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.4 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.4 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.4.4-1, dated September 28, 2005, the staff noted that Table 2.4.4-1 lists two identical component groups, "concrete in atmosphere/weather (walls, slab)," with identical intended functions; therefore, the staff requested that the applicant explain the need to list the same component group twice.

In its response, by letter dated October 28, 2005, the applicant stated the following:

Due to page format/spacing limitations, Table 3.5.2-4 was unable to include all the component information on the same page, and therefore it became necessary to repeat the component group, intended functions, etc. on the following page. Table 2.4.4-1 could have omitted this duplication but a decision was made not to interfere with the process used to assemble the 2.4.x-1 Table.

Based on its review, the staff found the applicant's response to RAI 2.4.4-1 acceptable. Although repetitious, the duplicate component groups have no effect on scoping or screening. Therefore, the staff's concern described in RAI 2.4.4-1 is resolved

2.4.4.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the EFT building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the EFT building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.5 Fire Protection Barriers Commodity Group

2.4.5.1 Summary of Technical Information in the Application

In LRA Section 2.4.5, the applicant described the FP barriers commodity group. The FP barriers commodity group includes fire stop sealants, fireproofing, and metallics such as aluminum and carbon steel credited in the FP evaluation report. Fire stop sealants, fireproofing, and metallics can be used as FP barriers to stop the spread of fire to adjacent fire areas and can also be used to encapsulate structural steel or other metallic and nonmetallic components located within a fire area to protect them from the effects of a fire. Fire stop sealants, fireproofing, metallics, and combinations thereof provide a fire resistance equivalent to the rating of the primary fire barrier to prevent the spread of fire to adjacent areas. Fire stop sealants, fireproofing, and metallics are used to close openings in ceilings, floors, and walls. These openings may be for penetrating electrical (e.g., cables, cable trays, conduits) or mechanical (e.g., pipes, instrument lines, ventilation ducts) components. Cable tray FP barriers are a type of barrier that prevents the propagation of fire along the length of the cables. Ventilation duct fire barrier housings, located between adjacent fire areas, are an integral part of the FP barrier and therefore are included with the FP barriers. Fire doors, curbs, dikes, concrete, and masonry block walls are evaluated as part of the structure where they are located. Fire and alarm (e.g., smoke detectors), and fire suppression (e.g., automatic sprinklers, automatic halon systems) are evaluated in the FIR system. The diesel-driven fire pump is evaluated in both the FIR and the ESW systems.

The FP barriers commodity group performs functions that support FP.

The intended function, within the scope of license renewal, is to provide a rated fire barrier.

In LRA Table 2.4.5-1, the applicant identified the following FP barriers commodity group component types that are within the scope of license renewal and subject to an AMR:

- aluminum in air/gas (cable tray cover)
- carbon steel, low-alloy steel in air/gas (access tunnel FP guard pipe, fire damper housings)
- nonmetallic fireproofing in air/gas (cementitious fireproofing for coating structural steel and miscellaneous components)
- nonmetallic fireproofing in air/gas (fibrous fire wraps, cementitious fireproofing (i.e., pyrocrete, etc.))
- nonmetallic fire proofing in air/gas (fibrous fire wraps, cementitious fireproofing (i.e., pyrocrete, etc.), rigid board (i.e., gypsum board, etc.))
- nonmetallic fire stop sealants in air/gas (fire stop sealants for EDG building)
- nonmetallic fire stop sealants in air/gas (fire stop sealants for intake structure)
- nonmetallic fire stop sealants in air/gas (fire stop sealants for reactor building, EFT building, plant control, and cable spreading structure)
- nonmetallic fire stop sealants in air/gas (fire stop sealants for turbine building)

2.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.5 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.5 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.4.5-1, dated September 28, 2005, the staff noted that Table 2.4.5-1 lists three identical component groups, "Non-metallic fire proofing in air/gas (...cementitious fireproofing, ...)," with identical intended functions; therefore, the staff requested that the applicant explain the need to list the same component group three times.

In its response, by letter dated October 28, 2005, the applicant stated the following:

> To explain the difference between component groups, first an explanation of how Table 2.4.x-1 was assembled is needed. Tables in Section 2.4 of the LRA were

assembled by copying the component group and intended functions for each 3.5.2-x Table line entry into the 2.4.x-1 Table. This format was consistently used throughout the LRA. Many line entry component group descriptions appear similar but there are subtle differences that are evident upon review of the 3.5.2-x Table AMP, aging effects/mechanisms, material, etc.

Table 2.4.5-1 component groups, 'non-metallic fire proofing in air/gas (cementitious fireproofing for coating structural steel and miscellaneous components),' 'non-metallic fire proofing in air/gas (fibrous fire wraps, cementitious fireproofing (i.e., pyrocrete, etc.)),' and 'non-metallic fire proofing in air/gas (fibrous fire wraps, cementitious fireproofing (i.e., pyrocrete, etc.), rigid board (i.e., gypsum board, etc.))' have different component group descriptions. Review of Table 3.5.2-5 reveals that component groups were evaluated for aging effects/mechanisms that were not applicable to all component groups.

Based on its review, the staff found the applicant's response to RAI 2.4.5-1 acceptable. The applicant explained that (1) the component groups and intended functions in Section 2.4 tables were copied from tables in Section 3.5 and (2) the aging effects/mechanisms listed in Table 3.5.2-5 were not applicable to all three components groups; therefore, the staff's concern described in RAI 2.4.5-1 is resolved.

2.4.5.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the FP barriers commodity group components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the FP barriers commodity group components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.6 Hangers and Supports Commodity Group

2.4.6.1 Summary of Technical Information in the Application

In LRA Section 2.4.6, the applicant described the hangers and supports commodity group. The hangers and supports commodity group contains component and equipment supports, pipe restraints, junction boxes, control panels, electrical raceways, and electrical conduit associated with plant systems and equipment that are within the scope of license renewal or are located within structures containing SR components. This commodity group includes the grout under the baseplate and fasteners used with the support or equipment anchorage. Generally, supports provide the connection between a system's equipment or component and a plant structural member (e.g., wall, floor, ceiling, column, beam). They provide support for distributed loads (e.g., piping, tubing, HVAC ducting, conduit, cable trays) and localized loads (e.g., individual equipment). Specific types of equipment and components evaluated as part of this commodity group include: (1) pipe supports/restraints—includes all items used to support and/or restrain piping, (2) equipment supports—includes structural steel, fasteners (e.g., bolts,

studs, nuts), and vibration mounts that secure equipment to structures, (3) HVAC duct supports—includes structural steel and fasteners (e.g., bolts, studs, nuts) that support/attach ventilation duct to structures, (4) raceways—generic component type that is designed specifically for holding electrical wires and cables (e.g., cable trays, exposed and concealed metallic conduit or wireways), and (5) electrical enclosures—generic component type that contains electrical components (e.g., conduit, panels, boxes, cabinets, consoles, and bus ducts).

The hangers and supports commodity group contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the hangers and supports commodity group could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the hangers and supports commodity group performs functions that support FP, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provide structural support to NSR components (civil and structural)
- provide structural support to SR components (civil and structural)

In LRA Table 2.4.6-1, the applicant identified the following hangers and supports commodity group component types that are within the scope of license renewal and subject to an AMR:

- aluminum in air/gas (electrical junction boxes)
- carbon steel, low-alloy steel in air/gas (anchorages of lighting fixtures and junction boxes inside torus, includes support members, welds, bolted connections)
- carbon steel, low-alloy steel in air/gas (anchorages of racks, panels, cabinets, and enclosures for electrical equipment and instrumentation; includes lighting fixtures, junction boxes, racks, panels, and cabinets outside torus, includes support members, welds, bolted connections, and support anchorage)
- carbon steel, low-alloy steel in air/gas (cable trays, conduit, tube track outside torus)
- carbon steel, low-alloy steel in air/gas (conduit, located inside torus)
- carbon steel, low-alloy steel in air/gas (lighting fixtures and junction boxes inside torus)
- carbon steel, low-alloy steel in air/gas (racks, panels, cabinets, lighting fixtures, junction boxes outside torus)
- carbon steel, low-alloy steel in air/gas (supports for American Society of Mechanical Engineers (ASME) Class 1 piping and components including RPV stabilizers (i.e., constant and variable spring hangers, guides, stops, etc.))
- carbon steel, low-alloy steel in air/gas (supports for ASME Class 1 piping and components including RPV stabilizers, includes support members, welds, bolted connections, and support anchorage)
- carbon steel, low-alloy steel in air/gas (supports for ASME Class 2 and 3 piping and components (i.e., constant and variable spring hangers, guides, stops, etc.))

- carbon steel, low-alloy steel in air/gas (supports for ASME Class 2 and 3 piping and components, includes support members, welds, bolted connections, and support anchorage)
- carbon steel, low-alloy steel in air/gas (supports for ASME Class MC components, includes torus seismic restraints, drywell male and female stabilizers, shield stabilizers, torus columns, torus saddles, vent system supports, downcomer bracing, includes support members, welds, bolted connections and anchorages)
- carbon steel, low-alloy steel in air/gas (supports for cable trays, conduit, HVAC ducts, tube track, instrument tubing, and non-ASME piping outside torus, includes support members, welds, bolted connections, and support anchorage)
- carbon steel, low-alloy steel in air/gas (supports for mechanical equipment such as the EDG, HVAC components, pumps, fans, motors, turbines, etc., includes the splash hoods for the ESW pumps and the gas bottle racks, includes support members, welds, bolted connections, and support anchorage)
- carbon steel, low-alloy steel in air/gas (supports for non-ASME piping, conduit, and components located inside the torus, includes support members, welds, bolted connections)
- carbon steel, low-alloy steel in atmosphere/weather (conduit for miscellaneous SBO yard structures, etc.)
- carbon steel, low-alloy steel in atmosphere/weather (supports for conduit for miscellaneous SBO yard structures, etc., includes support members, welds, bolted connections, and support anchorage)
- carbon steel, low-alloy steel in atmosphere/weather (supports for EFT tornado dampers and other miscellaneous mechanical equipment, includes support members, welds, bolted connections, and anchorage)
- carbon steel, low-alloy steel in atmosphere/weather (supports for non-ASME piping, includes support members, welds, bolted connections, and support anchorage)
- carbon steel, low-alloy steel in below grade (conduit for miscellaneous SBO yard structures, etc.)
- carbon steel, low-alloy steel in below grade (diesel fuel oil storage tank flood tie-downs)
- carbon steel, low-alloy steel embedded in concrete (drywell support skirt anchorage, RPV female stabilizers)
- carbon steel, low-alloy steel embedded in concrete (embedded conduit)
- carbon steel, low-alloy steel in treated water (supports for ASME Class MC components (i.e., vent system supports, downcomer bracing) includes support members, welds)
- carbon steel, low-alloy steel in treated water (supports for non-ASME piping and components (i.e., HPC, RCI sparger supports, SRV T-quencher support, ECCS suction strainer supports, etc.) includes support members, welds, bolted connections)
- concrete in air/gas (anchorage of racks, panels, cabinets, enclosures for electrical equipment and instrumentation, building concrete, grout pads)

- concrete in air/gas (supports for ASME Class 1 piping and components, building concrete, and grout pads)
- concrete in air/gas (supports for ASME Class 2 and 3 piping and components, building concrete, grout pads)
- concrete in air/gas (supports for ASME Class MC components, building concrete, grout pads)
- concrete in air/gas (supports for cable trays, conduit, HVAC ducts, tube track, instrument tubing, non-ASME piping and components, building concrete, grout pads)
- concrete in air/gas (supports for EDG, HVAC system components, and other miscellaneous mechanical equipment, building concrete, grout pads)
- concrete in atmosphere/weather (supports for conduit for miscellaneous SBO yard structures, etc.; building concrete, grout pads)
- concrete in atmosphere/weather (supports for EFT tornado dampers and other miscellaneous mechanical equipment, building concrete, grout pads)
- concrete in atmosphere/weather (supports for non-ASME piping and components, building concrete, grout pads)
- concrete in below grade (diesel fuel oil storage tank deadmen)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (vibration isolation elements for ASME Class 1 piping and components)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (vibration isolation elements for ASME Class 2 and 3 piping and components)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (vibration isolation elements for ASME Class MC components)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (vibration isolation elements for EDG, HVAC system components, and other miscellaneous mechanical equipment)
- fiberglass in air/gas (electrical junction boxes)
- lubrite in air/gas (sliding surfaces for ASME Class 1 piping and components)
- lubrite in air/gas (sliding surfaces for ASME Class 2 and 3 piping and components)
- lubrite in air/gas (sliding surfaces for torus saddles)
- plastic in air/gas (electrical junction boxes)
- stainless steel in air/gas (supports for ASME Class 1 piping and components including RPV stabilizers, clamps etc.)
- stainless steel in air/gas (supports for ASME Class 2 and 3 piping and components, clamps, etc.)
- stainless steel in air/gas (supports for ASME Class MC components (i.e., vent header column support pins))

- stainless steel in air/gas (supports for tube track, instrument tubing, non-ASME piping and components; clamps, etc.)
- stainless steel in treated water (supports for ASME Class MC components (i.e., vent header column support pins))

2.4.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.6 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.6 identified areas for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.4.6-1, dated September 28, 2005, the staff noted that after the "System Function Listing," the applicant referred to Sections 12.2.1.2 and 12.2.1.3 of the USAR for additional hangers and supports commodity group details. The staff's review of the USAR sections indicates that the SSCs are classified as Class I and Class II with definitions noticeably different from Criteria 1, 2, and 3 in 10 CFR 54.4(a); therefore, the staff requested that the applicant clarify how it reconciled the CLB classification in the system function listing in LRA Section 2.4.6.

In its response, dated October 28, 2005, the applicant stated that LRA Section 2.1.4.2 and the additional comment clarify how the CLB classification of SSCs was reconciled. LRA Section 2.1.4.2 states the following:

> Numerous sources, including the MNGP USAR, docketed correspondence with the NRC, Maintenance Rule documents, and DBDs provided system and structure-level function information. Documentation of references used in this process was included for each system function as appropriate.
>
> The process used at the MNGP identified all system-level and structure-level functions. If the functions met any of the criteria specified in 10 CFR Part 54.4(a)(1), (2), or (3), then the system or structure was in-scope for LR...

The applicant further stated that even though USAR Class I and II designations are significantly different from 10 CFR 54.4 designations, SSCs were still within the scope of license renewal, in accordance with the criteria in 10 CFR 54.4(a).

Based on its review, the staff found the applicant's response to RAI 2.4.6-1 acceptable. With the applicant's clarification, the staff recognized the methods used to reconcile SR SSCs and found the applicant's method of compliance with the requirements of 10 CFR 50.54 acceptable; therefore, the staff's concern described in RAI 2.4.6-1 is resolved.

In RAI 2.4.6-2, dated September 28, 2005, the staff noted that Table 2.4.6-1 line item "carbon steel, low-alloy steel in air/gas," identifies a number of supports/anchorages as ASME Class MC supports and some are identified as non-ASME support components; therefore, the staff requested that the applicant clarify the classification of component supports inside and outside the torus (some may be non-ASME) and specifically, the classification of the support system for the torus. The staff assumed that the torus support system is classified as Class MC supports and that all its components are inspected by the requirements of ASME Section XI, Subsection IWF. After reviewing LRA Table 3.5.2-6, it was not obvious how the applicant had treated these supports; therefore, the staff requested that the applicant provide clarifications.

In its response, by letter dated October 28, 2005, the applicant stated that the torus supports include torus columns, torus saddles, and torus seismic restraints and pointed out that LRA Table 3.5.2-6, page 3-675, indicates that these supports located on the outside of the torus are classified as ASME Class MC and will be managed by the ASME Section XI, Subsection IWF Program. For the remaining torus system support components, the applicant provided an abridged list extracted from Table 3.5.2-6 which provided classifications and locations of these supports.

Based on its review, the staff found the applicant's response to RAI 2.4.6-2 acceptable. The response asserted the staff's assumption that all torus supports on the outside of the torus are classified as Class MC supports and are inspected in accordance with the requirements of Section XI, Subsection IWF, of the ASME code. The applicant also clarified that either the Primary Containment In-Service Inspection Program (i.e., ASME Code Section XI, Subsection IWE) or ASME Code Section XI, Subsection NF provides aging management of the remaining supports. The staff considered the applicant's approach logical and acceptable; therefore, the staff's concern described in RAI 2.6.4-2 is resolved.

In RAI 2.4.6-3, dated September 28, 2005, the staff noted that Table 2.4.6-1 lists "Carbon steel, low-alloy steel in atmosphere/weather (bolted connections and anchorage)" as a component group and "Carbon steel, low-alloy steel in atmosphere/weather (bolted connections and support anchorage)" as another. The only difference between the two component groups is that one group lists "anchorage" and the other "support anchorage." Therefore, the staff requested that the applicant explain the difference between "anchorage" and "support anchorage" and provide examples of each.

In its response, by letter dated October 28, 2005, the applicant explained that the line entry in LRA Table 2.4.6-1 containing the word "anchorage" also could have included the word "support" before "anchorage" in the description to be consistent with similar entries. The word, "anchorage" alone, however, is sufficient to convey the intent. The applicant further explained that "anchorage" and "support anchorage" refer to components used to secure (i.e., anchor) the support to the concrete surface and include concrete anchors of various types and associated components like nuts and washers.

Based on its review, the staff found the applicant's response to RAI 2.4.6-3 acceptable because the applicant adequately explained that the two terms are defined the same and their intended functions are the same. Therefore, the staff's concern described in RAI 2.4.6-3 is resolved.

2.4.6.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the hangers and supports commodity group components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the hangers and supports commodity group components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.7 HPCI Building

2.4.7.1 Summary of Technical Information in the Application

In LRA Section 2.4.7, the applicant described the HPCI building. The principal functions of the HPCI building are to enclose the HPCI turbine and pumps and protect the equipment from weather, tornado, and seismic effects. The building is a Class 1 structure and is part of the secondary containment of the reactor building. The HPCI building is a reinforced concrete structure constructed monolithically with the reactor building. The structure is supported by a reinforced concrete mat which is an extension of the reactor building mat.

The HPCI building contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the HPCI building could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the HPCI building performs functions that support SBO.

The intended functions within the scope of license renewal include the following:

- provide flood protection barrier
- provide missile barrier
- provide structural support to NSR components (civil and structural)
- provide pressure boundary of essentially leaktight barrier (civil and structural)
- provide shielding against radiation
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components

In LRA Table 2.4.7-1, the applicant identified the following HPCI building component types that are within the scope of license renewal and subject to an AMR:

- aluminum in air/gas (platforms)
- carbon steel, low-alloy steel in air/gas (structural steel, steel embeds, etc.)

- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, etc.))
- carbon steel, low-alloy steel in atmosphere/weather (roof hatch)
- carbon steel, low-alloy steel in below grade (piping penetration seal plates)
- concrete in air/gas (foundation, walls, slab)
- concrete in air/gas (foundation, walls, slab, grout)
- concrete in atmosphere/weather (slab, roof hatch)
- concrete in below grade (foundation, walls)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (roof hatch seals)
- elastomer sealants (rubber, neoprene, silicone, etc.) in atmosphere/weather (roof hatch seals)

2.4.7.2 Staff Evaluation

The staff reviewed LRA Section 2.4.7 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.7.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the HPCI building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the HPCI building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.8 Intake Structure

2.4.8.1 Summary of Technical Information in the Application

In LRA Section 2.4.8, the applicant described the intake structure. The intake structure is basically a chambered box of reinforced concrete construction. Essentially, the intake structure consists of four 13-foot 8-inch bays with an invert at the intake end which converges to a two-

section suction chamber at the discharge end. A CWT pump is mounted over each suction chamber. The roof of the structure is approximately 4 feet 3 inches above grade and consists of reinforced concrete beam and slab framing. The intake structure contains an operating floor on which the EDG-ESW, ESW, and RHR service water subsystem pumps are mounted. Exterior and interior walls and slabs are constructed of reinforced concrete and provide support for the operating floor and roof framing. The structure is supported on a mat foundation 3 feet 6 inches in thickness that was placed on a lean concrete fill which overlays a layer of cemented sandstone. The intake structure also includes the access tunnel between the turbine building and the intake structure, as well as the diesel fire pump house which sits on top of the intake structure at the east end. The diesel fire pump house contains the diesel fire pump and the diesel fire pump day tank. The diesel fire pump house is constructed of concrete masonry block walls with an insulated steel deck roof supported by structural steel beams.

The intake structure contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the intake structure could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the intake structure performs functions that support FP.

The intended functions within the scope of license renewal include the following:

- provide source of cooling water for plant shutdown
- provide rated fire barrier
- provide flood protection barrier
- provide missile barrier
- provide structural support to NSR components (civil and structural)
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components

In LRA Table 2.4.8-1, the applicant identified the following intake structure component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (doors, structural steel, steel embeds, etc.)
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, etc.))
- carbon steel, low-alloy steel in atmosphere/weather (structural steel, sheet piles, ventilation assemblies)
- carbon steel, low-alloy steel in below grade (sheet piles)
- carbon steel, low-alloy steel in raw water (structural steel, sheet piles)
- carbon steel, low-alloy steel in raw water (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, etc.))
- concrete in air/gas (foundation, walls, slabs)
- concrete in air/gas (foundation, walls, slabs, grout)
- concrete in air/gas (walls, slabs)
- concrete in atmosphere/weather (intake structure and access tunnel roof slabs)

- concrete in atmosphere/weather (walls, slabs)
- concrete in below grade (foundation, walls, lean concrete)
- concrete in raw water (foundation, walls, slabs)
- masonry walls in air/gas
- masonry walls in atmosphere/weather

2.4.8.2 Staff Evaluation

The staff reviewed LRA Section 2.4.8 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.8.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the intake structure components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the intake structure components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.9 Miscellaneous SBO Yard Structures

2.4.9.1 Summary of Technical Information in the Application

In LRA Section 2.4.9, the applicant described the miscellaneous SBO yard structures. The miscellaneous SBO yard structures are those yard structures that provide support for equipment relied upon for recovery from an SBO. These structures are listed below:

- the foundations and transformer structures for 1R, 2R, 1AR, and 2RS transformers
- the 345-kV control house
- the towers/foundation for the 1N2, 1N6, 5N5, 5N7, 8N4, and 8N11 breakers
- the towers/foundations for the bus bars between the 2RS transformer and the 8N4 and 8N11 breakers, this includes the tower/foundation for the 3N4 breaker, 3N5 fused

disconnect, the current limiting protector, and the towers/foundations to the 1ARS motor-operated disconnect

- the towers/foundations for the bus bars for the 5N5 and 5N7 breakers, including the west four rows of columns and the beams that connect them together.
- the Trenwa trenches connecting the control house to the 115-kV ring bus
- the Trenwa trenches connecting the control house to the 345-kV ring bus
- the electrical duct bank from the 1N2 breaker to the 1AR transformer
- the tower/foundation for the bus 1, 115-kV potential transformer
- the three 115- kV transmission towers along the west owner-controlled area fence between the switchyard and the 1R transformer and the first transmission tower northwest of the plant
- the block walls surrounding the 1R and 2R transformers

The miscellaneous SBO yard structures perform functions that support SBO.

The intended function, within the scope of license renewal, is to provide structural support to NSR components (civil and structural).

In LRA Table 2.4.9-1, the applicant identified the following miscellaneous SBO yard structures component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (345-kV house structural steel)
- carbon steel, low-alloy steel in air/gas (supports for 345-kV house miscellaneous steel (i.e., members, welds, bolted connections, support anchorage))
- carbon steel, low-alloy steel in atmosphere/weather (anchorages)
- carbon steel, low-alloy steel in atmosphere/weather (structural steel for 345-kV house, switchyard, and transmission towers, etc.)
- concrete in air/gas (345-kV house concrete)
- concrete in atmosphere/weather (345-kV house concrete, foundations)
- concrete in atmosphere/weather (345-kV house, foundations, trenches, duct bank, grout)
- concrete in below grade (345-kV house, foundations, trenches, duct bank)
- masonry walls in atmosphere/weather

2.4.9.2 Staff Evaluation

The staff reviewed LRA Section 2.4.9 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.9.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the miscellaneous SBO yard structures components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the miscellaneous SBO yard structures components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.10 Offgas Stack

2.4.10.1 Summary of Technical Information in the Application

In LRA Section 2.4.10, the applicant described the offgas stack. The function of the offgas stack is to provide for controlled release and dispersal of gaseous radioactive wastes. The stack is a free-standing, tapered, reinforced concrete structure which encloses and supports an independent gas flue. The overall height of the stack above adjacent grade is 328 feet. The internal diameter of the concrete shell is 7 feet at the top and 32 feet at the 946-foot 6-inch elevation, with thickness varying from 7 inches at the top to 10 inches at the 946-foot 6-inch elevation. Below the 946-foot 6-inch elevation to the top of the foundation at the 932-foot 6-inch elevation, the stack shell is a polygon having a maximum inscribed diameter of 34 feet. The wall thickness varies in accordance with radiation shielding requirements. The stack shell is supported on a 4-foot-thick octagonal spread footing with a 1-foot 6-inch pedestal. The independent gas flue is 18 inches in diameter reducing to 14 inches in diameter at the top.

The offgas stack contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the offgas stack could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended functions within the scope of license renewal include the following:

- provide flood protection barrier
- provide path for release of filtered and unfiltered gaseous discharge
- provide structural support to NSR components (civil and structural)
- provide shielding against radiation
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components

In LRA Table 2.4.10-1, the applicant identified the following offgas stack component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (structural steel, steel embeds, etc.)
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, etc.))
- carbon steel, low-alloy steel in atmosphere/weather (doors)
- concrete in air/gas (pedestal, walls, slabs)
- concrete in air/gas (pedestal, walls, slabs, grout)
- concrete in atmosphere/weather (pedestal, walls)
- concrete in below grade (pedestal)
- masonry walls in air/gas
- stainless steel in air/gas (cap)
- stainless steel in atmosphere/weather (cap)

2.4.10.2 Staff Evaluation

The staff reviewed LRA Section 2.4.10 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.10.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the offgas stack components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the offgas stack components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.11 Offgas Storage and Compressor Building

2.4.11.1 Summary of Technical Information in the Application

In LRA Section 2.4.11, the applicant described the offgas storage and compressor building. The offgas storage building, except for the fan and foyer room portions, was designed for Class 1 seismic conditions and flood conditions, as well as for tornado wind loads and missiles. The only portion of the offgas storage system which currently has seismic design requirements are the storage tanks and the attached piping up to the first isolation valve. The building meets all Federal, State, and local codes applicable to industrial process buildings. The building is constructed of reinforced concrete on a suitable foundation and is situated near the base of the offgas stack. The fan and foyer room portions of the offgas storage building provide Class 1-level protection for all external events in which the enclosed equipment is required to perform an SR function. This includes Class 1 dead, live (snow and floor), and wind loads. It does not include seismic or tornado loads or tornado-generated missiles.

The offgas storage and compressor building contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the offgas storage and compressor building could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended functions within the scope of license renewal include the following:

- provide structural support to NSR components (civil and structural)
- provide structural support to SR components (civil and structural)

In LRA Table 2.4.11-1, the applicant identified the following offgas storage and compressor building component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (structural steel)
- concrete in air/gas (foundation, walls, slabs)
- concrete in air/gas (foundation, walls, slabs, grout)
- concrete in atmosphere/weather (walls, slabs)
- concrete in below grade (foundation, walls)

2.4.11.2 Staff Evaluation

The staff reviewed LRA Section 2.4.11 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.11.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the offgas storage and compressor building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the offgas storage and compressor building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.12 Plant Control and Cable Spreading Structure

2.4.12.1 Summary of Technical Information in the Application

In LRA Section 2.4.12, the applicant described the plant control and cable spreading structure. The primary functions of this structure are to provide, under all operating or postulated accident conditions, safe enclosure for those portions of the standby electrical power systems and I&C systems vital to overall plant operation and safety which are located therein, as well as an environment satisfactory for continuous occupancy by operating personnel. The plant control and cable spreading structure is located at the north end of the original office and control building and includes the MCR, cable spreading room, and battery room. The administration building is located adjacent to the east side of the original office and control building. The original office and control building, as well as the administration building, constitute the plant control and cable spreading structure. The administration building provides a records storage area to meet the requirements of American National Standards Institute (ANSI) N45.2.9, training space, lockers and restroom facilities, an instrument shop, library space, a meeting room, shift supervisor's office, open office space, and private offices. Modifications to the shift supervisor's office have been made so that the office is part of the MCR for the purpose of meeting the NRC's requirement for the presence of a senior licensed operator in the control room at all times. The shift supervisor's office is located immediately adjacent to the MCR, but outside the previously defined control room boundary.

The plant control and cable spreading structure contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the plant control and cable spreading structure could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the plant control and cable spreading structure performs functions that support FP, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provide rated fire barrier
- provide flood protection barrier
- provide missile barrier
- provide structural support to NSR components (civil and structural)
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components

In LRA Table 2.4.12-1, the applicant identified the following plant control and cable spreading structure component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (fire-rated doors)
- carbon steel, low-alloy steel in air/gas (structural steel, steel embeds, etc.)
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, etc.))
- concrete in air/gas (foundation, walls, slabs)
- concrete in air/gas (foundation, walls, slabs, grout)
- concrete in air/gas (walls, slabs)
- concrete in atmosphere/weather (walls, slabs)
- concrete in below grade (foundation, walls)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (control room seals)
- masonry walls in air/gas

2.4.12.2 Staff Evaluation

The staff reviewed LRA Section 2.4.12 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.12.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant had adequately identified the plant control and cable spreading structure components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the plant control and cable spreading structure components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.13 Primary Containment

2.4.13.1 Summary of Technical Information in the Application

In LRA Section 2.4.13, the applicant described the primary containment (PCT) system. The PCT system includes the drywell, the wetwell (torus), the primary containment penetrations, the bioshield wall, the RPV support pedestal, the drywell/torus internal platforms, and the torus external catwalk. The mechanical portion of the primary containment system is included in the PCM system. The PCT system provides a barrier to the release of fission products to the SCT and rapidly reduces the pressure in primary containment after a LOCA. The system consists of a light-bulb-shaped drywell, a torus-shaped wetwell, and a connecting vent system between the drywell and the wetwell. The system encloses the reactor vessel, the reactor coolant recirculation loops, and various branch connections of the reactor primary system. The drywell is a steel pressure vessel with a spherical lower portion and a cylindrical upper portion. The personnel airlock provides an entrance to the drywell measuring 6 feet by 2.5 feet. The wetwell is a steel pressure vessel in the shape of a torus located below and encircling the drywell. Penetrations through the drywell and wetwell walls provide for passage of fluid piping and electrical cables. These penetrations are designed to withstand environmental conditions present during a LOCA and to maintain primary containment integrity for extended periods of time in a post-accident environment. Piping penetrations consist of pipe segments welded into structurally enhanced containment shell plates. Piping penetrations are of two general types—sleeved, those for which the process flow is not in contact with the original penetration pipe segments, and unsleeved, those for which the process flow is in contact with the original penetration pipe segments.

The PCT system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the PCT system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the PCT system performs functions that support FP, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provide source of cooling water for plant shutdown
- provide flood protection barrier
- provide heat sink during DBAs
- provide shielding against HELBs
- provide missile barrier
- provide structural support to NSR components (civil and structural)
- provide pressure boundary of essentially leaktight barrier (civil and structural)
- provide shielding against radiation
- provide structural support to SR components (civil and structural)
- provide pipe whip restraint

In LRA Table 2.4.13-1, the applicant identified the following PCT system component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (drywell penetration sleeves, drywell penetration bellows assemblies, drywell penetrations, torus penetrations)

- carbon steel, low-alloy steel in air/gas (drywell, torus, drywell head, drywell head bolts, torus ring girder, downcomers, vent lines, vent header, bellows assemblies, vent header deflectors, ECCS suction header)
- carbon steel, low-alloy steel in air/gas (personnel airlock, equipment hatch, CRD hatch, seismic restraint, inspection ports)
- carbon steel, low-alloy steel in air/gas (personnel airlock, equipment hatch, CRD hatch, seismic restraint, inspection ports, including locks, hinges, and closure mechanisms)
- carbon steel, low-alloy steel in air/gas (structural steel (i.e., torus external catwalk, drywell interior platforms, bioshield wall liners, etc.))
- carbon steel, low-alloy steel in air/gas (structural steel inside torus (i.e., torus internal catwalk, etc.))
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures, including platforms, stairs, and whip restraints, etc. (i.e., members, welds, bolted connections, support anchorage to building structure))
- carbon steel, low-alloy steel embedded in concrete (drywell support skirt, embedded shell)
- carbon steel, low-alloy steel in treated water (structural steel)
- carbon steel, low-alloy steel in treated water (support members, welds, bolted connections (i.e., torus internal catwalk support columns))
- carbon steel, low-alloy steel in treated water (torus penetrations)
- carbon steel, low-alloy steel in treated water (torus, torus ring girder, downcomers, ECCS suction header)
- carbon steel, low-alloy steel, stainless steel in air/gas (drywell penetration sleeves, drywell penetrations)
- concrete in air/gas (bioshield wall, drywell equipment foundation, RPV pedestal)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (moisture barriers)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (seals and gaskets)
- inconel in air/gas (drywell penetration X-16B bellows)
- lubrite in air/gas (drywell head, downcomers)
- lubrite in air/gas (drywell interior platform sliding plates)
- lubrite in treated water (downcomers)
- stainless steel in air/gas (drywell penetration sleeves, drywell penetration bellows)
- stainless steel in air/gas (RPV to drywell refueling seal)
- stainless steel in air/gas (vent line bellows)
- stainless steel in treated water (thermowells)

2.4.13.2 Staff Evaluation

The staff reviewed LRA Section 2.4.13 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.13 identified areas for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.4.13-1, dated September 28, 2005, the staff requested that the applicant clarify whether the supports and components included in Code PCT-04 of the system function listing are within the scope of license renewal. The staff requested that the applicant provide a summary listing of these supports and components and a confirmation that their failure under earthquake-induced loads would not affect the functioning of SR SSCs.

In its response, by letter dated October 28, 2005, the applicant explained the following:

> System function Primary Containment (PCT)-04 referred only to non-safety related components that could not affect safety related SSCs. Components associated with this function are not in scope of license renewal. The function for non-safety related components that could affect safety related components is Primary Containment-Non-Safety Affecting Safety (PCT-NSAS), evaluated on page 2-225 of the LRA. Functions associated with component supports are further addressed in Section 2.4.6, 'Hangers and Supports Commodity Group.' The PCT-04 function was evaluated against the criteria of 10 CFR 54.4(a) and found not to meet any of its requirements. Consequently, the function was provided for information and completeness only, since it did not form a basis for including the primary containment structure within the scope of the Rule. This scoping methodology was consistently used through Section 2 of the LRA.

Based on its review, the staff found the applicant's response to RAI 2.4.13-1 acceptable. The clarification asserts that the components included in the PCT-04 group are not SR and would not affect the integrity of SR SSCs under postulated seismic events; therefore, the staff's concern described in RAI 2.4.13-1 is resolved.

In RAI 2.4.13-2, dated September 28, 2005, the staff noted that the second and third component groups in Table 2.4.13-1 list almost identical components (drywell, torus, drywell head, drywell head bolts, torus ring girder, downcomers, vent lines, vent header, bellows assembly, ECCS suction header) with the same material-environment combination (carbon steel/low-alloy steel in air/gas) and intended functions. A similar redundancy was noted on the

first two component groups on page 2-257 (personnel airlock, equipment hatch, CRD hatch, seismic restraint, and inspection ports). Therefore, the staff requested that the applicant clarify these redundancies.

In its response, by letter dated October 28, 2005, the applicant stated the following:

> To explain the apparent redundancies between components, first an explanation of how Table 2.4.13-1 was assembled is needed to explain the apparent redundancies between components. Tables in Section 2.4 of the LRA were assembled by copying the component group and intended functions for each 3.5.2-x Table line entry into the 2.4.x-1 Table. This format was consistently used throughout the LRA. Many line entry component group descriptions appear similar but there are subtle differences that are evident upon review of the 3.5.2-x Table AMP, aging effects/mechanisms, material, etc.
>
> For this specific question, Table 2.4.13-1 component groups, 'carbon steel, low alloy steel in air/gas (drywell, torus, drywell head, drywell head bolts, torus ring girder, downcomers, vent lines, vent header, bellows assemblies, ECCS suction header)' and 'carbon steel, low alloy steel in air/gas (drywell, torus, drywell head, drywell head bolts, torus ring girder, downcomers, vent lines, vent header, bellows assemblies, vent header deflectors, ECCS suction header)' have different component group descriptions (one component group includes vent header deflectors and the other does not). Review of Table 3.5.2-13 reveals that the component group without vent header deflectors is managed by 10 CFR 50, Appendix J while the group with vent header deflectors is managed by the Primary Containment In-Service Inspection Program. This is because the vent header deflectors do not perform a pressure retaining function associated with an Appendix J test.
>
> For part two of this question, Table 2.4.13-1 component groups, 'carbon steel, low alloy steel in air/gas (personnel airlock, equipment hatch, [Control Rod Drive] CRD hatch, seismic restraint inspection ports)' and 'carbon steel, low alloy steel in air/gas (personnel airlock, equipment hatch, CRD hatch, seismic restraint inspection ports, including locks, hinges and closure mechanisms)' have different component group descriptions. Review of Table 3.5.2-13 reveals that the component group with locks, hinges, and closure mechanisms is managed for a different aging effect, 'loss of leak tightness in closed position' in accordance with NUREG-1801 line item II.B4.2-b.

Based on its review, the staff found the applicant's response to RAI 2.4.13-2 acceptable. The purpose of scoping is to ensure that all SSCs that are within the scope of license renewal pursuant to 10 CFR 54.4 first be identified clearly and then, while performing an AMR, the applicant identifies the relevant material and environment. In this application, the applicant used the reverse method; however, the explanation ensures that the applicant has not missed any important SSCs from the scope of license renewal. After reviewing the applicant's approach, the staff understood the reason for the redundancies and found the approach acceptable; therefore, the staff's concern described in RAI 2.4.13-2 is resolved.

In RAI 2.4.13-3, dated September 28, 2005, the staff also noted that Table 2.4.13-1 lists the component group, "lubrite in air/gas," with the drywell head included as a component. In the description of drywell head, the applicant stated, "The head is held in place by bolts and sealed with a double gasket arrangement." Therefore, the staff requested that the applicant clarify where the lubrite bearings are used in the drywell head.

In its response, by letter dated October 28, 2005, the applicant provided the following information:

> Lubrite type material is not used for the drywell head or downcomers. Table 2.4.13-1, page 2-260 included this component group, 'lubrite in air/gas (drywell head and downcomers)' because tables in Section 2.4 of the LRA were assembled by copying the component group and intended functions for each Table 3.5.2-13 line entry into Table 2.4.13-1. Table 3.5.2-13 included this entry to demonstrate that NUREG-1801 line item II.B1.1.1-e was evaluated for applicability. The evaluation provided in Table 3.5.2-13 stated that, 'The drywell head and downcomer pipes are carbon steel material. Graphite plate material is not used for these components and therefore the aging effect is not applicable' (see LRA note 556). Therefore the description of the drywell head in the LRA, page 2-251 is consistent with note 556 in Table 3.5.2-13.

Based on its review, the staff found the applicant's response to RAI 2.4.13-3 acceptable. The staff found that the applicant's approach covers all the components subject to AMR; therefore, the staff's concern described in RAI 2.4.13-3 is resolved.

2.4.13.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the PCT system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the PCT system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.14 Radioactive Waste Building

2.4.14.1 Summary of Technical Information in the Application

In LRA Section 2.4.14, the applicant described the radioactive waste building. The radioactive waste building is located adjacent to the south side of the reactor building. The building is used for storage of contaminated materials, such as spent ion exchange resins, filters, anti-C clothing, and contaminated materials. The railroad car airlock and the airlock between the reactor building and the radioactive waste building are part of secondary containment. The radioactive waste building is a reinforced concrete structure supported on a concrete slab. The radioactive waste building was designed such that it would not fail during an earthquake. It is also designed to protect the reactor building from external floods.

The radioactive waste building contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the radioactive waste building could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal.

The intended functions within the scope of license renewal include the following:

- provide flood protection barrier
- provide shielding against HELBs
- provide structural support to NSR components (civil and structural)
- provide pressure boundary of essentially leaktight barrier (civil and structural)
- provide shielding against radiation
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components

In LRA Table 2.4.14-1, the applicant identified the following radioactive waste building component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (air lock and railroad doors)
- carbon steel, low-alloy steel in air/gas (structural steel)
- carbon steel, low-alloy steel in atmosphere/weather (railroad door)
- concrete in air/gas (foundation, walls, slabs)
- concrete in air/gas (foundation, walls, slabs, grout)
- concrete in atmosphere/weather (walls, slabs)
- concrete in below grade (foundation, walls)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (secondary containment seals)
- elastomer sealants (rubber, neoprene, silicone, etc.) in atmosphere/weather (secondary containment seals)
- glass in air/gas (railroad bay door view port)
- glass in atmosphere/weather (railroad bay door view port)
- masonry walls in air/gas
- roofing in atmosphere/weather (railroad bay built-up roofing)

2.4.14.2 Staff Evaluation

The staff reviewed LRA Section 2.4.14 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended

functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.14.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the radioactive waste building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the radioactive waste building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.15 Reactor Building

2.4.15.1 Summary of Technical Information in the Application

In LRA Section 2.4.15, the applicant described the reactor building. The principal functions of the reactor building are to support and protect enclosed systems and components and to provide secondary containment limiting the offsite radiological consequences of accidents. The building provides necessary space for the equipment in a planned arrangement and provides for layout space for the equipment to be removed and replaced if necessary. Reactor internals and fuel can be moved and conveniently stored within the building. The reactor building serves as the secondary containment. The secondary containment, in conjunction with other engineered safeguards and nuclear safety systems, limits the release of radioactive materials from a postulated DBA. The reactor building also provides secondary containment when the primary containment is in service and provides primary containment during reactor refueling and maintenance operations when the primary containment system is open. A major substructure within the reactor building is a reinforced concrete biological shield that surrounds the reactor and drywell portion of the primary containment.

The reactor building contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the reactor building could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the reactor building performs functions that support FP, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provide shielding against neutron radiation
- provide rated fire barrier
- provide flood protection barrier
- provide shielding against HELBs
- provide missile barrier
- provide structural support to NSR components (civil and structural)
- provide pressure boundary of essentially leaktight barrier (civil and structural)

- provide shielding against radiation
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components
- provide pipe whip restraint

In LRA Table 2.4.15-1, the applicant identified the following reactor building component types that are within the scope of license renewal and subject to an AMR:

- aluminum in air/gas (new fuel storage racks)
- aluminum in air/gas (siding)
- aluminum in atmosphere/weather (siding, ventilation assemblies)
- aluminum in treated water (spent fuel storage racks)
- boral in treated water (spent fuel storage racks neutron-absorbing sheets)
- carbon steel, low-alloy steel in air/gas (drywell to reactor building refueling seal plates)
- carbon steel, low-alloy steel in air/gas (fire-rated doors)
- carbon steel, low-alloy steel in air/gas (fire-rated, HELB, and secondary containment doors)
- carbon steel, low-alloy steel in air/gas (structural steel, steel embeds, blowout panels, etc.)
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, whip restraints, masonry wall supports, etc.))
- carbon steel, low-alloy steel in atmosphere/weather (structural steel, ventilation assemblies)
- carbon steel, low-alloy steel in treated water (drywell to reactor building refueling seal plates)
- concrete in air/gas (foundation, walls, slabs)
- concrete in air/gas (foundation, walls, slabs, grout)
- concrete in air/gas (walls, slabs)
- concrete in atmosphere/weather (walls, slabs)
- concrete in below grade (foundation, walls)
- elastomer sealants (rubber, neoprene, silicone, etc.) in air/gas (secondary containment seals, spent fuel pool gate seals, and hatch seals)
- elastomer sealants (rubber, neoprene, silicone, etc.) in atmosphere/weather (secondary containment seals)
- elastomer sealants (rubber, neoprene, silicone, etc.) in treated water (spent fuel pool gate seals)
- glass in air/gas (railroad door view port)

- masonry walls in air/gas
- nonmetallic fireproofing in air/gas (gypsum board walls)
- roofing in atmosphere/weather
- stainless steel in air/gas (metal siding screws, upper portion of spent fuel pool, dryer/separator storage pool, reactor well liners, and drywell to reactor building refueling seal bellows)
- stainless steel in atmosphere/weather (metal siding screws)
- stainless steel in treated water (dryer/separator storage pool and reactor well liners)
- stainless steel in treated water (drywell to reactor building refueling seal bellows)
- stainless steel in treated water (spent fuel pool, dryer/separator storage pool, and reactor well liners)
- stainless steel in treated water (spent fuel pool liner)
- stainless steel in treated water (spent fuel storage racks)

2.4.15.2 Staff Evaluation

The staff reviewed LRA Section 2.4.15 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.15.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the reactor building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the reactor building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.16 Structures Affecting Safety

2.4.16.1 Summary of Technical Information in the Application

In LRA Section 2.4.16, the applicant described the structures affecting safety system. The structures affecting safety system pertains to plant structures that perform no safety function or regulated event function (except for the heating boiler building), but could, under certain failure scenarios, adversely affect buildings or equipment having such functions. These structures are listed below:

- The heating boiler building is located along the east side of the turbine building. The heating boiler building is a structural steel frame building with insulated metal siding and a steel deck roof. The structural steel columns sit on a reinforced concrete footing. The foundation walls are also of reinforced concrete. The floor consists of a reinforced concrete slab on grade.
- The non-1E electrical equipment room is located just east of the turbine building. The structure contains transformers and switchgear for NSR portions of the 480-VAC power system. In addition, the NSR No. 17 250-VDC battery is located in the non-1E electrical equipment room.
- The hot machine shop is located along side the turbine building at the east end of the north wall. The hot machine shop is a structural steel frame building with insulated metal siding with a steel deck roof. The structural steel columns sit on a reinforced concrete footing. The foundation walls are also of reinforced concrete. The floor consists of a reinforced concrete slab on grade.
- The turbine building addition is a Class 2 structure and does not contain any Class 1 equipment. The structure was designed in accordance with the uniform building code. The primary function of the turbine building addition is to provide a controlled environment for the condenser retubing effort.
- The recombiner building is a reinforced concrete structure utilizing heavy shear walls as a lateral force-resisting system resting on a mat foundation. The building consists of two equipment bays, a shielded tunnel which houses the interconnecting piping, an instrument room, and a pump room. There is also an enclosed walkway and access areas constructed of structural steel with insulated metal siding and insulated builtup roofing.
- A radwaste storage building is provided for the solid radwaste truck-loading area. This sheet metal building is provided with shield walls, floor drains, heating, and FP systems. An overhead crane is located in the building. The building is designed to enclose the radwaste shipping truck and to facilitate loading of the truck.

The failure of NSR SSCs in the structures affecting safety system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. The structures affecting safety system also performs functions that support FP.

The intended functions within the scope of license renewal include the following:

- provide rated fire barrier

- provide structural support to NSR components (civil and structural)

In LRA Table 2.4.16-1, the applicant identified the following structures affecting safety system component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (fire-rated doors)
- carbon steel, low-alloy steel in air/gas (structural steel)
- concrete in air/gas (foundations, walls, slabs)
- concrete in air/gas (foundations, walls, slabs, grout)
- concrete in atmosphere/weather (foundations, walls, slabs)
- concrete in below grade (foundations, walls)

2.4.16.2 Staff Evaluation

The staff reviewed LRA Section 2.4.16 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.16.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the structures affecting safety system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the structures affecting safety system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.17 Turbine Building

2.4.17.1 Summary of Technical Information in the Application

In LRA Section 2.4.17, the applicant described the turbine building (TGB). The TGB is a Class 2 structure; however, the portions that support and protect electrical controls and instrumentation for Class 1 equipment were designed in accordance with the criteria for the design of portions of Class 2 structures enclosing and/or supporting Class 1 equipment. The primary function of the TGB is to provide the necessary environment required for safe operation and maintenance of the turbine generator and other components of the power conversion system. The TGB is a combination of reinforced concrete and structural steel construction. The

foundation is a reinforced concrete mat of variable thickness supported on undisturbed soil. The foundation supports the reinforced concrete turbine generator pedestal, as well as the building superstructure. The reinforced concrete portion of the superstructure extends from the top of the mat foundation to the turbine deck. Structural steel beam and girded framing support the reinforced concrete floor slabs. Interior reinforced concrete walls extending from the top of the mat up to the operating floor are oriented to protect personnel against radiation emanating from the turbine and auxiliary systems. A structural steel-framed superstructure is based at the turbine deck on reinforced concrete columns located within the exterior walls. The superstructure encloses the operating floor and also provides support and closure for a traveling bridge crane. A 5-ply tar and felt insulated roof is supported by a metal roof deck which also acts as a diaphragm to transmit lateral forces to vertically braced end walls or shear frames.

The TGB contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the TGB could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the TGB performs functions that support FP, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provide rated fire barrier
- provide flood protection barrier
- provide shielding against HELBs
- provide missile barrier
- provide structural support to NSR components (civil and structural)
- provide shielding against radiation
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components
- provide pipe whip restraint

In LRA Table 2.4.17-1, the applicant identified the following TGB component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (fire-rated doors)
- carbon steel, low-alloy steel in air/gas (structural steel, steel embeds, doors, etc.)
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, whip restraints, masonry wall supports, etc.))
- carbon steel, low-alloy steel in atmosphere/weather (doors)
- concrete in air/gas (foundation, walls, slabs)
- concrete in air/gas (foundation, walls, slabs, grout)
- concrete in air/gas (walls, slabs)
- concrete in atmosphere/weather (walls near recombiner building)
- concrete in atmosphere/weather (walls, slabs)

- concrete in below grade (foundation, walls)
- masonry walls in air/gas
- nonmetallic fireproofing in air/gas (cementitious fireproofing, pyrocrete walls)
- nonmetallic fireproofing in air/gas (gypsum board walls)

2.4.17.2 Staff Evaluation

The staff reviewed LRA Section 2.4.17 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.17 identified an area for which it needed additional information to complete its evaluation of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.4.17-1, dated September 28, 2005, the staff noted that Table 2.4.17-1 lists "Carbon steel, low-alloy steel in air/gas (fire rated doors)" as a component group with the intended function being fire barrier, and "Carbon steel, low-alloy steel in air/gas (...doors,...)" as another component group with one of the intended functions also being fire barrier. Therefore, the staff requested that the applicant explain the difference between the doors listed in the two component groups.

In its response, by letter dated October 28, 2005, the applicant provided the following response:

> Table 2.4.17-1 component group, 'carbon steel, low alloy steel in air/gas (fire rated doors)' refers to doors that provide a fire barrier intended function and are managed for aging by the Fire Protection Program. Table 2.4.17-1 component group, 'carbon steel, low alloy steel in air/gas (structural steel, steel embeds, doors, etc.)' refers to those doors that were assigned a fire barrier function as discussed above, but also perform at least one other intended function such as high energy line break (HELB) barrier and/or flood barrier. Consequently doors with a fire barrier intended function that also perform additional functions are managed by the Structures Monitoring Program in addition to the Fire Protection Program in accordance with NUREG-1801.

Based on its review, the staff found the applicant's response to RAI 2.4.17-1 acceptable, because the applicant adequately explained that the doors have different intended functions. Therefore, the staff's concern described in RAI 2.4.17-1 is resolved.

2.4.17.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the TGB components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the TGB components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.18 Underground Duct Bank

2.4.18.1 Summary of Technical Information in the Application

In LRA Section 2.4.18, the applicant described the underground duct bank. The underground duct bank runs between the third floor of the EFT building and the reactor building. The primary function of the duct bank is to carry Division 2 safe-shutdown cables outside of areas where fire damage could occur. The duct bank includes risers at each end with an underground section in between. The underground portion of the duct bank is 700 feet in length and is rectangular in cross section. It is constructed of reinforced concrete and contains sixteen 4-inch diameter raceways. Access to the duct bank is provided by four reinforced concrete manholes. Seismic joints occur at the manhole to duct bank interface and the riser to duct bank interface.

The underground duct bank contains SR components that are relied upon to remain functional during and following DBEs. In addition, the underground duct bank performs functions that support FP and SBO.

The intended functions within the scope of license renewal include the following:

- provide flood protection barrier
- provide structural support to NSR components (civil and structural)
- provide structural support to SR components (civil and structural)
- provide shelter/protection to SR components

In LRA Table 2.4.18-1, the applicant identified the following underground duct bank component types that are within the scope of license renewal and subject to an AMR:

- carbon steel, low-alloy steel in air/gas (structural steel, steel embeds, etc.)
- carbon steel, low-alloy steel in air/gas (supports for miscellaneous structures (i.e., members, welds, bolted connections, support anchorage for platforms, stairs, etc.))
- carbon steel, low-alloy steel in atmosphere/weather (manhole covers/supports)
- carbon steel, low-alloy steel in below grade (manhole covers/supports)
- concrete in air/gas (foundation, walls, slabs)
- concrete in atmosphere/weather (walls, slabs)

- concrete in below grade (foundation, walls, slabs, grout)

2.4.18.2 Staff Evaluation

The staff reviewed LRA Section 2.4.18 and the USAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

In conducting its review, the staff evaluated the structural component functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4.18.3 Conclusion

The staff reviewed the LRA and related structural components to determine whether the applicant had failed to identify any SSCs that should be within the scope of license renewal. No omissions were identified. In addition, the staff performed a review to determine whether the applicant had failed to identify any components that should be subject to an AMR. No omissions were identified. On the basis of its review, the staff concluded that the applicant adequately identified the underground duct bank components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the underground duct bank components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5 Scoping and Screening Results: Electrical and Instrumentation and Controls

This section documents the staff's review of the applicant's scoping and screening results for electrical and I&C systems. Specifically, this section discusses the following:

- electrical and I&C systems
- electrical commodities

In accordance with the requirements of 10 CFR 54.21(a)(1), the applicant must identify and list passive, long-lived SCs that are within the scope of license renewal and subject to an AMR. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results. This approach allowed the staff to confirm that there were no omissions of electrical and I&C system components that meet the scoping criteria and are subject to an AMR.

Staff Evaluation Methodology. The staff performed its evaluation of the information in the LRA in the same manner for all electrical and I&C systems. The objective of the review was to determine whether the applicant had identified the components and supporting structures for a specific electrical and I&C system, that appeared to meet the scoping criteria specified in the Rule, as within the scope of license renewal, in accordance with 10 CFR 54.4. Similarly, the

staff evaluated the applicant's screening results to verify that all long-lived, passive components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

Scoping. To perform its evaluation, the staff reviewed the applicable LRA section and associated component drawings, focusing its review on components that had not been identified as within the scope of license renewal. The staff reviewed relevant licensing-basis documents, including the USAR, for each electrical and I&C system component to determine whether the applicant had omitted components with intended functions delineated under 10 CFR 54.4(a) from the scope of license renewal. The staff also reviewed the licensing-basis documents to determine whether the LRA specified all intended functions delineated under 10 CFR 54.4(a). If omissions were identified, the staff requested additional information to resolve the discrepancies.

Screening. Once the staff completed its review of the scoping results, the staff evaluated the applicant's screening results. For those systems and components with intended functions, the staff sought to determine (1) if the functions are performed with moving parts or a change in configuration or properties or (2) if they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1). For those electrical and I&C systems and components that did not meet either of these criteria, the staff sought to confirm that they were subject to an AMR, as required by 10 CFR 54.21(a)(1). If discrepancies were identified, the staff requested additional information to resolve them.

2.5.1 Electrical and Instrumentation and Controls Systems

In LRA Section 2.5.1, the applicant identified the SCs of the electrical and I&C systems that are subject to an AMR for license renewal.

The applicant described the supporting SCs of the electrical and I&C systems in the following sections of the LRA:

- 2.5.1.1 480-V station auxiliary system
- 2.5.1.2 4.16-kV station auxiliary
- 2.5.1.3 alternate shutdown
- 2.5.1.4 annunciators
- 2.5.1.5 communications
- 2.5.1.6 DC battery
- 2.5.1.7 lighting
- 2.5.1.8 neutron monitoring
- 2.5.1.9 offsite power
- 2.5.1.10 plant protection
- 2.5.1.11 radiation monitoring
- 2.5.1.12 reactor level control (RLC)
- 2.5.1.13 uninterruptible AC

SER Sections 2.5.1.1–2.5.1.13 present the staff's review findings regarding LRA Sections 2.5.1.1–2.5.1.13, respectively.

2.5.1.1 480-V Station Auxiliary

2.5.1.1.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.1, the applicant described the 480-V station auxiliary system. The 480-V station auxiliary system consists of transformers, breakers, load centers, and MCCs. Power is typically supplied to motors less than 250 horsepower (HP) and lighting transformers. The system receives power from the 4.16-kV station auxiliary system through load center transformers. It distributes power through load center buses and MCCs.

The 480-V station auxiliary system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the 480-V station auxiliary system could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. In addition, the 480-V station auxiliary system performs functions that support FP, ATWS, and SBO.

The applicant identified the 480-V station auxiliary system SCs that are within the scope of license renewal. LRA Section 2.5.2 evaluates electrical commodities for this system that are subject to AMR. LRA Section 2.4.6 evaluates supports for electrical components.

2.5.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.1 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.5.1.1 identified an area for which it needed additional information to complete its evaluation of the applicant's results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.5.1-1, the staff noted that LRA Section 2.5.1.1, under the system function listing 480-V station auxiliary, states that MCCs 132, 133A, and 142A are credited with supporting an ATWS event; however, license renewal drawing LR-36298, does not include MCC 132 as within the scope of license renewal; therefore, the staff requested that the applicant resolve the discrepancy.

In its response, by letter dated September 16, 2005, the applicant provided the following response:

> MCC 132 Breaker B3230 supplies power to the tank heater for Standby Liquid Control (SLC) Tank T-200. The SLC System mitigates an ATWS event. The

drawing is in error. Drawing LR-36298 will be revised to show MCC 132 as being within the scope of License Renewal.

Based on its review, the staff found the applicant's response to RAI 2.5.1-1 acceptable because the applicant will revise its boundary drawing to indicate MCC 132 as being within the scope of license renewal. Therefore, the staff's concern described in RAI 2.5.1-1 is resolved.

During the scoping inspection, the inspectors identified discrepancies between the scoping and screening report and license renewal drawing LR-36298. Specifically, the license renewal classification of breakers fed from several 480-V load centers was not consistent with the license renewal scoping and screening document. The applicant also identified several other load center cubicles which were not previously shown as being within the scope of license renewal, but which should have been included. The applicant determined that the additional components brought into scope of license renewal were all active components, and therefore, screened out and did not require aging management. On the basis of its review, the staff concluded that the breakers are active components, and therefore not subject to an AMR.

2.5.1.1.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the 480-V station auxiliary system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the 480-V station auxiliary system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.2 4.16-kV Station Auxiliary

2.5.1.2.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.2, the applicant described the 4.16-kV station auxiliary system. All station power is supplied from the 4.16-kV station auxiliary system (4 kV) through distribution buses to various motors and stepdown transformers. The 4.16-kV system is a three-phase, grounded neutral distribution system. The system uses eight 4.16-kV bus sections, each housed in metal clad assemblies. Six buses, 11, 12, 13, 14, 15, and 16, are located in the turbine building. Buses 17 and 18 are located at the discharge structure to serve the cooling tower pumps. The plant's 4.16-kV buses may be supplied from either of two sources. The normal source is the 2R transformer supplied from the 345-kV substation. The alternate source is the 1R transformer supplied from the 115-kV substation. Protective relaying, if activated, deenergizes the 2R transformer and initiates an open circuit transfer to the 1R transformer. Air circuit breakers (ACBs) connect sources and loads to the buses. Two 125-V station batteries supply control power to control the opening and closing of the plant breakers in the 4.16-kV system.

The 4.16-kV station auxiliary system contains SR components that are relied upon to remain functional during and following DBEs. In addition, the 4.16-kV station auxiliary system performs functions that support FP, ATWS, and SBO.

The applicant identified the 4.16-kV station auxiliary system component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.2.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.2 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.2.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the 4.16-kV station auxiliary system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the 4.16-kV station auxiliary system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.3 Alternate Shutdown

2.5.1.3.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.3, the applicant described the ASD system, which is designed to provide alternative shutdown capability, as required by 10 CFR 50.48 and Appendix R to 10 CFR Part 50. This system assures safe shutdown in the event of a fire in the control room, cable spreading room, or both. The ASD system performs the above by providing for a remote centralized location at which existing plant systems can be manually controlled. The system uses existing Division II systems and equipment. The ASD control panel is located on the third floor of the emergency filtration building. This area is adjacent to the turbine building and the control room.

The ASD system contains SR components that are relied upon to remain functional during and following DBEs. In addition, the ASD system performs functions that support FP and SBO.

The applicant identified the ASD system component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.3.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.3 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had

not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.3.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the ASD system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the ASD system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.4 Annunciators

2.5.1.4.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.4, the applicant described the plant annunciators. The plant annunciators consist of MCC panels and local panels for selected systems and associated plant instrumentation. They alert operators to off-normal conditions for monitored variables.

The failure of NSR SCs in the plant annunciators could potentially prevent the satisfactory accomplishment of an SR function of SSCs within the scope of license renewal. The plant annunciators also perform functions that support FP and SBO.

The applicant identified the plant annunciators component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.4.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.4 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.4.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the plant annunciators components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the plant annunciators components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.5 Communications

2.5.1.5.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.5, the applicant described the communications system. The communications system consists of the following five subsystems—(1) telephone system, (2) site public address (PA) system, (3) sound-powered system, (4) intercom system, and (5) plant radio system. The plant telephone system is the most widely used method of communication at MNGP and is centered around an AT&T programmable solid-state private branch exchange (PBX) switch. There is also a set of telephones located in the control room, technical support center, and training center which are used solely to perform NRC notification. This system is called the FTS 2000 and uses dedicated circuits leased from commercial carriers to make direct connections to various branches/offices of the NRC. The design of this system provides independence from the normal telephone system and guarantees availability of commercial circuits in the event of heavy telephone use by the local community. The site PA system is designed to provide general plant paging capability and also provides a single-party line channel between paging stations. The sound powered system is a series of hard-wired telephone jacks located at various places throughout the plant that can be used for maintenance and calibration activities. The intercom system is a multichannel system with push-button channel selection at the master stations located in the control room and cable spreading room. The plant radio system is a Motorola repeater-based system with six separate channels.

The communications system performs functions that support FP.

The applicant identified the communications system component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.5.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.5 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.5.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the communications system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the communications system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.6 DC Battery

2.5.1.6.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.6, the applicant described the DC battery. Two independent divisions of 24-VDC batteries are provided. They include two battery systems which feed separate DC buses and two battery chargers per division fed from different AC feeders and distribution panels. These 24-VDC batteries provide power for the nuclear instrumentation, PRMs, and H_2/O_2 analyzer isolation valve position indication. Two independent divisions of 125-VDC batteries are provided. They include two battery systems which feed separate DC buses and distribution panels. The 250-VDC system consists of essential and nonessential subsystems. The essential system consists of two independent divisions of 250-VDC batteries with center taps for 125 VDC. The 250-VDC system supplies highly reliable power to large loads, such as motor-driven pumps, valves, and uninterruptible power supplies (UPSs). The nonessential system consists of one division of 250-VDC batteries. It includes one battery system which is charged by rectifiers in the UPS and distribution panels.

The DC battery contains SR components that are relied upon to remain functional during and following DBEs. In addition, the DC battery performs functions that support FP, ATWS, and SBO. This system contains equipment that is required to be qualified in accordance with 10 CFR 50.49.

The applicant identified the DC battery component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.6.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.6 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.5.1.6 identified an area for which it needed additional information to complete its evaluation of the applicant's results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.5.1-2, the staff noted that LRA Section 2.5.1.6, under the description of DC battery, states that the 24-VDC batteries provide power for the nuclear instrumentation, PRMs, and $H_2/0_2$ analyzer isolation valve position indication. This section further states, under the system function listing, that the 24-VDC system continuously provides DC electrical power to the SR and NSR loads. However, the 24-VDC system is not considered SR because the system is not

required to provide the SR function of these loads; therefore, the staff requested that the applicant indicate specific safety loads powered by the 24-VDC system and explain how these loads would perform the SR function if the 24-VDC NSR power supply were to fail.

In its response, by letter dated September 16, 2005, the applicant responded:

> The 24 VDC system provides power to the Source Range Monitors (SRMs) and the Intermediate Range Monitors (IRMs) in the Neutron Monitoring System (NMS). With the mode switch in SHUTDOWN and RUN, SRMs and IRMs are not required to be operable. Per the Technical Specifications, the SRMs and IRMs are only required to be operable when the mode switch is in REFUEL and STARTUP. The 24 VDC system provides power to the SRMs and IRMs, but is not required for them to provide their Safety Related function. Failure of 24 VDC power will initiate the safety functions (rod block and scram).
>
> The Division I 24 VDC system provides power for the output trip relaying (not the radiation monitors) for the Off-Gas Pretreatments monitors. In the event of a 24 VDC failure for this relaying, offgas trip timers will conservatively trip the operating recombiner train after a 30-minute delay. Operability of the monitors themselves is not affected.
>
> The Division I 24 VDC system also provides power for the Flux-Tilt monitor. This monitor is classified as non-safety related and is not required for normal operation.
>
> The Division II 24 VDC system provides power for the Discharge Canal, Service Water, Radwaste Effluent, and Reactor Building Closed Cooling Water process liquid radiation monitors. These monitors are all classified as non-safety related. In the event of loss of Division II 24 VDC, compensatory measures would be implemented for these radiation monitors in accordance with the applicable MNGP site procedures.
>
> Finally, each divisions of 24 VDC supplies power for the corresponding division of containment atmosphere monitoring system isolation valve position indication. Control power for the valves is provided by other sources. The valve position indication function does not meet the criteria of 10 CFR 54.4(a)(I), (ii), or (iii) for being within the scope of license renewal.

Based on its review, the staff found the applicant's response to RAI 2.5.1-2 acceptable because the applicant adequately described the safety loads powered by the system and how those loads perform if the power supply were to fail. Therefore, the staff's concern described in RAI 2.5.1-2 is resolved.

2.5.1.6.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the DC battery components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the DC battery components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.7 Lighting

2.5.1.7.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.7, the applicant described the lighting system. The lighting system provides light in all areas for safe, efficient operation of the plant. Normal lighting is supplied by normal AC power. Several locations in the plant are supplied by normal lighting which is supplied from an essential lighting source. Essential lighting is supplied by a normal AC source, or by the diesel generators, or by the 1AR transformer during a loss of the normal AC source. The emergency lighting system is independent of the AC system. 8-hour, battery-powered emergency lighting units are also located throughout the plant. These units have individual batteries that are continuously charged from normal AC power sources. In the event normal AC power is lost, these units will illuminate. Appendix R to 10 CFR Part 50 requires 8-hour lighting units to be located in the MCR, at the ASD panel, along the pathway in between, in the 11 diesel generator room, and in the warehouse/cold shop equipment bay.

The lighting system contains SR components that are relied upon to remain functional during and following DBEs. In addition, the lighting system performs functions that support FP and SBO.

The applicant identified the lighting system component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.7.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.7 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.7.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the lighting system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the lighting system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.8 Neutron Monitoring

2.5.1.8.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.8, the applicant described neutron monitoring systems. The local power range monitor (LPRM) subsystem is designed to continuously monitor the neutron flux level in the reactor while in the power range. The LPRM subsystem signals must be available to permit demonstration of compliance with the critical power ratio limits. The individual LPRM output signals serve as input signals to the average power range monitors (APRMs) and rod block monitor (RBM). The APRM subsystem is designed to provide a continuous, accurate indication of the average core power. The RBM is an operational aid designed to prevent violation of the fuel integrity safety criteria during withdrawal of a single control blade. The RBM also provides a local relative power signal for operator evaluation during control blade movement. The startup range monitors consist of 12 neutron flux monitoring channels. They include four SRMs and eight IRMs. The source range monitoring system is used to provide neutron flux information from subcritical to an intermediate flux level. The intermediate range monitoring system is used to provide neutron flux information from the upper limit of the source range monitors to the lower limit of the power range monitors.

The neutron monitoring systems contain SR components that are relied upon to remain functional during and following DBEs.

The applicant identified the neutron monitoring component types that are within the scope of license renewal. Section 2.5.2 evaluates the electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates the supports for electrical components.

2.5.1.8.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.8 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.8.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the neutron monitoring components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the neutron monitoring components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.9 Offsite Power

2.5.1.9.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.9, the applicant described the offsite power system. The 115-kV substation contains buses, breakers, transformers, and associated equipment necessary to connect the MNGP 345-kV system to the Xcel Energy 115-kV transmission system. The 115-kV substation supplies power to the 1R and 1AR transformers. The 230-kV substation contains buses, breakers, transformers, and associated equipment. It connects the Xcel 345-kV transmission system to the Great River Energy 230-kV transmission system. The 230-kV substation system includes the No. 6 transformer. The 345-kV substation contains the buses, breakers, and associated equipment necessary to connect the Xcel 345-kV transmission system to the 2RS and 1ARS transformers.

The offsite power system performs functions that support SBO.

The applicant identified the offsite power system component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.9.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.9 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.9.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the offsite power components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the offsite power components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.10 Plant Protection

2.5.1.10.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.10, the applicant described the PPS. The PPS consists of the reactor protection system, the ATWS system, and the primary containment isolation system (PCIS). The reactor protection system includes the motor-generator power supplies' associated control and indicating equipment, sensors, relays, bypass circuitry, and switches that cause rapid

insertion of control rods (scram) to shutdown the reactor. The ATWS system consists of two separately powered trip systems, each made up of two subchannels. Each subchannel receives an input from an independent sensor monitoring each of the ATWS trip parameters. A trip occurring in both subchannels will cause an ATWS trip which opens both recirculating motor generator set generator field breakers and causes control rod insertion by venting the scram air header. The PCIS provides protection against the onset and consequences of accidents involving the gross release of radioactive materials from the primary containment. This protection is the automatic isolation of appropriate pipelines which penetrate the primary containment whenever certain monitored variables exceed their preselected operational limit.

The PPS contains SR components that are relied upon to remain functional during and following DBEs. In addition, the PPS performs functions that support FP, ATWS, and SBO. This system contains components required to be qualified in accordance with 10 CFR 50.49.

The applicant identified the PPS component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.10.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.10 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.10.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the PPS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the PPS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.11 Radiation Monitoring

2.5.1.11.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.11, the applicant described the area radiation monitors (ARMs). There are numerous ARMs located throughout the plant, recombiner building, and offgas storage building. Each consists of a detector coupled to an indicator located either on control room panels C-11 or C-252D. The indicators for the containment high-range monitors are located on panels C-257 and C-258 in the control room. The PAS system indicators are on PAS system panel C-261. Two multipoint recorders, NR-18-55 and RR-7573, located on panel C-02 and panel C-252D, respectively, record the readings of all channels, except the high-range channel (RI-7774) from

the offgas storage building, the drywell monitors, and the PAS system monitor. All of the ARMs use Geiger-Mueller detectors, except for the containment high-range monitors which are ion chambers. These units are X-ray and gamma sensing devices. The PRM system consists of several subsystems that provide continuous monitoring of the radiation levels of liquid and gaseous processes throughout the plant which can release activity directly to the environment. These subsystems assist in controlling the release of radioactive byproducts within the legally prescribed limits as set forth in the TSs. They also help provide for personnel safety by warning of abnormal radiation release levels and, in some cases, automatically terminating these releases.

The ARMs contain SR components that are relied upon to remain functional during and following DBEs. In addition, the ARMs contain components which are part of the Environmental Qualification Program.

The applicant identified the ARMs component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.11.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.11 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.11.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the ARM components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the ARM components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.12 Reactor Level Control

2.5.1.12.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.12, the applicant described the RLC system. The FW system consists of two constant-speed, motor-driven FW pumps with throttling flow control that have a combined capacity of the total required flow to the reactor. The RLC system automatically controls the flow of FW into the reactor vessel to maintain the water level in the vessel within a predetermined range during all modes of plant operations. The RLC system employs water level, steam flow, and FW flow as a three-element control. Single-element control, which employs water level only, is also available.

The RLC system performs functions that support FP and SBO.

The applicant identified the RLC component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.12.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.12 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.12.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the RLC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the RLC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.13 Uninterruptible AC

2.5.1.13.1 Summary of Technical Information in the Application

In LRA Section 2.5.1.13, the applicant described the uninterruptible AC (UAC) system. The UAC system is composed of two Class 1E inverters that provide a Division 1 and a Division 2 120-VAC UPS. The Division 1 inverter (Y-71) is supplied by Division 1 250-VDC distribution panel D-31, with an alternate AC source to the static switch from essential MCC-134 through a stepdown transformer. The Division 2 inverter (Y-81) is supplied by Division 2 250-VDC distribution panel D-100 with an alternate AC source to the static switch from essential MCC-144 through a step-down transformer. The 480-Volt AC system is composed of one UPS Y-91 which provides a reliable source of 480-Volt AC power. This system is not a Class 1E system. The normal source for Y-91 is from LC-108 through circuit breaker 52-804. The alternate source is through circuit breaker 52-704 on LC-107. The backup DC source is 250-VDC battery No. 17 via circuit breaker No. 1 on panel D-71. Y-91 rectifier section provides the charging for No. 17 battery, as well as being the normal supply for Y-91 inverter section. The instrument and control AC power provides AC power to plant AC instrument loads.

The UAC system contains SR components that are relied upon to remain functional during and following DBEs. In addition, the UAC system performs functions that support FP, ATWS, and SBO.

The applicant identified the UAC system component types that are within the scope of license renewal. Section 2.5.2 evaluates electrical commodities for this system that are subject to an AMR. Section 2.4.6 evaluates supports for electrical components.

2.5.1.13.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1.13 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

In conducting its review, the staff evaluated the system functions described in the LRA and USAR, in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.5.1.13.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the UAC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the UAC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.2 Electrical Commodities

In LRA Section 2.5.2, the applicant presented the results of the screening process for electrical components evaluated as commodities subject to an AMR for license renewal. The applicant explained in LRA Section 2.1.5.4 that the scoping and screening process for electrical equipment was unique in several aspects. All electrical systems were evaluated to determine whether the system intended functions met 10 CFR 54.4(a)(1) through (a)(3) requirements. SSCs supporting intended functions were considered within the scope of license renewal. The applicant performed component-level screening for electrical and mechanical systems within the scope of license renewal. Most component-level screening was performed and documented in the license renewal database on a commodity basis. Components were either screened out as active or included in a commodity group.

The applicant described electrical commodity groups and their intended function in the following sections of the LRA:

- 2.5.2.1 electrical penetrations
- 2.5.2.2 fuse holders
- 2.5.2.3 non-EQ cables and connections
- 2.5.2.4 offsite power/SBO recovery path

Sections 2.5.2.1–2.5.2.4 present the staff's review findings regarding LRA Sections 2.5.2.1–2.5.2.4, respectively.

2.5.2.1 Electrical Penetrations

2.5.2.1.1 Summary of Technical Information in the Application

In LRA Section 2.5.2.1, the applicant described the electrical penetrations. The electrical penetrations assemblies consist of one or more electrical conductors and materials, which provide a pressure boundary between the inboard and outboard sides of the penetration. The penetration must be capable of maintaining the license renewal intended function of "electrical continuity" through the boundary. The cable and material associated with maintaining the license renewal intended function is the focus of this review. Section 2.4.13 of the LRA contains portions and materials of the penetration assembly associated with the license renewal intended function "pressure boundary" (or essentially leaktight containment barrier). For an electrical penetration to be within the scope of license renewal, it must support an intended function of one of the systems or components identified as within the scope of license renewal. MNGP uses penetrations manufactured by GE and D.G. O'Brien. There are 24 electrical penetrations at MNGP. Nineteen of these are in use and five are spares. There are six penetrations designated as requiring EQ and are addressed in SER Section 4.7. Of the remaining 13 penetrations, only 4 are within the scope of license renewal. The other nine penetrations do not contain cables which provide a license renewal SR intended function or are credited for any of the regulated events.

The intended function of electrical penetrations is to provide electrical connections to specified sections of an electrical circuit

In LRA Table 2.5.2-1, the applicant identified the following commodity groups that are within the scope of license renewal and subject to an AMR:

- non-EQ insulated cables and connections
- non-EQ electrical and I&C penetration assemblies except cable and connections (electrical components only—potting compound, vapor barrier, and support)
- non-EQ electrical cables used in instrumentation circuits not subject to 10 CFR 50.49 EQ requirements that are sensitive to reduction in conductor insulation resistance

2.5.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.5.2.1 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

2.5.2.1.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the electrical penetrations components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the commodity groups for electrical penetrations components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.2.2 Fuse Holders

2.5.2.2.1 Summary of Technical Information in the Application

In LRA Section 2.5.2.2, the applicant described the fuse holders. For a fuse holder (block, clips, and connection points) to be within scope, it must support an intended function of one of the systems or components identified as within the scope of license renewal. In addition, the review of fuse holders applies only to those that are not part of a larger assembly, but support SR and NSR functions in which the failure of a fuse precludes a safety function from being accomplished. Fuse holders inside an enclosure of an active component, such as the switchgear, load center, MCC, distribution panel, power supply, power inverter, charger, converter, inverter, or circuit board, are parts of the larger assembly. Since the applicant regularly inspects and maintains piece parts and subcomponents in such an enclosure as part of the plant's normal maintenance and surveillance activities, they are not subject to an AMR. Since there is no all-inclusive fuse database at MNGP, the applicant used various databases, analysis/calculations, and plant walkdowns to identify those fuse holders meeting the above criteria. Based on the above reviews of databases, analysis/calculations, and in-plant walkdowns, the applicant determined that the majority of the fuse holders at MNGP are located inside an active device enclosure. For those fuse holders not located inside an active device enclosure, the applicant performed further evaluation to determine whether the fuse holder supported an intended function of systems or components identified as within the scope of license renewal. Those fuse holders not supporting an intended function were scoped out and no further evaluations were performed. Those fuse holders that do support an intended function were scoped in and are subject to AMR.

The intended function of fuse holders is to provide electrical connections to specified sections of an electrical circuit.

In LRA Table 2.5.2-2, the applicant identified the fuse holders as a commodity group that is within the scope of license renewal and subject to an AMR.

2.5.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.5.2.2 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

2.5.2.2.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the fuse holders that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the fuse holders as a commodity group that is subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.2.3 Non-EQ Cables and Connections

2.5.2.3.1 Summary of Technical Information in the Application

In LRA Section 2.5.2.3, the applicant described the non-EQ cables and connections. The components evaluated are non-EQ power, I&C insulated cables and connections (connections include connectors, splices, and terminal blocks), and uninsulated (bare) ground conductors. SER Section 4.7 evaluates components that are part of the Environmental Qualification Program. In accordance with the Department of Energy's cable aging management guideline presented in SAND96-0344, "Aging Management Guideline for Commercial Nuclear Power Plants—Electrical Cable and Terminations," issued September 1996, an insulated cable is an assembly of a single electrical conductor (wire) with an insulation covering or a combination of conductors insulated from one another with overall coverings. Connections (or terminations) are used to connect the cable conductors to other cables or electrical devices. The applicant evaluated several types of connections. Plug-in connectors are one or more electrical contacts that plug or screw into a mating receptacle. Splice insulation systems (heat shrink and tape) are insulation material generally applied over compression (i.e., bolted) or fusion connections and are used to seal and insulate cable or splice terminations or junctions from the surrounding environment. Terminal blocks are an insulating base with fixed points for landing of wiring or connection of terminal (ring) lugs. Terminal blocks are installed in enclosures such as control boards, MCCs, motors, terminal boxes, or power panel boards for protection from both physical and environmental damage. Uninsulated ground conductors are electrical conductors (e.g., bare copper cable, bare copper bar) that are used to make electrical equipment ground connections.

Uninsulated ground cables are neither classified as SR nor relied upon for SR equipment to perform their intended function, as identified in 10 CFR 54.4(a); therefore, the applicant has determined that uninsulated ground cables are outside the scope of license renewal.

The intended function of non-EQ cable and connections is to provide electrical connections to specified sections of an electrical circuit.

In LRA Table 2.5.2-3, the applicant identified the non-EQ cables and connections as commodity groups that are within the scope of license renewal and subject to an AMR as follows:

- electrical cables and connections not subject to 10 CFR 50.49 EQ requirements
- electrical cables used in instrumentation circuits not subject to 10 CFR 50.49 EQ requirements that are sensitive to reduction in conductor insulation resistance
- inaccessible medium voltage (2 kV to 34.5 kV) cable and connections (e.g., installed in conduit or direct buried) not subject to 10 CFR 50.49 EQ requirements

2.5.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.5.2.3 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

2.5.2.3.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the non-EQ cables and connections that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the non-EQ cables and connections as commodity groups that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.2.4 Offsite Power/SBO Recovery Path

2.5.2.4.1 Summary of Technical Information in the Application

In LRA Section 2.5.2.4, the applicant described the offsite power/SBO recovery path. The passive, long-lived, in-scope components comprising the offsite power/SBO recovery path subject to an AMR include phase bus, switchyard bus, high-voltage insulators, transmission conductors, non-EQ cables and connections, and non-EQ buried cable. The hardware used to secure or attach switchyard bus and transmission conductors to high-voltage insulators is also included. Phase bus is a bus that is enclosed (either within its own enclosure or inside a vault) and is not part of an active component, such as switchgear, load center, or MCC. There are four types of phase bus—isolated-phase bus, nonsegregated phase bus, phase bus enclosed in a vault, and segregated phase bus. MNGP has two of the types of phase buses mentioned above. A switchyard bus is an uninsulated, unenclosed, rigid electrical conductor used in switchyards to connect two or more elements of an electrical power circuit, such as active disconnect (gang) switches and passive transmission conductors. Included with the switchyard bus is the hardware used to secure the bus to a high-voltage insulator or transmission conductor. Switchyard bus connections to an active component (e.g., disconnect (gang) switch, transformer) are inspected and maintained along with the active components (e.g., disconnect (gang) switch, transformer) and are not included here. In accordance with the Institute of Electrical and Electronics Engineers, an insulator is an insulating material in a form designed to support a conductor physically and separate the conductor electrically from another conductor or object. Transmission conductors are uninsulated, stranded electrical cables used to electrically connect two or more elements of an electrical power circuit. The offsite power system/recovery path boundary includes the 345-kV, 115-kV, and 13.8-kV system components from the plant 4.16-kV buses out to the first switchyard breaker, which disconnects the plant from the 345-kV or 115-kV ring bus or the 13.8-kV system fed from the No. 10 transformer.

In LRA Table 2.5.2-4, the applicant identified the following commodity groups for offsite power/SBO recovery path that are within the scope of license renewal and subject to an AMR:

- nonsegregated phase bus
- high-voltage insulators
- high-voltage switchyard bus
- high-voltage transmission conductors
- electrical cables and connections not subject to 10 CFR 50.49 EQ requirements
- inaccessible medium voltage (2 kV to 34.5 kV) cable (e.g., installed in conduit or direct buried) not subject to 10 CFR 50.49 EQ requirements

The intended functions of the above commodity groups include the following:

- insulate and support an electrical conductor
- provide electrical connections to specified sections of an electrical circuit

2.5.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.5.2.4 and the USAR using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.5.

The staff's review of LRA Section 2.5.2.4 identified an area for which it needed additional information to complete its evaluation of the applicant's results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.5.2-1, dated August 18, 2005, the staff noted that LRA Section 2.5.2.4, under the description of Offsite Power/SBO Recovery Path, states that the path boundary includes the 345-kV, 115-kV, and 13.8-kV system components from the plant 4.16-kV buses out to the first switchyard breaker, which disconnects the plant from the 345-kV or 115-kV ring bus or the 13.8-kV system fed from the No. 10 transformer in the switchyard. The staff requested that the applicant confirm that the path boundary also includes the associated control circuits subject to an AMR.

In its response, by letter dated September 16, 2005, the applicant confirmed that the control circuits for the offsite power/SBO recovery path components within the scope of license renewal are included within the AMR scope.

Based on its review, the staff found the applicant's response to RAI 2.5.2-1 acceptable because the applicant verified that the associated control circuits are subject to an AMR. Therefore, the staff's concern described in RAI 2.5.2-1 is resolved.

2.5.2.4.3 Conclusion

On the basis of its review, the staff concluded that the applicant adequately identified the offsite power/SBO recovery path components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and adequately identified the commodity group for the offsite power/SBO recovery path components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.6 Conclusion for Scoping and Screening

The staff reviewed the information in LRA Section 2, "Scoping and Screening Methodology for Identifying Structures and Components Subject to Aging Management Review, and Implementation Results." The staff determined that the applicant's scoping and screening methodology was consistent with the requirements of 10 CFR 54.21(a)(1) and the SRP-LR on the treatment of SR and NSR SSCs within the scope of license renewal and that the SCs identified as requiring an AMR are consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

On the basis of its review, the staff concluded that the applicant adequately identified those systems and components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and those systems and components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).