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NUREG-1920, Vol. 1

Safety Evaluation Report

Related to the License Renewal of Vogtle Electric Generating Plant, Units 1 and 2

Docket Nos. 50-424 and 50-425

Southern Nuclear Operating Company, Inc.

Office of Nuclear Reactor Regulation

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ABSTRACT

This safety evaluation report (SER) documents the technical review of the Vogtle Electric Generating Plant (VEGP), Units 1 and 2, license renewal application (LRA) by the United States (US) Nuclear Regulatory Commission (NRC) staff (the staff). By letter dated June 29, 2007, Southern Nuclear Operating Company, Inc. (SNC or the applicant) submitted the LRA in accordance with Title 10, Part 54, of the *Code of Federal Regulations*, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." SNC requests renewal of the Units 1 and 2 operating licenses (Facility Operating License Numbers NPF-68 and NPF-81, respectively) for a period of 20 years beyond the current expiration date of January 16, 2027, for Unit 1, and February 9, 2029, for Unit 2.

VEGP is located approximately 26 miles southeast of Augusta, GA. The NRC issued the construction permits for Unit 1 on June 28, 1974, and on June 28, 1974, for Unit 2. The NRC issued the operating licenses for Unit 1 on March 16, 1987, and on March 31, 1989, for Unit 2. Units 1 and 2 are of a dry ambient containment pressurized water reactor design. Westinghouse Electric supplied the nuclear steam supply system and Georgia Power Company originally designed and constructed the balance of the plant with the assistance of its agent, Southern Services and Bechtel. The licensed power output of each unit is 3625.6 megawatt thermal with a gross electrical output of approximately 1250 megawatt electric.

This SER presents the status of the staff's review of information submitted through February 16, 2009, the cutoff date for consideration in the SER. The staff identified no open or confirmatory items that would require a formal response from the applicant. SER Section 6 provides the staff's final conclusion of its LRA review.

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ABBREVIATIONS

AB	auxiliary building
ACI	American Concrete Institute
ACRS	Advisory Committee on Reactor Safeguards
ADAMS	Agencywide Document Access and Management System
AERM	aging effect requiring management
AFW	auxiliary feedwater
AISC	American Institute of Steel Construction
AMP	aging management program
AMR	aging management review
AMSAC	ATWS mitigation system actuation circuitry
ANSI	American National Standards Institute
ART	adjusted reference temperature
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATWS	anticipated transient without scram
AWWA	American Water Works Association
BAC	boric acid corrosion
BWR	boiling water reactor
B&PV	boiler and pressure vessel
CASS	cast austenitic stainless steel
CCW	component cooling water
CET	core exit thermocouple
CF	chemistry factor
CFR	*Code of Federal Regulations*
CI	confirmatory item
CLB	current licensing basis
COPS	cold overpressure protection system
CRDM	control rod drive mechanism
CR	condition report
CRGT	control rod guide tube
CS	containment spray
CST	condensate storage tank
CTMT	containment
CTB	containment building
CUF	cumulative usage factor
CVCS	chemical and volume control system
DAW	dry active waste
DBA	design basis accident
DBE	design basis event
DC	direct current
DW	demineralized water
ECCS	emergency core cooling system
EDG	emergency diesel generator
EFPY	effective full-power year

EHC	electrohydraulic control
EOL	end of life
EPRI	Electric Power Research Institute
EQ	environmental qualification
ESF	engineered safety feature
FAC	flow-accelerated corrosion
F_{en}	environmental fatigue life correction factor
FP	fire protection
FPP	fire protection plan
FR	*Federal Register*
FRRADS	flood-retaining rooms, alarms, and drain system
FW	feedwater
GALL	Generic Aging Lessons Learned Report
GDC	general design criteria or general design criterion
GEIS	Generic Environmental Impact Statement
GL	generic letter
GPC	Georgia Power Company
GSI	generic safety issue
HAZ	heat-affected zone
HELB	high-energy line break
HE/ME	high energy/moderate energy
HJTC	heated junction thermocouple
HVAC	heating, ventilation, and air conditioning
HX	heat exchanger
I&C	instrumentation and controls
IASCC	irradiation assisted stress corrosion cracking
IEEE	Institute of Electrical and Electronics Engineers
IGA	intergranular attack
IN	information notice
INPO	Institute of Nuclear Power Operations
IPA	integrated plant assessment
ISG	interim staff guidance
ISO	International Organization for Standardization
ISI	inservice inspection
LBB	leak-before-break
LOCA	loss of coolant accident
LOSP	loss of offsite power
LR	license renewal
LRA	license renewal application
MPL	master parts list
MSLB	main steam line break
MWe	megawatts electric
MWt	megawatts thermal
NDE	nondestructive examination

NEI	Nuclear Energy Institute
NPS	nominal pipe size (in inches)
NRC	U.S. Nuclear Regulatory Commission
NSCW	nuclear service cooling water
NSR	nonsafety-related
NSSS	nuclear steam supply system
OBE	operating basis earthquake
ODSCC	outside-diameter stress corrosion cracking
OI	open item
P&ID	piping and instrumentation diagram
PRF	penetration room filtration
PSRF	nonsafety-related that can prevent a safety-related function
PTLR	pressure-temperature limits report
PTS	pressurized thermal shock
PVC	polyvinyl chloride
PW	pipe whip
PWR	pressurized water reactor
PWSCC	primary water stress corrosion cracking
RAI	request for additional information
RCP	reactor coolant pump
RCPB	reactor coolant pressure boundary
RCS	reactor coolant system
RG	regulatory guide
RHR	residual heat removal
RI-ISI	risk-informed inservice inspection
RMWST	reactor makeup water storage tank
RPV	reactor pressure vessel
RT_{NDT}	reference temperature for nil ductility transition
RT_{PTS}	reference temperature for pressurized thermal shock
RTS	reactor trip system
RVCH	reactor vessel closure head
RVLIS	reactor vessel level indicating system
RWST	refueling water storage tank
RV	reactor vessel
SBO	station blackout
SCs	structures and components
SCC	stress-corrosion cracking
SER	safety evaluation report
SFP	spent fuel pool
SG	steam generator
SGBD	steam generator blowdown
SI	safety injection
SMP	structural monitoring program
SNC	Southern Nuclear Operating Company, Inc.
SOC	statement of consideration
SR	safety-related
SRP	Standard Review Plan

SRP-LR	Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants
SSCs	systems, structures, and components
SSE	safe-shutdown earthquake
SW	service water
TLAA	time-limited aging analysis
TS	technical specifications
TSP	trisodium phosphate
UFSAR	updated final safety analysis report
USE	upper-shelf energy
UT	ultrasonic testing
UV	ultraviolet
VEGP	Vogtle Electric Generating Plant
WCAP	Westinghouse Commercial Atomic Power
WOG	Westinghouse Owner's Group

SECTION 1

INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

This document is a safety evaluation report (SER) on the license renewal application (LRA) for Vogtle Electric Generating Plant (VEGP), Units 1 and 2, as filed by the Southern Nuclear Operating Company, Inc. (SNC or the applicant). By letter dated June 29, 2007, SNC submitted its application to the U.S. Nuclear Regulatory Commission (NRC) for renewal of the VEGP operating licenses for an additional 20 years. The NRC staff (the staff) prepared this report to summarize the results of its safety review of the LRA for compliance with 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 project manager for the license renewal review is Donnie Ashley. Mr. Ashley may be contacted by telephone at 301-415-3191 or by electronic mail at Donnie.Ashley@nrc.gov. Alternatively, written correspondence may be sent to the following address:

Division of License Renewal
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Attention: Donnie Ashley, Mail Stop 011-F1

In its June 27, 2007, submission letter, the applicant requested renewal of the operating licenses issued under Section 103 (Operating License Nos. NPF-68 and NPF-81) of the Atomic Energy Act of 1954, as amended, for Units 1 and 2 for a period of 20 years beyond the current expiration date of January 16, 2027, for Unit 1, and February 9, 2029, for Unit 2. Although the Unit 2 license only has 18 years experience, the applicant requested and was granted an exemption on January 9, 2007, (ML062770492) to that requirement prior to the submittal of the application for both units. VEGP is located approximately 26 miles southeast of Augusta, Georgia. The NRC issued the construction permits for Unit 1 on June 28, 1974, and on June 28, 1974, for Unit 2. The NRC issued the operating licenses for Unit 1 on March 16, 1987, and on March 31, 1989, for Unit 2. Units 1 and 2 are a dry ambient containment pressurized water reactor design. Westinghouse Electric supplied the nuclear steam supply system and Georgia Power Company originally designed and constructed the balance of the plant with the assistance of its agent, Southern Services and Bechtel. The licensed power output of each unit is 3565 megawatt thermal with a gross electrical output of approximately 1208 megawatt electric. The updated final safety analysis report (UFSAR) shows details of 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 in 10 CFR Part 54 and 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," respectively, set forth requirements for these reviews. The safety review for the VEGP license renewal is based on the applicant's LRA and on its responses to the staff's requests for additional information (RAIs). The applicant supplemented the LRA and provided clarifications through its responses to the staff's RAIs in audits, meetings, and docketed correspondence. Unless otherwise noted, the staff reviewed and considered information submitted through February 16, 2009. The public may view the LRA and all

pertinent information and materials, including the UFSAR, at the NRC Public Document Room, located on the first floor of One White Flint North, 11555 Rockville Pike, Rockville, MD 20852-2738 (301-415-4737 / 800-397-4209), and at the Burk County Library, 130 Highway 24 South, Waynesboro, Georgia 30830. In addition, the public may find the 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 LRA and describes the technical details considered in evaluating the safety aspects of the units' proposed operation for an additional 20 years beyond the term of the current operating licenses. The staff reviewed the LRA in accordance with NRC regulations and the guidance in NUREG-1800, Revision 1, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR), dated September 2005.

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

SER Appendix A is a table showing the applicant's commitments for renewal of the operating licenses. SER Appendix B is a chronology of the principal correspondence between the staff and the applicant regarding the LRA review. SER Appendix C is a list of principal contributors to the SER and Appendix D is a bibliography of the references in support of the staff's review.

In accordance with 10 CFR Part 51, the staff prepared a draft plant-specific supplement to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS)." This supplement discusses the environmental considerations for license renewals for Units 1 and 2. The staff issued draft, plant-specific GEIS Supplement 34, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 34, Regarding Vogtle Electric Generating Plant, Units 1 and 2, Draft Report for Comment," on April 22, 2008.

1.2 Regulatory Evaluation

1.2.1 Background

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

In 1982, the staff 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. From the results of that research, a technical review group concluded that many aging phenomena are readily manageable and pose no technical issues precluding life extension for nuclear power plants. In 1986, the staff 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 staff published 10 CFR Part 54, the License Renewal Rule (Volume 56, page 64943, of the *Federal Register* (56 FR 64943), dated December 13, 1991). The staff participated in an industry-sponsored demonstration program to apply 10 CFR Part 54 to a pilot plant and to gain the experience necessary to develop implementation guidance. To establish a scope of review for license renewal, 10 CFR Part 54 defined age-related degradation unique to license renewal; however, during the demonstration program, the staff finds that adverse aging effects on plant systems and components are managed during the period of initial license and that the scope of the review did not allow sufficient credit for management programs, particularly the implementation of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," which regulates management of plant-aging phenomena. As a result of this finding, the Commission amended 10 CFR Part 54 in 1995. As published May 8, 1995, in 60 FR 22461, amended 10 CFR Part 54 establishes a regulatory process that is simpler, more stable, and more predictable than the previous 10 CFR Part 54. In particular, as amended, 10 CFR Part 54 focuses on the management of adverse aging effects rather than on the identification of age-related degradation unique to license renewal. The rule changes were initiated 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 amended 10 CFR Part 54 clarifies and simplifies the integrated plant assessment process to be consistent with the revised focus on passive, long-lived structures and components (SCs).

Concurrent with these initiatives, the NRC pursued a separate rulemaking effort (61 FR 28467, June 5, 1996) and amended 10 CFR Part 51 to focus the scope of the review of environmental impacts of license renewal in order to fulfill NRC responsibilities under the National Environmental Policy Act of 1969.

1.2.2 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 maintain an acceptable level of safety with the possible exceptions of the detrimental aging effects on the functions of certain SSCs, as well as a few other safety-related 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 that (1) are safety-related, (2) whose failure could affect safety-related functions, or (3) are relied on to demonstrate compliance with the NRC's regulations for fire protection, environmental qualification (EQ), pressurized thermal shock (PTS), anticipated transient without scram (ATWS), and station blackout (SBO).

Pursuant to 10 CFR 54.21(a), a license renewal applicant must review all SSCs within the scope of 10 CFR Part 54 to identify SCs subject to an aging management review (AMR). Those SCs subject to an AMR perform an intended function without moving parts or without change in configuration or properties and are not subject to replacement based on a qualified life or specified time period. Pursuant to 10 CFR 54.21(a), a license renewal applicant must demonstrate that the aging effects will be managed such that the intended function(s) 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, detrimental aging effects that may affect active equipment can be readily identified and corrected through routine surveillance, performance monitoring, and maintenance. Surveillance and maintenance programs for active equipment, as well as other maintenance aspects of plant design and licensing basis, are required throughout the period of extended operation.

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

License renewal also requires TLAA identification and updating. During the plant design phase, certain assumptions about the length of time the plant can operate are incorporated into design calculations for several plant 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 aging effects on these SSCs will be adequately managed for the period of extended operation.

In 2005, the NRC revised Regulatory Guide (RG) 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses." This RG endorses Nuclear Energy Institute (NEI) 95-10, Revision 6, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," issued in June 2005. NEI 95-10 details an acceptable method of implementing 10 CFR Part 54. The staff also used the SRP-LR to review the LRA.

In the LRA, the applicant fully utilized the process defined in NUREG-1801, Revision 1, "Generic Aging Lessons Learned (GALL) Report," dated September 2005. The GALL Report summarizes staff-approved aging management programs (AMPs) for many SCs subject to an AMR. If an applicant commits to implementing these staff-approved AMPs, the time, effort, and resources for LRA review can be greatly reduced, 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 is also a quick reference for both applicants and staff reviewers to AMPs and activities that can manage aging adequately during the period of extended operation.

1.2.3 Environmental Review

Part 51 of 10 CFR contains regulations on environmental protection regulations. In December 1996, the staff revised the environmental protection regulations to facilitate the environmental review for license renewal. The staff prepared the "Draft Generic Supplemental Environmental Impact Statement, Vogtle Electric Generating Plant Site, Supplement 34, NUREG-1437", (ML081900016) (GEIS), to document its evaluation of possible environmental impacts associated with nuclear power plant license renewals. For certain types of environmental impacts, the GEIS contains generic findings that apply to all nuclear power plants and 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), a license renewal applicant may incorporate these generic findings in its environmental report. In accordance with 10 CFR 51.53(c)(3)(ii), an environmental report also must include analyses of environmental impacts that must be evaluated on a plant-specific basis (i.e., Category 2 issues).

In accordance with the National Environmental Policy Act of 1969 and 10 CFR Part 51, the staff reviewed the plant-specific environmental impacts of license renewal, including whether there was new and significant information not considered in the GEIS. As part of its scoping process, the staff held a public meeting on September 27, 2007, in Waynesboro, Georgia, to identify plant-specific environmental issues. The draft, plant-specific GEIS Supplement 34 documents the results of the environmental review and makes a preliminary recommendation as to the license renewal action. The staff held another public meeting on June 3, 2008, in Waynesboro, Georgia, to discuss draft, plant-specific GEIS Supplement 34. After considering comments on the draft, the staff published the final, plant-specific GEIS Supplement 34, on December 11, 2008.

1.3 Principal Review Matters

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

Pursuant to 10 CFR 54.19(a), the NRC requires a license renewal applicant to submit general information, which the applicant provided in LRA Section 1. The staff reviewed LRA Section 1 and finds that the applicant has submitted the required information.

Pursuant to 10 CFR 54.19(b), the NRC requires that the 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." On this issue, the applicant stated in the LRA:

> The original Indemnity Agreement for VEGP, which was effective as of August 21, 1986, provides that such agreement "shall terminate at the time of expiration of that license specified in Item 3 of the Attachment, which is the last to expire." The license originally listed in Item 3 of the Attachment was SNM-1967. Since August 21, 1986, however, the Indemnity Agreement has been amended in order to add license numbers NPF-61, NPF-68, SNM-1981, NPF-79 and NPF-81 to Item 3 of the Attachment. As a consequence of these amendments, the existing Indemnity Agreement is presently due to terminate at midnight, February 9, 2029, as the last of these licenses expires. SNC requests that conforming changes be made to Item 3 of the Attachment to the Indemnity Agreement (and any other applicable provisions of the Indemnity Agreement and/or the Attachment) in order to make clear that the Indemnity Agreement is extended until the last expiration date of the renewed VEGP operating licenses issued by the Commission in response to this application.

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

Pursuant to 10 CFR 54.21, "Contents of Application - Technical Information," the NRC requires that the LRA contain (a) an integrated plant assessment, (b) a description of any CLB changes during the staff's review of the LRA, (c) an evaluation of TLAAs, and (d) an UFSAR supplement. LRA Sections 3 and 4 and Appendix B address the license renewal requirements of

10 CFR 54.21(a), (b), and (c). LRA Appendix A satisfies the license renewal requirements of 10 CFR 54.21(d).

Pursuant to 10 CFR 54.21(b), the NRC requires that, each year following submission of the LRA and at least three months before the scheduled completion of the staff's review, the applicant submit an LRA amendment identifying any CLB changes to the facility that affect the contents of the LRA, including the UFSAR supplement. By letter dated June 26, 2008, the applicant submitted an LRA update which summarize the CLB changes that have occurred during the staff's review of the LRA. This submission satisfies 10 CFR 54.21(b) requirements and is still under staff review.

Pursuant to 10 CFR 54.22, "Contents of Application - Technical Specifications," the NRC requires that the LRA include changes or additions to the technical specifications (TSs) that are necessary to manage aging effects during the period of extended operation. In LRA Appendix D, the applicant stated that it had not identified any TS changes necessary for issuance of the renewed VEGP operating licenses. This statement adequately addresses the 10 CFR 54.22 requirement.

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

As required by 10 CFR 54.25, "Report of the Advisory Committee on Reactor Safeguards (ACRS)," the ACRS will issue a report documenting its evaluation of the staff's LRA review and SER. SER Section 5 is reserved for the ACRS report when it is issued. SER Section 6 documents the findings required by 10 CFR 54.29.

1.4 Interim Staff Guidance

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

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

Table 1.4-1 Current Interim Staff Guidance"

ISG Issue (Approved ISG Number)	Purpose	SER Section
Nickel-alloy components in the reactor coolant pressure boundary **(LR-ISG-19B)**	Cracking of nickel-alloy components in the reactor pressure boundary. ISG under development. NEI and EPRI-MRP will develop an augmented inspection program for GALL AMP XI.M11-B. This AMP will not be completed until the NRC approves an augmented inspection program for nickel-alloy base metal components and welds as proposed by EPRI-MRP.	**3.0.3.3.5**
Corrosion of drywell shell in Mark I containments **(LR-ISG-2006-01)**	To address concerns related to corrosion of drywell shell in Mark I containments.	**Not Applicable to VEGP**

1.5 Summary of Open Items

As a result of its review of the LRA, including additional information submitted through February 16, 2009, the staff concludes that no open items exist which would require a formal response from the applicant.

1.6 Summary of Confirmatory Items

As a result of its review of the LRA, including additional information submitted through February 16,2009, the staff concludes that no confirmatory items exist which would require a formal response from the applicant.

1.7 Summary of Proposed License Conditions

Following the staff's review of the LRA, including subsequent information and clarifications from the applicant, the staff identified three proposed license conditions.

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

The second license condition requires that all capsules in the reactor vessel that are removed and tested meet the requirements of American Society for Testing and Materials (ASTM) E 185-82 to the extent practicable for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the staff prior to implementation. All capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the staff, as required by 10 CFR Part 50, Appendix H.

The third license condition requires the applicant to complete the commitments in the UFSAR supplement, and notify the NRC in writing when implementation of those activities required prior to the period of extended operations are complete and can be verified by NRC inspection.

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

In Section 2.1 of the license renewal application (LRA) "Scoping and Screening Methodology," the applicant described the scoping and screening methodology used to identify the SSCs at Vogtle Electric Generating Plant (VEGP), Units 1 and 2, that are within the scope of license renewal and the SCs that are subject to an AMR. The staff reviewed the Southern Nuclear Operating Company, Inc., (SNC or the applicant), scoping and screening methodology to determine if it is consistent with 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 LRA, the applicant considered the requirements of 10 CFR 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," (the Rule), the statements of consideration related to the Rule, and the guidance provided in Nuclear Energy Institute (NEI) 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR 54 - The License Renewal Rule," Revision 6. Additionally, in developing this methodology, the applicant considered the correspondence between the U.S. Nuclear Regulatory Commission (NRC) and other applicants, and NEI.

2.1.2 Summary of Technical Information in the Application

LRA Sections 2.0 and 3.0 provided the technical information required by 10 CFR 54.21(a). In LRA Section 2.1, the applicant described the process used to identify the SSCs that meet the license renewal scoping criteria under 10 CFR 54.4(a), and the process used to identify the SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1). Additionally, Section 2.2, "Plant-Level Scoping Results," Section 2.3,"Scoping and Screening Results - Mechanical Systems;" Section 2.4, "Scoping and Screening Results - Structural Systems;" and Section 2.5, "Scoping and Screening Results - Electrical and Instrumentation and Control (I&C) Systems;" of the LRA, provided the results of the process used to identify the SCs that are subject to an AMR. Section 3.0, "Aging Management Review Results," of the LRA, contained the following information: Section 3.1, "Aging Management of Reactor Vessel, Internals and Reactor Coolant System;" Section 3.2, "Aging Management of Engineered Safety Features Systems;" Section 3.3, "Aging Management of Auxiliary Systems;" Section 3.4, "Aging Management of Steam and Power Conversion Systems;" Section 3.5, "Aging Management of Containment, Structures and

Component Supports;" and Section 3.6, "Aging Management of Electrical and Instrumentation and Controls (I&C) Components." Section 4.0 of the LRA, "Time-Limited Aging Analyses (TLAA)," contained the applicant's identification and evaluation of TLAA.

2.1.3 Scoping and Screening Program Review

The staff evaluated the LRA scoping and screening methodology in accordance with the guidance contained in Section 2.1, "Scoping and Screening Methodology," of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 1 (SRP-LR). The following regulations form the basis for the acceptance criteria for the scoping and screening methodology review:

- 10 CFR 54.4(a), as it relates to the identification of plant SSCs within the scope of the Rule.
- 10 CFR 54.4(b), as it relates to the identification of the intended functions of plant structures and systems determined to be within the scope of the Rule.
- 10 CFR 54.21(a)(1) and (a)(2), as they relate to the methods utilized by the applicant to identify 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 contained in the SRP-LR:

- Section 2.1 to ensure that the applicant described a process for identifying SSCs that are within the scope of license renewal, in accordance with the requirements of 10 CFR 54.4(a).
- Section 2.2 to ensure that the applicant described a process for determining the SCs that are subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1) and (a)(2).

In addition, the staff conducted a scoping and screening methodology audit at the applicant's corporate facility, located near Birmingham, Alabama, during the week of September 17-21, 2007. 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 methodologies described in the LRA and the requirements of the Rule. The staff reviewed implementation of the project level guidelines and topical reports describing the applicant's scoping and screening methodology. 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 training for personnel that developed the LRA, and quality practices used by the applicant to develop the LRA. Additionally, the staff evaluated the quality attributes of the applicant's aging management program activities described in Appendix A, "Final Safety Analysis Report Supplement," and Appendix B, "Aging Management Programs and Activities," of the LRA. The staff reviewed scoping and screening results reports for the main steam system (MSS), emergency core cooling system (ECCS), and the nuclear service cooling water tower (NSCW) to ensure that the

applicant had appropriately implemented the methodology outlined in the administrative controls and that the results were consistent with the current licensing basis (CLB) documentation.

2.1.3.1 Implementation Procedures and Documentation Sources Used for Scoping and Screening

The staff reviewed the applicant's scoping and screening implementation procedures as documented in the Scoping and Screening Methodology audit report, dated March 17, 2008 (ML080640502), to verify that the process used to identify SCs subject to an AMR was consistent with the LRA and the SRP-LR. Additionally, the staff reviewed the scope of CLB documentation sources and the process used by the applicant to ensure that CLB commitments were appropriately considered and that the applicant had adequately implemented the procedural guidance during the scoping and screening process.

2.1.3.1.1 Technical Information in the Application

LRA Section 2.1, "Scoping and Screening Methodology," states that the applicant reviewed the following information sources during the license renewal scoping and screening process:

- Design Criteria Documents
- Update Final Safety Analysis Report (UFSAR)
- Plant drawings
- Maintenance Rule Scoping Documents
- Technical Specifications and Bases
- Safety Evaluation Reports
- Equipment Databases
- Master List of Environmental Qualification (EQ) Equipment
- Station Blackout (SBO) Analysis Report
- Licensing correspondence
- Vendor documents

The applicant stated that it used this information to identify the functions performed by plant systems and structures. It then compared these functions to the scoping criteria in 10 CFR 54.4 (a)(1)-(3) to determine whether the associated plant system or structure performed a license renewal intended function. It also used these sources to develop the list of SCs subject to an AMR.

2.1.3.1.2 Staff Evaluation

Scoping and Screening Implementation Procedures The staff reviewed the applicant's scoping and screening methodology implementation procedures, including license renewal guidelines, documents, reports, and AMR reports, as documented in the audit report, to ensure the guidance was consistent with the requirements of the Rule, the SRP-LR and the NEI 95-10. The staff finds the overall process used to implement the 10 CFR 54 requirements described in the implementing documents and AMRs was consistent with the Rule and industry guidance. Guidance for determining plant SSCs within the scope of the Rule, and for determining which component types of the SCs, within the scope of license renewal, were subject to an AMR, were contained in the applicant's implementing documents.

During the review of the implementing documents, the staff focused on the consistency of the detailed procedural guidance with information in the LRA, including the implementation of NRC

staff guidance documented in SRP-LR, and the information in request for addition information (RAI) responses dated February 27, 2008.

After reviewing the LRA and supporting documentation, the staff finds that the scoping and screening methodology instructions were consistent with Section 2.1 of the LRA. The applicant's methodology contained sufficient detail to provide concise guidance on the scoping and screening implementation process to be followed during the LRA activities.

Sources of Current Licensing Basis Information The staff reviewed the scope and depth of the applicant's CLB review to verify that the methodology was sufficiently comprehensive to identify SSCs within the scope of license renewal, as well as component types 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 applicant's written commitments for ensuring compliance with, and operation within, applicable NRC requirements and the plant-specific design bases that are docketed and in effect. The CLB includes certain NRC regulations, orders, license conditions, exemptions, Technical Specifications, design-basis information documented in the most recent UFSAR, and applicant's commitments remaining in effect that were made in docketed licensing correspondence such as applicant responses to NRC bulletins, generic letters, and enforcement actions, as well as applicant commitments documented in NRC safety evaluations or licensee event reports.

During the audit, the staff reviewed pertinent information sources utilized by the applicant that included the UFSAR, license renewal boundary diagrams, and maintenance rule information. In addition, the applicant's license renewal process identified additional potential sources of plant information pertinent to the scoping and screening process, including, design criteria documents, Technical Specifications and bases, safety evaluation reports, equipment databases, the EQ master list, SBO analysis report, licensing correspondence, piping and instrumentation drawings (P&IDs), plant layout drawings, and vendor documents. The staff verified that the applicant's detailed license renewal program guidelines required use of the CLB source information in developing scoping evaluations.

The VEGP Design Criteria DC-1000-G and the Maintenance Rule list of systems were the applicant's primary repository for system identification and classification information. During the audit, the staff reviewed the applicant's administrative controls for the VEGP design criteria, maintenance rule information and other information sources used to verify system information. These controls are described and implementation is governed by plant administrative procedures. Based on a review of the administrative controls, and a sample of the system identification and classification information contained in the applicable VEGP documentation, the NRC staff concluded that the applicant had established adequate measures to control the integrity and reliability of VEGP system identification and classification data, and therefore, the staff concludes that the information sources used by VEGP during the scoping and screening process provided a sufficiently controlled source of system and component data to support scoping and screening evaluations.

During the staff's review of the applicant's CLB evaluation process, the applicant provided the staff with a discussion regarding the incorporation of updates to the CLB and the process used to ensure those updates are adequately incorporated into the license renewal process. The staff concludes that Section 2.1 of the LRA provided a description of the CLB and related documents used during the scoping and screening process that is consistent with the guidance contained in the SRP-LR. In addition, the staff reviewed the implementing procedures and results reports used to support identification of SSCs relied upon to demonstrate compliance with the

safety-related criteria, nonsafety-related criteria and the regulated events criteria referenced in 10 CFR 54.4(a). The applicant's license renewal program guidelines provided a comprehensive listing of documents used to support scoping and screening evaluations. The staff finds these design documentation sources to be useful for ensuring that the initial scope of SSCs identified by the applicant was consistent with the plant's CLB.

2.1.3.1.3 Conclusion

On the basis of a review of information provided in Section 2.1 of the LRA, a review of the applicant's detailed scoping and screening implementation procedures, and the results from the scoping and screening audit, the staff concludes that the applicant's scoping and screening methodology considered CLB information consistent with the SRP-LR and 10 CFR 54 and is therefore acceptable.

2.1.3.2 *Quality Controls Applied to LRA Development*

2.1.3.2.1 Staff Evaluation

The staff reviewed the quality controls used by the applicant to ensure that scoping and screening methodologies used in the LRA were adequately implemented. Although the applicant did not develop the LRA under a 10 CFR 50, Appendix B, QA program, the applicant applied the following quality assurance (QA) processes during the LRA development:

- The applicant developed written procedures to govern the implementation of the scoping and screening methodology.
- The applicant incorporated lessons learned from prior license renewal applications. Previous NRC requests for additional information were also reviewed to ensure that applicable issues were addressed.
- The applicant used a review system to verify and validate the controlling documents.
- The LRA was reviewed by the applicant's on-site and corporate personnel and industry peers, prior to submittal to the NRC.
- The applicant's QA organization performed an internal audit as an independent review of the LRA. The purpose of the audit was to ensure that the license renewal documents, procedures and technical information were developed in accordance with the requirements of 10 CFR 54.4.

2.1.3.2.2 Conclusion

The staff reviewed reports, LRA development guidance, and discussed the quality controls applied to the LRA development with the applicant's license renewal staff. The staff concludes that the quality assurance activities met current regulatory requirements and provided additional assurance that LRA development activities were performed consistently with the applicant's LRA program requirements.

2.1.3.3 Training

2.1.3.3.1 Staff Evaluation

The staff reviewed the applicant's training process to ensure the guidelines and methodology for the scoping and screening activities would be performed in a consistent and appropriate manner. The license renewal scoping and screening activities and LRA development were accomplished by the applicant's corporate staff and VEGP site staff.

The applicant's training process provided both instruction and written guidance documents to the personnel involved with LRA development in order to ensure that the personnel had an understanding of the license renewal procedures, industry guidance and regulations applicable to the scoping and screening activities and LRA development. The applicant developed a checklist used as a tracking system as a basis for the personnel training record which listed the completed training sessions and the documents reviewed. Both corporate and site license renewal personnel were also qualified in plant support which focused on core plant training and how to support the plant in license renewal. In addition, the applicant provided training on design modification, plant support, components and systems in the mechanical, electrical and civil disciplines. The applicant developed technical training in scoping and screening methodology to establish the necessary knowledge and understanding of the license renewal process and the terminology used to support the license renewal review. The applicant's management and staff also participated in industry groups and task forces.

2.1.3.3.2 Conclusion

The staff reviewed completed qualification and training records and completed checklists of several of the applicant's license renewal personnel and concluded that the records adequately documented the training for the applicant's staff. Additionally, based on discussions with the applicant's license renewal personnel, the staff concludes that personnel were knowledgeable regarding the license renewal process requirements and the specific technical issues within their areas of responsibility.

2.1.3.4 Scoping and Screening Program Review Conclusion

On the basis of a review of information provided in Section 2.1 of the LRA, a review of the applicant's detailed scoping and screening implementation procedures, discussions with the applicant's license renewal personnel and the results from the scoping and screening audit, the staff concludes that the applicant's scoping and screening program was consistent with the SRP-LR and 10 CFR 54 and is therefore acceptable.

2.1.4 Plant Systems, Structures, and Components Scoping Methodology

In LRA Section 2.1, the applicant described the methodology used to scope SSCs pursuant to the requirements of the 10 CFR 54.4(a) scoping criteria. The applicant described the scoping process for the plant in terms of systems and structures. Specifically, the scoping process consisted of developing a list of plant systems and structures, identifying their intended functions, and determining which functions meet one or more of the three criteria of 10 CFR 54.4(a). The systems list was developed using design criteria and maintenance rule system information. Additional information on mechanical system functions was obtained from the UFSAR, plant layout drawings and P&IDs. Structural functions were identified using UFSAR, the maintenance rule basis documents for structures, the plant seismic categorization

information, and structural drawings. All electrical and I&C systems, and electrical and I&C components in mechanical systems, were included within in the scope of license renewal.

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

2.1.4.1.1 Technical Information in the Application

LRA Section 2.1.2.1, "10 CFR 54.4(a)(1) - Safety-Related," describes the scoping methodology as it relates to the safety-related criterion in accordance with 10 CFR 54.4(a)(1). With respect to the safety-related criterion, the applicant stated that the safety-related systems and structures are initially identified based on a review of the VEGP project classification designators (VEGP UFSAR Section 3.2.2.1) which are used in the plant documentation, the safety design bases discussions in the design criteria documents, the safety evaluation discussions in the UFSAR, and the safety-related determination results for the Maintenance Rule scoping. Systems and structures whose intended functions met one or more of the criteria in 10 CFR 54.4(a)(1) were included within the scope of license renewal. The applicant confirmed that all plant conditions, including conditions of normal operation, design basis accidents, external events, and natural phenomena for which the plant must be designed, were considered for license renewal scoping under 10 CFR 54.4(a)(1) criteria.

2.1.4.1.2 Staff Evaluation

Pursuant to 10 CFR 54.4(a)(1), the applicant must consider all safety-related SSCs relied upon to remain functional during and following a design basis event (DBE) to ensure the following functions: (i) the integrity of the reactor coolant pressure boundary; (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition; or (iii) 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 Part 100.11 of the Code of Federal Regulations.

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

> The set of DBEs as defined in the Rule is not limited to Chapter 15 (or equivalent) of the 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 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).

During the audit the applicant stated that it evaluated the types of events listed in NEI 95-10 (i.e., anticipated operational occurrences, design basis accidents, external events and natural phenomena) that were applicable to VEGP. The applicant identified the documents that described the events, which are contained in the UFSAR and system design criteria which discussed events such as internal and external flooding tornados, and missiles. The applicant also reviewed licensing correspondence and design criteria.

The staff concludes that the applicant's evaluation of DBEs was consistent with the SRP-LR.

The applicant performed scoping of SSCs for the 54.4(a)(1) criterion in accordance with the license renewal implementing documents which provided guidance for the preparation, review, verification, and approval of the scoping evaluations to assure the adequacy of the results of the scoping process. The staff reviewed the implementing documents governing the applicant's evaluation of safety-related SSCs, and sampled the applicant's scoping results reports to ensure the methodology was implemented in accordance with those written instructions. In addition, the staff discussed the methodology and results with the applicant's personnel who were responsible for these evaluations.

The staff reviewed the applicant's evaluation of the rule and CLB definitions pertaining to 10 CFR 54.4(a)(1) and concluded that the VEGP CLB definition of safety-related did not contain references to 10 CFR 50.34 or 10 CFR 50.67(b)(2) as specified in the Rule. The applicant's definition of safety-related and exceptions to the definition in the Rule are documented in LRA Section 2.1.2.1. Based on this review, the staff verified that 10 CFR 50.34(a)(1) is not applicable to VEGP, Units 1 or 2, as it concerns applicants for a construction permit. The staff concludes that 10 CFR 50.67(b)(2), which concerns the use of an alternate source term in the dose analysis, is not applicable to VEGP, Units 1 or 2, which has not applied for the use of an alternate source term.

The staff reviewed a sample of the license renewal scoping results for the MSS, ECCS, and the NSCW tower to provide additional assurance that the applicant adequately implemented their scoping methodology with respect to 10 CFR 54.4(a)(1). The staff verified that the scoping results for each of the sampled systems were developed consistent with the methodology, the SSCs credited for performing intended functions were identified, and the basis for the results as well as the intended functions were adequately described. The staff verified that the applicant had identified and used pertinent engineering and licensing information to identify the SSCs required to be in scope in accordance with the 10 CFR 54.4(a)(1) criteria.

The staff concludes that additional information would be required to complete the review of the applicant's scoping methodology. RAI 2.1-1, dated January 28, 2008, stated that during the NRC audit, the staff noted that source documents used to identify the SSCs which met the scoping criteria of 10 CFR 54.4(a)(1), including the VEGP updated safety analysis report Section 3.2, and procedures AP 05-007, Section 6.1.4, and AP 23M-001, Section 4.17.1, had differing definitions of safety-related and also cited superseded regulatory text in establishing the scoping criteria to be used in identifying VEGP SSCs in accordance with 10 CFR 54.4(a)(1) requirements. Therefore, the staff requested that the applicant provide a written evaluation that addresses the impact, if any, of the use of differing definitions of safety-related.

In the response to RAI 2.1-1 dated February 27, 2008, the applicant stated,

> "The VEGP definition of safety related for current design activities is defined in procedure ENG-016 which reads:
>
> Any structure, system, component, or part used in a nuclear power plant that is relied upon during or following design basis events to assure
>
> - The integrity of the reactor coolant pressure boundary,
> - The capability to shut down the reactor and maintain it in safe shutdown condition, or

- The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guideline exposures of 10 CFR 100.11."

As noted in the question, wording in historic procedures has not always been section specific, but the intent and application was consistent. The CLB classification of VEGP SSCs was based on design criteria documents. The applicant's governing procedure for creation of these documents (PS-VS-001) was the primary source of the wording discrepancy in that it defined safety related as:

> Equipment, components, or structures perform a safety-related function if that function is required to:
>
> - Maintain the integrity of the reactor coolant pressure boundary.
> - Shut down the plant and maintain the plant in a safe shutdown condition.
> - Prevent accidents or mitigate their consequences.

This definition could not be used without further clarification because it did not define which accidents or consequences had been considered. However, the staff understood that this paragraph referred to accidents defined by limits in 10 CFR 100. This inference was demonstrated in the applicant's procedure (DC-1010), which was the section of the design manual that defined the safety classification of the VEGP SSCs. This section defined safety related as:

> Systems, structures, and components important to safety are defined as those items necessary to ensure:
>
> - The integrity of the reactor coolant pressure boundary.
> - The capability 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 the guideline exposures of 10 CFR 100.

While this reference does not include the specific section (10 CFR 100.11), the section of the 10 CFR 100 that defined "potential off site exposures" during initial classification of VEGP SSCs was Section 11. Therefore, the CLB definition of safety related SSCs for VEGP has been consistently applied and meets the criteria of 10 CFR 54.4(a)(1). (As noted in the VEGP LRA, 10 CFR 50.34(1)(1) and 10 CFR 50.67(b)(2) do not apply to VEGP).

The staff reviewed the applicant's response to RAI 2.1-1 and determined that the applicant had provided a description of an adequate process used to ensure that SSCs had been appropriately included within the scope of license renewal, in accordance with 10 CFR 54.4(a)(1) and that the definitions for safety-related used to classify SSCs, as described in the response to RAI 2.1-1, was consistent with 10 CFR 54.4(a)(1).

2.1.4.1.3 Conclusion

On the basis of a review of systems sampled, discussions with the applicant, review of the applicant's scoping process, and the applicant's response to RAI 2.1-1, the staff concludes that

the applicant's methodology for identifying systems and structures is consistent with the SRP-LR and 10 CFR 54.4(a)(1), and is therefore acceptable.

2.1.4.2 *Application of the Scoping Criteria in 10 CFR 54.4(a)(2)*

2.1.4.2.1 Technical Information in the Application

LRA Section 2.1.2.2, "10 CFR 54.4(a)(2) - Nonsafety-Related SSCs Affecting Safety-Related SSCs," the applicant described the scoping methodology as it related to the nonsafety-related criteria in accordance with 10 CFR 54.4(a)(2). Also, the applicant's 10 CFR 54.4(a)(2) scoping methodology was based on guidance provided in Appendix F of NEI 95-10, Rev. 6. The applicant evaluated the impacts of nonsafety-related SSCs that met 10 CFR 54.4(a)(2) criteria by considering functional failures and physical failures.

Functional Failure of Nonsafety-Related SSCs LRA 2.1.2.2.1, "Nonsafety-Related SSCs That Perform A Required Function In Support Of Safety-Related Functions," stated that SSCs required to perform a function in support of safety-related components are generally classified as safety-related and are included within the scope of license renewal in accordance with 10 CFR 54.4(a)(1).

For the few exceptions where nonsafety-related components are required to remain functional to support a safety function, this system intended function was identified and the components were included within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(2).

Nonsafety-Related SSCs directly connected to Safety-Related SSCs LRA 2.1.2.2.2, "Nonsafety-Related SSCs Directly Connected To Safety-Related SSCs and Relied Upon For Structural Support Of Safety-Related SSCs," stated that nonsafety-related piping and supports are included within the scope of license renewal up to and including the seismic anchor as identified in the stress analysis, or to an equivalent anchor, or one of the other methods provided for in NEI 95-10, Appendix F. The LRA defined equivalent anchor as a combination of restraints or supports such that the nonsafety-related piping and associated SCs attached to safety-related piping is included in scope up to a boundary point that encompasses two (2) supports (restraints) in each of the three (3) orthogonal directions. The other methods used to define a scoping boundary included bounding conditions discussed in NEI 95-10, including ending at a base mounted component, flexible connection, or to include the entire piping run.

Nonsafety-Related SSCs With the Potential for Spatial Interaction With Safety-Related SSCs LRA 2.1.2.2.3, "Nonsafety-Related SSCs Whose Failure Could Result In a Potential Spatial Interaction with Safety-Related SSCs That Could Prevent Accomplishment of a Safety Function," stated that nonsafety-related systems and nonsafety-related portions of safety-related systems are identified as in scope under 10 CFR 54.4(a)(2) if there is a potential for spatial interactions with safety-related equipment. Spatial failures were defined as failures of nonsafety-related SSCs that are located in the vicinity of safety-related SSCs creating the potential for interaction between the SSCs due to physical impact, pipe whip, jet impingement, a harsh environment resulting from a piping rupture, or damage due to leakage or spray that could impede or prevent the accomplishment of the safety-related functions of a safety-related SSC. Also included were nonsafety-related SSCs which provide protection from temperature extremes, or detect flooding and leaks. Mitigative features, such as missile barriers, flood barriers, and spray shields, were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). In addition, the preventive option described in Appendix F of NEI 95-10

was used to determine the scope of license renewal with respect to the protection of safety-related SSCs from spatial interactions that are not addressed in the CLB. This scoping process required an evaluation based on equipment location and the related SSCs and if fluid-filled system components are located in the same space as safety-related equipment. A "space" was defined as barriers composed of walls, floors and ceilings which prevented interaction between safety-related and nonsafety-related SSCs.

2.1.4.2.2 Staff Evaluation

Pursuant to 10 CFR 54.4(a)(2), the applicant must consider all nonsafety-related SSCs whose failure could prevent satisfactory accomplishment of safety-related SSCs relied upon to remain functional during and following a DBE to ensure the following functions: (i) the integrity of the reactor coolant pressure boundary; (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition; or (iii) 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.

NRC Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," Revision 1, (Reg. Guide 1.188) provided NRC endorsement of the use of NEI 95-10, Revision 6, which discusses in Appendix F, the NRC staff position on 54.4(a)(2) scoping criteria, nonsafety-related SSCs typically identified in the CLB, consideration of missiles, cranes, flooding, high energy line breaks, nonsafety-related SSCs connected to safety-related SSCs, nonsafety-related SSCs in proximity of safety-related SSCs, and the mitigative and preventative options related to nonsafety-related and safety-related SSCs interactions.

In addition, the NRC staff position (as discussed NEI 95-10, Rev. 6) states that applicants should not consider hypothetical failures, but rather should base their evaluation on the plant's CLB, engineering judgment and analyses, and relevant operating experience. NEI 95-10 further describes operating experience as all documented plant-specific and industry-wide experience that can be used to determine the plausibility of a failure. Documentation would include NRC generic communications and event reports, plant-specific condition reports, industry reports such as safety operational event reports, and engineering evaluations. The staff reviewed LRA Section 2.1.2.2, where the applicant described the scoping methodology as it related to the application of the 10 CFR 54.4(a)(2) nonsafety-related criteria. In addition, the staff reviewed the applicant's results report which documented the guidance and corresponding results of the applicant's 10 CFR 5.4.4(a)(2) scoping review which had been performed in accordance with the guidance contained in NEI 95-10, Revision 6, Appendix F.

Nonsafety-Related SSCs Required to Perform a Function that Supports a Safety-Related SSC
The staff concludes that nonsafety-related SSCs required to remain functional to support a safety-related function were included within the scope of license renewal as safety-related in accordance with the requirements of 10 CFR 54.4(a)(1) with several exceptions, which were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). This evaluating criteria was discussed in the applicant's 10 CFR 54.4(a)(2) report. The staff finds that the applicant implemented an acceptable method for scoping of nonsafety-related systems that perform a function that supports a safety-related intended function.

Nonsafety-Related SSCs Directly Connected to Safety-Related SSCs The staff concludes that in order to identify the nonsafety-related SSCs connected to safety-related SSCs and required to be structurally sound to maintain the integrity of the safety-related SSCs, the applicant used a

combination of the information contained in the VEGP structural analysis (to identify the structural boundary), equivalent anchors and the bounding approach as described in NEI 95-10, Appendix F. The applicant reviewed the safety-related to nonsafety-related interfaces for each mechanical system in order to identify the nonsafety-related components located between the interface and the structural boundary. The staff concludes that the applicant had included all nonsafety-related SSCs within the structural boundary within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

If a seismic support could not be located using the structural boundary, the applicant identified the portion of the nonsafety-related piping up to, and including, an equivalent anchor or a bounding condition such as a base-mounted component, flexible connection, or the end of the piping run, in accordance with the guidance of NEI 95-10, Appendix F, which was included within the scope of license renewal. The LRA and the applicant's implementing procedures defined an equivalent anchor as two supports in each of the three orthogonal directions.

Nonsafety-Related SSCs with the Potential for Spatial Interaction with Safety-Related SSCs The applicant considered physical impact (pipe whip, jet impingement), harsh environments, flooding, spray, and leakage when evaluating the potential for spatial interactions between nonsafety-related systems and safety-related SSCs. The applicant used a "spaces approach" to identify the portions of nonsafety-related systems with the potential for spatial interaction with safety-related SSCs. The spaces approach focused on the interaction between nonsafety-related and safety-related SSCs that are located in the same space, which was defined as a room or cubicle that is separated from other spaces by substantial objects (such as wall, floors, and ceilings).

Physical Impact or Flooding the applicant had considered situations where nonsafety-related supports for non-seismic piping systems with potential for spatial interaction with safety-related SSCs for inclusion within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). The applicant had identified the nonsafety-related SSCs by performing a review of the UFSAR, CLB documents, industry guidance, equipment layout drawings, composite drawings, isometric drawings and by performing walkdowns. Piping and equipments supports and components were addressed in a commodity fashion within civil/structural AMR reports. The applicant's review of earthquake experience identified no occurrence of welded steel pipe segments falling due to a strong motion earthquake. The applicant concluded that as long as the effects of aging on supports for piping systems are managed, falling of piping systems is not credible (except due to flow accelerated corrosion as considered in the high energy line break (HELB) analysis for high energy systems) and the piping sections are not required to be included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) due to a physical impact hazard. The applicant evaluated the missiles that could be generated from internal or external events such as failure of rotating equipment. The nonsafety-related design features which protect safety-related SSCs from such missiles were included within the scope of license renewal. All nonsafety-related cranes, monorails and hoists (overhead-handling systems) were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) as structural commodities due to the potential for interaction with safety-related SSCs.

Pipe Whip, Jet Impingement, and Harsh Environment The applicant had evaluated nonsafety-related portions of high energy lines against the10 CFR 54.4(a)(2) criteria. The applicant's evaluation was based on a review of documents such as the UFSAR, design criteria documents and relevant site documentation. The applicant's high energy systems were evaluated to ensure identification of components that are part of nonsafety-related

high energy lines that can effect safety-related equipment. If the applicant's HELB analysis assumed that a nonsafety-related piping system did not fail or assumed failure only at specific locations, then that piping system (piping, equipment and supports) was included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) and subject to an AMR in order to provide assurance that those assumptions remain valid through the period of extended operation. Also, as discussed in the VEGP 10 54.4(a)(2) report, the applicant reviewed the reference documents, primarily the UFSAR and the VEGP Technical Requirements Manual, that contained HELB analysis for inside and outside containment and which identified high energy lines. Many of the identified systems were safety-related or required for a regulated event and included within the scope of license renewal in accordance with 10 CFR 54.4(a)(1). The remaining nonsafety-related, high energy lines, which were determined to have the potential for interaction with safety-related SSCs, were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

Spray and Leakage The applicant evaluated moderate and low energy systems which have the potential for spatial interactions due to spray or leakage. Nonsafety-related systems, and nonsafety-related portions of safety-related systems, with the potential for spray or leakage that could prevent safety-related SSCs from performing their required safety function were considered within the scope of license renewal. The applicant used a spaces approach to identify the nonsafety-related SSCs which were located within the same space as safety-related SSCs. As described in the LRA, a space was defined as barriers composed of walls, floors and ceilings which prevented interaction between safety-related and nonsafety-related SSCs. Following identification of the applicable mechanical systems, the applicant reviewed the system functions to determine whether the system contained fluid, air or gas. Based on plant and industry operating experience, the applicant excluded the nonsafety-related SSCs containing air or gas from the scope of license renewal with the exception of lines containing hydrogen gas whose failure were determined to have a potential impact on safety-related SSCs. The applicant then determined whether the system had any components located within a space containing safety-related SSCs. Those nonsafety-related SSCs determined to contain fluid or hydrogen gas, and located within a space containing safety-related SSCs, were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

The staff concludes that additional information would be required to complete the review of the applicant's scoping methodology. During the on-site audit the staff reviewed the applicant's technical evaluation for nonsafety-related affecting safety-related SSCs which discussed the consideration of components located in the turbine building and identified as safety-related in the UFSAR. The applicant concluded in the technical evaluation that, although the turbine building contains components identified as safety-related in the UFSAR, these components are not vulnerable to the effects of a failure of nonsafety-related SSCs in the non-seismic areas within the limits of the CLB. Therefore, no additional SSCs located in the turbine building were included within the scope of license renewal based on the requirements of 10 CFR 54.4(a)(2). In RAI 2.1-2, dated January 28, 2008, the staff requested that the applicant provide the rationale and basis for not including nonsafety-related SSCs in the vicinity of safety-related SSCs in the turbine building within the scope of license renewal.

In the response to RAI 2.1-2 dated February 27, 2008, the applicant stated the following:

The following components in the turbine building are classified as safety related:

- Turbine impulse pressure transmitters

- Turbine steam bypass valve (steam dump valve) air supply solenoid valves
- High pressure turbine steam stop valve limit switches
- High pressure turbine steam control valve [electrohydraulic control] oil pressure transmitters and manual isolation valves

The applicant stated that although these components are conservatively classified as safety-related they (1) perform no safety function, (2) are not credited in the accident analysis, and (3) meet the VEGP CLB for preventing interactions from propagating back into the reactor protection system and they can not prevent satisfactory accomplishment of any of the safety related functions discussed in 10 CFR 54.4, paragraphs (a)(1) (i), (ii), or (iii). Based on the review of the functions of the components classified as safety related in the turbine building, the applicant determined that there were no nonsafety-related components located in the turbine building whose failure could prevent the performance of a safety-related function. Therefore, no components located within the turbine building were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

The staff reviewed the applicant's response to RAI 2.1-2 and determined that the applicant had provided a description of an adequate process to review the functions of the components classified as safety-related and located in the turbine building. The staff concludes that the applicant had adequately performed and documented a review to determine that certain components located in the turbine building had been conservatively classified as safety-related although they did not perform a safety-function as defined in the CLB and, therefore, there were no nonsafety-related components located in the turbine building whose failure could prevent the performance of safety-related function.

Protective Features The applicant evaluated protective features such as whip restraints, spray shields, supports, missile and flood barriers installed to protect safety-related SSCs against spatial interaction with nonsafety-related SSCs due to fluid leakage, spray, or flooding. Such protective features credited in the plant design were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

2.1.4.2.3 Conclusion

On the basis of a review of the applicant's scoping process and sample systems, discussions with the applicant, and review of the information provided in the response to RAI 2.1-2, the staff concludes that the applicant's methodology for identifying and including nonsafety-related SSCs, which could affect the performance of a safety-related SSCs, within the scope of license renewal, is consistent with the scoping criteria of 10 CFR 54.4(a)(2), and is therefore acceptable.

2.1.4.3 *Application of the Scoping Criteria in 10 CFR 54.4(a)(3)*

2.1.4.3.1 Summary of Technical Information in the Application

LRA Section 2.1.2.3 , "10 CFR 54.4(a)(3) - Regulated Events," describes the methodology for identifying those systems and structures within the scope of license renewal in accordance with the Commission's criteria for five regulated events: (1) 10 CFR 50.48, "Fire Protection;" (2) 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants;" (3) 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events;" (4) 10 CFR 50.62, "Requirements for Reduction of Risk from Anticipated Transients Without Scram (ATWS) Events for Light-Water-Cooled Nuclear

Power Plants;" and (5) 10 CFR 50.63, "Loss of All Alternating Current Power."

Fire Protection LRA Section 2.1.2.3.1, "10 CFR 50.48 - Fire Protection," described scoping of systems and structures relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the fire protection criterion. The LRA stated the SSCs relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with 10 CFR 50.48, "Fire Protection," were included in the scope of license renewal under the 10 CFR 54.4(a)(3) criterion.

The VEGP CLB documents applicable to the VEGP Fire Protection Program, such as the UFSAR Section 9.5.1 and Appendices 9A and 9B, were reviewed to determine the SSCs relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with 10 CFR 50.48. Based on the CLB, the applicant included the SSCs credited with fire prevention, detection, and mitigation for areas containing equipment important to safety and for certain radioactive waste areas (as required by the CLB), within the scope of license renewal. The applicant also included in the scope of license renewal those SSCs relied upon in the CLB to maintain the ability to perform reactor plant safe shutdown functions in the event of a fire.

Environmental Qualification LRA Section 2.1.2.3.2, "10 CFR 50.49 - Environmental Qualification (EQ)," describes the scoping of systems and structures relied on in safety analyses or plant evaluations to perform a function in compliance with the EQ criterion. The LRA stated that the master list of safety-related equipment located in a harsh environment (EQ master list) defines the electrical equipment subject to the requirements of 10 CFR 50.49. The electrical components on the EQ master list have been included in the scope of license renewal in accordance with 10 CFR 54.4(a)(3).

Pressurized Thermal Shock LRA Section 2.1.2.3.3, "10 CFR 50.61 - Pressurized Thermal Shock (PTS)," describes the scoping of systems and structures relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the PTS criterion. The LRA stated that SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," are within the scope of license renewal. Based upon a review of design basis documentation, only the reactor vessels and the reactor vessel internals credited to reduce fast neutron fluence are relied upon for protection against PTS. The reactor vessels and the reactor vessel internals structures credited to reduce fast neutron fluence have been included within the scope of license renewal for PTS in accordance with 10 CFR 54.4(a)(3).

Anticipated Transient Without Scram LRA Section 2.1.1.3.4, "Commission's Regulations for Anticipated Transients without Scram (10 CFR 50.62)," describes the scoping of systems and structures relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the ATWS criterion. The LRA stated that the ATWS mitigation system actuation circuitry (AMSAC) was required to meet the 10 CFR 50.62 requirements. The AMSAC is described in UFSAR Section 7.7.1.11. The AMSAC and other SSCs relied on in analyses or plant evaluations to sense, initiate, and perform these required functions have been included within the scope of license renewal for ATWS in accordance with 10 CFR 54.4(a)(3).

Station Blackout LRA Section 2.1.1.3.5, "Commission's Regulations for Station Blackout (10 CFR 50.63)," describes the scoping of systems and structures relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the SBO criterion. The LRA stated that the functions relied upon during the SBO coping phase were described in

UFSAR Section 8.4. The SSCs relied on in the analyses and plant evaluations for coping with an SBO event, and the systems containing these components, have been included within the scope of license renewal in accordance with 10 CFR 54.4(a)(3). In addition the SSCs required to recover from a SBO event were also included within the scope of license renewal in accordance with 10 CFR 50.63.

2.1.4.3.2 Staff Evaluation

The staff reviewed the applicant's approach to identifying mechanical systems and structures relied upon to perform functions meeting the requirements of the fire protection, EQ, PTS, ATWS, and SBO regulations. As part of this review the staff discussed the methodology with the applicant, reviewed the documentation developed to support the approach, and evaluated a sample of the mechanical systems and structures indicated as within the scope of license renewal under the 10 CFR 54.4(a)(3) criteria.

The applicant's implementing procedures describe the process for indentifying systems and structures within the scope of license renewal. The procedures state that all mechanical systems and structures that perform functions addressed in 10 CFR 54.4(a)(3) are to be included within the scope of license renewal and that the results are to be documented in scoping results reports.

The results reports reference the information sources used for determining the systems and structures credited for compliance with the regulated events.

Fire Protection The applicant's scoping results reports indicate that it considered CLB documents to identify in-scope systems and structures. These documents include the UFSAR, design criteria and fire protection P&IDs. The staff reviewed the scoping results reports in conjunction with the LRA and the CLB information to validate the methodology for including the appropriate SSCs within the scope of license renewal. The staff finds that the scoping results reports indicated which of the mechanical systems and structures are included within the scope of license renewal because they perform intended functions meeting 10 CFR 50.48 requirements. The staff concludes that the applicant's scoping methodology was adequate for including SSCs credited in performing fire protection functions.

Environmental Qualification The applicant had used the EQ master list to identify SSCs meeting the requirements of 10 CFR 50.49. The EQ master list included system information, component identification numbers and descriptions. The staff reviewed the LRA, implementing procedures, scoping results reports, and the EQ master list to verify that the applicant had identified SSCs within the scope of license renewal. The staff concludes that the applicant's scoping methodology was adequate for identifying EQ SSCs within the scope of license renewal.

Pressurized Thermal Shock The applicant addressed PTS requirements for these components in a TLAA report. The staff reviewed the TLAA report and scoping report and determined that the methodology is appropriate for identifying SSCs with functions credited for complying with the PTS regulation and within the scope of license renewal. For this requirement the applicant identified the reactor vessel and certain vessel internal components within the scope of license renewal.

Anticipated Transient Without Scram The applicant's scoping results report indicated the mechanical systems were included within the scope of license renewal because they perform intended functions meeting 10 CFR 50.62 requirements. The applicant determined the intended

functions based on CLB information and identified most in-scope components as electrical equipment. For scoping electrical equipment, the applicant's bounding methodology included within the scope of license renewal all electrical and I&C systems in mechanical systems by default. The applicant also included mechanical systems with ATWS intended functions based on CLB information. The staff concludes that this scoping methodology was adequate for identifying SSCs with functions credited for complying with the ATWS regulation.

Station Blackout The scoping results reports indicate the mechanical systems and structures credited with performing intended functions to comply with the SBO requirement. During the scoping process the applicant considered CLB information, including the UFSAR, design criteria, plant drawings and the SBO analysis report. The applicant included within the scope of license renewal electrical equipment, mechanical systems, and structures with intended functions meeting SBO requirements. For scoping electrical equipment, the applicant's bounding methodology included within the scope of license renewal all electrical and I&C systems by default. The mechanical systems and structures within the scope of license renewal are those relied on in the CLB for the SBO coping duration phase and for the SBO recovery phase. The staff concludes that this scoping methodology was adequate for identifying SSCs with functions credited for complying with the SBO regulation. The staff review and conclusion of the results of the implementation of the SBO scoping methodology is contained in Section 2.5.

2.1.4.3.3 Conclusion

The staff concludes that the applicant's methodology for identifying systems and structures meets the scoping criteria of 10 CFR 54.4(a)(3) and is therefore acceptable. This conclusion is based on sample reviews, discussions with the applicant, and review of the applicant's scoping process as discussed above.

2.1.4.4 Plant-Level Scoping of Systems and Structures

2.1.4.4.1 Summary of Technical Information in the Application

System and Structure Level Scoping The applicant documented its methodology for performing the scoping of SSCs in accordance with 10 CFR 54.4(a) in the LRA, guidance documents and scoping and screening reports. The applicant's approach to system and structure scoping provided in the site guidance and implementing documents was consistent with the methodology described in Section 2.1 of the LRA. Specifically, the guidance documents specified that the personnel performing license renewal scoping use CLB documents and describe the system or structure, including a list of functions that the system or structure is required to accomplish. Sources of information included the UFSAR, design criteria, maintenance rule information, plant drawings, equipment databases and docketed correspondence. The applicant then compared identified system or structures function lists to the scoping criteria to determine whether the functions met the scoping criteria of 10 CFR 54.4(a). If any part of a system or structure met any of the license renewal scoping criteria, the system or structure was included in the scope of license renewal. The system and structure scoping results included an overall system/structure description, an evaluation of each of the 10 CFR 54.4 scoping criteria and the basis for the conclusion reached. The applicant developed evaluation boundaries to document the system and structure level scoping determinations and to define the in-scope SSCs to support the subsequent screening and AMR processes. The boundaries for the in-scope systems and structures were defined and documented in a manner for each discipline that assured the in-scope SSCs were included in the screening process.

Component Level Scoping After the applicant identified the intended functions of systems or structures within the scope of license renewal, a review was performed to determine which components and structures support the system's license renewal intended functions. The components that support intended functions were considered within the scope of license renewal and screened to determine if an AMR was required. The applicant considered three groups of SCs during this stage of the scoping methodology: (1) mechanical, (2) structural, and (3) electrical.

Commodity Groups Scoping The applicant applied commodity group scoping to structural and electrical SCs as discussed in Sections 2.1.4.6 and 2.1.4.7.

Insulation LRA Section 2.1.2.2.3 stated that insulation was included with the mechanical scoping. Piping insulation in containment penetrations was identified as being required to keep the local concrete temperatures below 200°F. Also, for certain HVAC systems, thermal insulation is credited in the calculations that assure that the HVAC systems will perform their safety-related functions. Insulation was included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

Consumables LRA Section 2.1.2.3, "Screening," discusses consumables. The information in Table 2.1-3 of the SRP-LR was used to categorize and evaluate consumables. Consumables were divided into the following four categories for the purpose of license renewal: (a) packing, gaskets, component seals, and O-rings; (b) structural sealants; (c) oil, grease, and component filters; and (d) system filters, fire extinguishers, fire hoses, and air packs.

Group (a) Packing, gaskets, component mechanical seals, and O-rings are typically used to provide a leak proof seal when components are mechanically joined together. These items are commonly found in components such as valves, pumps, heat exchangers, ventilation units or ducts, and piping segments. Based on ANSI B31.1 and the ASME B&PV Code Section III, the subcomponents of these pressure retaining components are not pressure-retaining parts. Therefore, these subcomponents are not relied on to perform a pressure boundary intended function and were not subject to an AMR.

Group (b) Elastomers and other materials used as structural sealants are subject to an AMR if they are not periodically replaced and they perform an intended function, typically supporting a pressure boundary, flood barrier, or rated fire barrier. Compressible joints and seals, seismic joint filler, and roof membranes were included in the AMR of bulk commodities. Sealants with a pressure boundary function were included in the AMR of the containment buildings.

Group (c) Oil, grease, and component filters have been treated as consumables because either (1) they are periodically replaced or (2) they are monitored and replaced based on condition and were not subject to an AMR.

Group (d) Components such as system filters, fire hoses, fire extinguishers, self-contained breathing apparatus (SCBA), and SCBA cylinders are considered consumables and are routinely tested, inspected, and replaced when necessary. Periodic inspection procedures specify the replacement criterion of these components that are routinely checked by tests or inspections. Therefore, while these consumables are in the scope of license renewal, they are not subject to an AMR.

2.1.4.4.2 Staff Evaluation

The staff reviewed the applicant's methodology for performing the scoping of plant systems and

components to ensure it was consistent with 10 CFR 54.4(a). The methodology used to determine the systems and components within the scope of license renewal was documented in implementing procedures and scoping results reports for mechanical systems. The scoping process defined the plant in terms of systems and structures. Specifically, the implementing procedures identified the systems and structures that are subject to 10 CFR 54.4 review, described the processes for capturing the results of the review, and were used to determine if the system or structure performed an intended function consistent with the criteria of 10 CFR 54.4(a). The process was completed for all systems and structures to ensure that the entire plant was addressed.

The applicant documented the results of the plant-level scoping process in accordance with the guidance documents. The results were provided in the systems and structures documents and reports which contained information including a description of the structure or system, a listing of functions performed by the system or structure, identification of intended functions, the 10 CFR 54.4(a) scoping criteria met by the system or structure, references, and the basis for the classification of the system or structure intended functions. During the audit, the staff reviewed a sampling of the documents and reports and concluded that the applicant's scoping results contained an appropriate level of detail to document the scoping process.

2.1.4.4.3 Conclusion

Based on its review of the LRA, scoping and screening implementation procedures, and a sampling of system scoping results during the audit, the staff concludes that the applicant's methodology identifies SSC types, and commodity groups within the scope of license renewal and their intended functions in accordance with the requirements of 10 CFR 54.4.

2.1.4.5 *Mechanical Component Scoping*

2.1.4.5.1 Summary of Technical Information in the Application

In addition to the information previously discussed in Section 2.1.4.4.1, LRA Section 2.1.2 stated that for the mechanical scoping effort, summary-level boundary descriptions were developed, along with a set of license renewal mechanical boundary drawings. The mechanical boundary drawings were developed from the VEGP piping and instrumentation diagrams and show the mechanical components within the scope of license renewal, including those components that are only within the scope of license renewal in accordance with 10 CFR 54.4(a)(2), using color-coding. End points for the portions within the scope of license renewal were clearly delineated. Notes were added to the drawings as necessary to clarify the endpoints when they do not occur at a component or feature already depicted on the drawing.

2.1.4.5.2 Staff Evaluation

The staff evaluated LRA Section 2.1.2 and the guidance in the implementing project documents and reports to perform the review of mechanical scoping process. The project documents and reports provided instructions for identifying the evaluation boundaries. Determination of the mechanical system evaluation boundary required an understanding of system operations in support of intended functions.

This process was based on the review of design criteria documents, UFSAR, plant drawings, maintenance rule scoping documents, technical specifications and bases, safety evaluation reports, equipment databases, master list of EQ equipment, SBO analysis report, licensing correspondence, and vendor documents. The evaluation boundaries for mechanical systems were documented on license renewal boundary drawings that were created by marking mechanical piping and instrumentation diagrams to indicate the components within the scope of license renewal. Components within the evaluation boundary were reviewed to determine whether they perform an intended function. Intended functions were established based on whether a particular function of a component was necessary to support the system functions that meet the scoping criteria.

The staff reviewed the implementation guidance and the CLB documents associated with mechanical system scoping, and found that the guidance and CLB source information noted above were acceptable to identify mechanical components and support structures in mechanical systems that are within the scope of license renewal. The staff conducted detailed discussions with the applicant's license renewal project management personnel and reviewed documentation pertinent to the scoping process. The staff assessed whether the applicant had appropriately applied the scoping methodology outlined in the LRA and implementation procedures and whether the scoping results were consistent with CLB requirements. The staff concludes that the applicant's proceduralized methodology was consistent with the description provided in the LRA Section 2.1 and the guidance contained in the SRP-LR, Section 2.1, and was adequately implemented.

The staff reviewed the applicant's methodology for identifying MSS and ECCS mechanical component types meeting the scoping criteria as defined in the Rule. The staff also reviewed the scoping methodology implementation procedures and discussed the methodology and results with the applicant. The staff verified that the applicant had identified and used pertinent engineering and licensing information in order to determine the MSS and ECCS mechanical component types required to be within the scope of license renewal. As part of the review process, the staff evaluated each system intended function identified for the MSS and ECCS, the basis for inclusion of the intended function, and the process used to identify each of the system component types. The staff verified that the applicant had identified and highlighted system P&IDs to develop the license renewal boundaries in accordance with the procedural guidance. The applicant was knowledgeable about the process and conventions for establishing boundaries as defined in the license renewal implementation procedures. Additionally, the staff verified that the applicant had independently verified the results in accordance with the governing procedures. Specifically, other license renewal personnel knowledgeable about the system had independently reviewed the marked-up drawings to ensure accurate identification of system intended functions. The applicant performed additional cross-discipline verification and independent reviews of the resultant highlighted drawings before final approval of the scoping effort.

2.1.4.5.3 Conclusion

Based on its review of the LRA, scoping implementation procedures, the systems sampled, and discussions with the applicant, the staff concludes that the applicant's methodology for identifying mechanical systems within the scope of license renewal is in accordance with the requirements of 10 CFR 54.4.

2.1.4.6 *Structural Scoping*

2.1.4.6.1 Technical Information in the Application

In addition to the information previously discussed in Section 2.1.4.4.1, LRA Section 2.1.2 stated that the structural scoping effort, summary-level boundary descriptions were developed. Generally, the VEGP scoping process used a "spaces" approach in establishing the evaluation boundaries. With few exceptions, the scoping for a building or structure was the entire building. Individual license renewal drawings were not created for structures and were not necessary since the spaces approach was being used. A single boundary drawing based on the site plot plan drawing was created, however. This license renewal structural boundary drawing showed the in scope structures using color-coding, and displays the spatial relationship of the plant structures to one another.

2.1.4.6.2 Staff Evaluation

The staff reviewed the applicant's approach for identifying structures relied upon to perform the functions described in 10 CFR 54.4(a). As part of this review, the staff discussed the methodology with the applicant, reviewed the documentation developed to support the review, and evaluated the scoping results for several structures that were identified within the scope of license renewal.

The applicant had identified and developed a list of plant structures and the structures intended functions through a review of design criteria documents, UFSAR, plant drawings, maintenance rule scoping documents, technical specifications and bases, safety evaluation reports, equipment databases, licensing correspondence, and vendor documents. Each structure was evaluated against the criteria of 10 CFR 54.4 (a)(1), (a)(2) and (a)(3).

The staff reviewed selected portions of the UFSAR, maintenance rule documents, design criteria, and structural drawings, implementing procedures and selected AMR reports to verify the adequacy of the methodology. In addition, staff reviewed the scoping results, including information contained in the source documentation, for the NSCW cooling tower building to verify that application of the methodology would provide the results as documented in the LRA. The staff reviewed the applicant's methodology for identifying structures meeting the scoping criteria as defined in the Rule. The staff also reviewed the scoping methodology implementation procedures and discussed the methodology and results with the applicant. The staff verified that the applicant had identified and used pertinent engineering and licensing information in order to determine the NSCW tower structure and components required to be within the scope of license renewal. As part of the review process, the staff evaluated the intended functions identified for the NSCW tower and components, the basis for inclusion of the intended function, and the process used to identify each of the component types. Additionally, the staff verified that the applicant had independently verified the results in accordance with the governing procedures.

2.1.4.6.3 Conclusion

Based on the staff's review of information in the LRA, scoping implementation procedures, and a sampling review of structural scoping results, the staff concludes that the applicant's methodology for identification of the structures within the scope of license renewal is in accordance with the requirements of 10 CFR 54.4.

2.1.4.7 Electrical Component Scoping

2.1.4.7.1 Technical Information in the Application

LRA Section 2.1.2, states that for the electrical scoping effort, boundary drawings were not needed since the screening was performed using a "Plant-Wide Spaces Approach." LRA Section 2.5.1, "Plant-Wide Electrical," states that plant-wide electrical was the designation used by VEGP in the LRA for the sole purpose of grouping electrical components into one system grouping for scoping, screening, and an AMR. Identification of in-scope electrical and I&C components was performed on a generic component type basis. The electrical and I&C component types associated with the in-scope electrical and I&C systems and in-scope mechanical systems and civil structures, were also identified generically.

2.1.4.7.2 Staff Evaluation

The staff evaluated LRA Sections 2.1.2 and 2.5.1 and the applicants implementing procedures and AMR reports that governed the electrical scoping methodology. The applicant had reviewed the electrical and I&C systems in accordance with the requirements of 10 CFR 54.4 and determined which systems were to be included within the scope of license renewal. During the scoping process, the applicant used the design criteria documents, UFSAR, plant drawings, maintenance rule scoping documents, technical specifications and bases, safety evaluation reports, equipment databases, master list of EQ equipment, SBO analysis report, licensing correspondence, and vendor documents.

All electrical and I&C components contained in plant systems and electrical systems contained in mechanical or structural systems were included within the scope of license renewal. The applicant reviewed fuse-holders using the plant fuse documentation and drawings and did not identify any fuse holders to be included within the scope of license renewal. The applicant reviewed the application of tie-wraps to determine if credit had been taken in the CLB for tie-wrap use or if nonsafety-related tie-wraps could affect a safety-related function, but did not identify any tie-wraps to be included within the scope of license renewal. The staff reviewed selected portions of the data sources and selected several examples of components for which the applicant demonstrated the process used to determine electrical components were within the scope of license renewal. The results of the staff's review of the implementation of the SBO scoping methodology is discussed in Section 2.5.

2.1.4.7.3 Conclusion

On the basis of the review of information contained in the LRA, scoping implementation procedures, and a sampling review of electrical scoping results, the staff concludes that the applicant's methodology for identification of electrical components within the scope of license renewal is in accordance with the requirements of 10 CFR 54.4.

2.1.4.8 ***Scoping Methodology Conclusion***

On the basis of a review of the LRA and the scoping implementation procedures, the staff concludes that the applicant's scoping methodology is consistent with the guidance contained in the SRP-LR and identifies those SSCs (1) that are safety-related, (2) whose failure could affect safety-related functions, and (3) that are necessary to demonstrate compliance with the NRC's regulations for Fire Protection, Environmental Qualification, Pressurized Thermal Shock, Anticipated Transient Without Scram and Station Blackout. The staff concludes that the

applicant's methodology is consistent with the requirements of 10 CFR 54.4(a), and is therefore, acceptable.

2.1.5 Screening Methodology

2.1.5.1 *General Screening Methodology*

2.1.5.1.1 Technical Information in the Application

In LRA Section 2.1.3, "Screening Methodology," the applicant discussed the process for determining which components and structural elements require an AMR. Screening identifies SCs within the scope of license renewal that perform an intended function as described in 10 CFR 54.4, without moving parts or without a change in configuration or properties and that are not subject to replacement based on a qualified life or specified time period. The screening process determines the SCs subject to an AMR by:

- Listing the in-scope SCs by component type using the scoping results for a particular system or structure;
- "Screening" the component types for the passive and long-lived criteria; and
- Identifying the intended function(s) performed by the passive and long-lived SCs by component type for the in-scope system or structure.

The result was a tabulation of the in-scope passive long-lived SCs that perform intended functions and therefore require an AMR. The screening process grouped SCs into component groups (component types) based on similarity of design and purpose. Use of component groups enables evaluation of entire groups of SCs in a single screening evaluation. The screening process followed the recommendations of NEI 95-10. "Active" and "short-lived" determinations were made consistent with NEI 95-10. Components or structural elements that were either active or subject to replacement based on a qualified life were "screened out" as not subject to an AMR.

2.1.5.1.2 Staff Evaluation

Pursuant to 10 CFR 54.21, each LRA must contain an Integrated Plant Assessment (IPA) that identifies SCs within the scope of license renewal that are subject to an AMR. The IPA must identify components that perform an intended function without moving parts or a change in configuration or properties (passive), as well as components that are not subject to periodic replacement based on a qualified life or specified time period (long-lived). The IPA includes a description and justification of the methodology used to determine the passive and long-lived SCs, and a demonstration that the effects of aging on those SCs will be adequately managed so that the intended function(s) will be maintained under all design conditions imposed by the plant specific CLB for the period of extended operation.

The staff reviewed the methodology used by the applicant to determine if mechanical and structural components and electrical commodity groups within the scope of license renewal should be subject to an AMR. The applicant implemented a process for determining which SCs were subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In LRA Section 2.1.3, the applicant discussed these screening activities as they related to the component types and commodity groups within the scope of license renewal.

The screening process evaluated the component types and commodity groups, included within the scope of license renewal, to determine which ones were long-lived and passive and therefore subject to an AMR. The staff reviewed Section 2.3, Section 2.4, and Section 2.5 of the LRA that provided the results of the process used to identify component types and commodity groups subject to an AMR. The staff also reviewed the screening results reports for the MSS and ECCS and the NSCW tower.

The applicant provided the staff with a detailed discussion of the processes used for each discipline and provided administrative documentation that described the screening methodology. Specific methodology for mechanical, electrical, and structural is discussed below.

2.1.5.1.3 Conclusion

On the basis of a review of the LRA, the screening implementation procedures and a sampling of screening results, the staff concludes that the applicant's screening methodology was consistent with the guidance contained in the SRP-LR and was capable of identifying passive, long-lived components in-scope of license renewal that are subject to an AMR. The staff concludes that the applicant's process for determining which component types and commodity groups subject to an AMR is consistent with the requirements of 10 CFR 54.21.

2.1.5.2 *Mechanical Component Screening*

2.1.5.2.1 Summary of Technical Information in the Application

LRA Section 2.1.3.1, "Screening of Mechanical Systems," discusses the screening methodology for identifying passive and long-lived mechanical components and their support structures that are subject to an AMR. License renewal drawings were prepared to indicate portions of systems that support system intended functions within the scope of license renewal. For mechanical systems, a systematic process was used to identify the components that require an AMR. The mechanical component screening included the following steps: (1) identifying the in-scope SCs and associated component types using the license renewal mechanical boundary information and drawings created during the scoping process; (2) evaluating the component types against the active/passive and long-lived/short-lived criteria of 10 CFR 54.21(a)(1)(i) and (ii); and (3) identifying the component intended functions for the passive and long-lived component types. For each system, the applicable component types for the components and component groups were identified and listed. The criteria of 10 CFR 54.21(a)(1)(i) and (ii) were applied to identify the passive long-lived component types. Component intended functions were also identified. The components that contribute to the performance of a system intended function, and perform their function without moving parts and without a change in configuration or properties, and are not subject to replacement based on a qualified life or specified time period were subject to an AMR.

2.1.5.2.2 Staff Evaluation

The staff evaluated the mechanical screening methodology discussed and documented in LRA Section 2.1.3.1, the implementing guidance documents, the AMR reports, and the license renewal drawings. The mechanical system screening process began with the results from the

scoping process. The applicant reviewed each system evaluation boundary as illustrated on P&IDs to identify passive and long-lived components. Within the system evaluation boundaries, all passive, long-lived components that perform or support an intended function were subject to an AMR. The results of the review are documented in the AMR reports. The AMR reports contain information such as the information sources reviewed and the system intended functions.

The staff reviewed the results of the boundary evaluations and discussed the process with the applicant. The staff verified that mechanical system evaluation boundaries were established for each system within the scope of license renewal and that the boundaries were determined by mapping the system intended function boundary onto P&IDs. The applicant reviewed the components within the system intended function boundary to determine if the component supported the system intended function. Those components that supported the system intended function were reviewed to determine if the component was passive and long lived and therefore subject an AMR.

The staff reviewed selected portions of design criteria documents, UFSAR, plant drawings, maintenance rule scoping documents, and selected AMR reports. The staff conducted detailed discussions with the applicant's license renewal team and reviewed documentation pertinent to the screening process. The staff assessed if the mechanical screening methodology outlined in the LRA and procedures was appropriately implemented and if the scoping results were consistent with CLB requirements. The staff also reviewed the mechanical screening results for the MSS and ECCS to verify proper implementation of the screening process. Based on these audit activities, the staff did not identify any discrepancies between the methodology documented and the implementation results.

2.1.5.2.3 Conclusion

Based on its review of the LRA, the screening implementation procedures, and a sample of the MSS and ECCS screening results, the staff concludes that the applicant's mechanical component screening methodology is consistent with SRP-LR guidance. The staff concludes that the applicant's methodology for identification of passive, long lived mechanical components within the scope of license renewal and subject to an AMR is in accordance with the requirements of 10 CFR 54.21(a)(1).

2.1.5.3 *Structural Component Screening*

2.1.5.3.1 Technical Information in the Application

LRA Section 2.1.3.2, "Screening of Structures," states that the screening process was applied to in-scope buildings and civil structures to identify the structural elements to be evaluated in the AMRs. Screening evaluation boundaries were established based on the scoping boundary results. A "Component Supports and Bulk Commodities" screening evaluation boundary was also established to address common components within the in-scope structures. The scoping and screening process used a "spaces" approach in establishing the evaluation boundaries and with few exceptions, the scoping and screening boundary for a building or structure was the entire building. The listing of structural elements was facilitated by grouping components into component groups since structural components and commodities often do not have unique identifiers such as those given to mechanical components. Structural components and commodities were identified based on materials of construction and functional applications to categorize them for AMRs. A list of structural components and component groups was

developed for each structural evaluation boundary. Since structures are inherently passive, and with few exceptions long-lived, the screening of structural components and commodities was based primarily on whether or not they perform an intended function.

Structural components that perform an intended function without moving parts and without a change in configuration or properties, and that are not subject to replacement based on a qualified life or specified time period were subject to an AMR.

2.1.5.3.2 Staff Evaluation

The staff reviewed the applicant's methodology for identifying structural components that are subject to an AMR as required in 10 CFR 54.21(a)(1). As part of this review, the staff discussed the methodology with the applicant, reviewed the documentation developed to support the activity, and evaluated the screening results for several structures that were identified within the scope of license renewal.

The staff reviewed the applicant's methodology used for structural screening described in LRA Section 2.1.3.2 and in the applicant's implementing guidance and AMR reports. The applicant had performed the screening review in accordance with the implementation guidance and captured pertinent structure design information, component, materials, environments, and aging effects. The staff verified that the applicant had determined that structures are inherently passive and long-lived, such that the screening of structural components and commodities was based primarily on whether they perform an intended function. Structural components were grouped as commodities based on materials of construction. The primary task performed by the applicant during the screening process was to evaluate structural components to identify intended functions as they relate to license renewal. The applicant provided the staff with a detailed discussion that described the screening methodology, as well as the screening reports for a selected group of structures.

The staff reviewed selected portions of the design criteria documents, UFSAR, plant drawings, maintenance rule scoping documents, structural drawings, implementing procedures and selected AMR reports. The staff conducted detailed discussions with the applicant's LR team and reviewed documentation pertinent to the screening process. The staff assessed if the screening methodology outlined in the LRA and procedures was appropriately implemented and if the scoping results were consistent with CLB requirements. The staff also reviewed structural screening results for the NSCW tower to verify proper implementation of the screening process. Based on these audit activities, the staff did not identify any discrepancies between the methodology documented and the implementation results.

2.1.5.3.3 Conclusion

On the basis of the staff's review of information contained in the LRA, the applicant's detailed screening implementation procedures, and a sampling review of structural screening results, the staff concludes that the applicant's methodology for identification of structural components within the scope of license renewal and subject to an AMR is in accordance with the requirements of 10 CFR 54.21(a)(1).

2.1.5.4 *Electrical Component Screening*

2.1.5.4.1 Technical Information in the Application

LRA Section 2.1.3.3 stated that VEGP used a "plant-wide spaces" approach for electrical and I&C screening. Electrical component types were screened on a plant-wide basis without regard to plant system. The spaces approach used was consistent with the approach described in NEI 95-10, Revision 6. A screening evaluation boundary was created which included all of the in-scope electrical and I&C systems, and the electrical
and I&C portions of the in-scope mechanical systems. This plant-wide electrical boundary permitted the screening evaluation to be consolidated under one system boundary.

The electrical and I&C component types in use at VEGP were identified and listed. The listing provided by NEI 95-10 Appendix B, as well as plant-specific document reviews were the basis for this list. Electrical component types were organized into component groups. The electrical and I&C component groups were identified from a review of plant documents, drawings, equipment databases, and interface with the parallel mechanical and civil/structural screening efforts. Following the identification of the electrical and I&C component commodity groups, the "passive" screening criterion of 10 CFR 54.21(a)(1)(i) was applied to identify component groups that perform their intended function(s) without moving parts or without a change in configuration or properties. These passive components were identified utilizing the guidance of NEI 95-10 and the Electric Power Research Institute (EPRI) License Renewal Electrical Handbook.

The "short-lived" screening criterion of 10 CFR 54.21(a)(1)(ii) was then applied to those specific component groups that were not previously eliminated. The "short-lived" screening criterion found in 10 CFR 54.21(a)(1)(ii) excludes those components or commodity groups that are subject to replacement based on a qualified life or specific time period from the requirements of an AMR. Electrical components included in the plant EQ program are replaced on a specified interval based on a qualified life. Therefore, components in the EQ program do not meet the "long-lived" criteria of 10 CFR 54.21(a)(1)(ii) and are "short-lived" per the regulatory definition.

The passive component types that are not subject to replacement based on a qualified life or specified time period and were subject to an AMR were determined to include cables, connectors, fuse holders, and various switchyard components.

2.1.5.4.2 Staff Evaluation

The staff reviewed the applicant's methodology used for electrical screening in LRA Sections 2.1.3.3 of the LRA and the applicant's implementation procedures and AMR reports. The applicant used the screening process described in these documents to identify the electrical commodity groups subject to an AMR. The applicant used the information contained in NEI 95-10, plant documents and drawings, the EQ master list, and the EPRI License Renewal Electrical Handbook as data sources to identify the electrical and I&C components.

The applicant identified two commodity groups which were determined to meet the passive criteria in accordance with NEI 95-10. The applicant evaluated the identified, passive commodities to identify whether they were subject to replacement based on a qualified life or specified time period (short-lived), or not subject to replacement based on a qualified life or specified time period (long-lived). The remaining passive, long lived components were determined to be subject to an AMR. The staff reviewed the screening of selected components to verify the correct implementation of the methodology.

2.1.5.4.3 Conclusion

The staff reviewed the LRA, procedures, electrical drawings, and a sample of the results of the screening methodology. The staff concludes that the applicant's methodology was consistent with the description provided in LRA and the applicant's implementing procedures. On the basis of a review of information contained in the LRA, the applicant's screening implementation procedures, and a sampling review of electrical screening results, the staff concludes that the applicant's methodology for identification of electrical commodity groups within the scope of license renewal and subject to an AMR is in accordance with the requirements of 10 CFR 54.21(a)(1).

2.1.5.5 *Screening Methodology Conclusion*

On the basis of a review of the LRA, the screening implementation procedures, discussions with the applicant's staff, and a sample review of screening results, the staff concludes that the applicant's screening methodology was consistent with the guidance contained the SRP-LR and identified those passive, long-lived components within the scope of license renewal that are subject to an AMR. The staff concludes that the applicant's methodology is consistent with the requirements of 10 CFR 54.21(a)(1), and is therefore acceptable.

2.1.6 Summary of Evaluation Findings

The staff review of the information presented in LRA Section 2.1, the supporting information in the scoping and screening implementation procedures and reports, the information presented during the scoping and screening methodology audit, and the applicant's responses to the staff's RAIs dated February 27, 2008, formed the basis of the staff's determination. The staff verified that the applicant's scoping and screening methodology was consistent with the requirements of the Rule. From this review, the staff concludes that the applicant's methodology for identifying SSCs within the scope of license renewal and SCs requiring an AMR is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1), and is therefore acceptable.

2.1.7 References

1. LRA, Vogtle Electric Generating Plant, Units 1 and 2, dated June 29, 2007.

2. NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 1, dated September 2005.

3. NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR 54 - The License Renewal Rule," Revision 6, dated September 2005.

4. Scoping and Screening Methodology audit Trip Report Regarding the Southern Nuclear Operating Company, Inc., License Renewal Application for the Vogtle Electric Generating Plant, Units 1 and 2, dated June 29, 2007.

2.2 Plant-Level Scoping Results

2.2.1. Technical Information in the Application

In LRA Table 2.2-1 the applicant listed plant mechanical systems, structural systems, and electrical and instrumentation and controls systems within the scope of license renewal. Based on the DBEs considered in the plant's CLB, other CLB information relating to nonsafety-related systems and structures, and certain regulated events, the applicant identified plant-level systems and structures within the scope of license renewal as defined by 10 CFR 54.

2.2.2 Staff Evaluation

In LRA Section 2.1, the applicant described its methodology for identifying systems and structures within the scope of license renewal and subject to an AMR. The staff reviewed the scoping and screening methodology and provides its evaluation in SER Section 2.1. To verify that the applicant properly implemented its methodology, the staff's review focused on the implementation results shown in LRA Tables 2.2-1, and 2.2-2 to confirm that there were no omissions of plant-level systems and structures within the scope of license renewal.

The staff concludes whether the applicant properly identified the systems and structures within the scope of license renewal in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 54.4. The staff reviewed selected systems and structures that the applicant identified as not within the scope of license renewal to verify whether the systems and structures have any intended functions requiring their inclusion within the scope of license renewal. The staff's review of the applicant's implementation was conducted in accordance with the guidance in SRP-LR Section 2.2, "Plant-Level Scoping Results."

The staff's review of LRA Section 2.2 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.2-1, dated January 28, 2008, the staff noted that the LRA Table 2.2-2 defines the circulating water (CW) system, System No. 1401, as not within the scope of license renewal. Similar plant designs have identified their CW systems as being within scope based on 10 CFR 54.4(a)(2). The applicant was asked to provide additional information to justify exclusion of the CW system with respect to the applicable requirements of 10 CFR 54.4(a).

In its response, dated February 27, 2008, the applicant stated:

> The CW system components are located entirely within the Turbine Building, or in outside areas remote from any safety related systems, structures, or components (SCs). The CW system is not attached to any safety related SCs. Refer to the answer to RAI 2.1-2 for discussion regarding non-safety related components in the Turbine Building. The Circulating Water System components in the outside areas are physically located such that there is no potential for interaction with a safety related

SC. Therefore, the CW system is not in scope for the 10 CFR 54.4(a)(2) scoping criteria.

Based on its review, the staff finds the applicant's response to RAI 2.2-1 acceptable, because the applicant provided clarification as to why the CW system is not in scope with respect to the applicable requirement of 10 CFR 54.4(a); therefore, the staff's concern described in RAI 2.2-1 is resolved.

In RAI 2.2-2, dated January 28, 2008, the staff noted that LRA Table 2.2-2 defines the turbine plant closed cooling water system, System No. 1404, as not within the scope of license renewal. However, the turbine plant cooling water system (System No. 1405), LRA section 2.3.3.7, is identified as being within the scope of license renewal based on 10 CFR 54.4(a)(2). It appears these two systems are very similar. The applicant was asked to provide additional information to justify exclusion of the turbine plant closed cooling water system with respect to the applicable requirements of 10 CFR 54.4(a).

In its response, dated February 27, 2008, the applicant stated:

> The Turbine Plant Cooling Water System, System No. 1405, is in scope based on 10 CFR 54.4(a)(2) because it supplies cooling water to the CVCS Chiller, the Steam Generator Blowdown Trim Heat Exchangers, and corrosion product monitors which are located in the Auxiliary Building. With certain exceptions based on location, those portions of the Turbine Plant Cooling Water System which are located in the Auxiliary Building are in scope for potential spatial interaction. ... the Turbine Plant Cooling Water System components which are located in Room 124, the CVCS Chiller Pumps Room, are not in scope...There are no safety related components in Room 124, therefore, there is no potential for spatial interaction, so the components located in this room are not within the scope of license renewal for 10 CFR 54.4(a)(2).
>
> The Turbine Plant Closed Cooling Water System, System No. 1404, is not in scope based on 10 CFR 54.4(a)(2) because its components are located entirely within the Turbine Building. Refer to the answer to RAI 2.1-2 for discussion regarding non-safety related components in the Turbine Building.

Based on its review, the staff finds the applicant's response to RAI 2.2-2 acceptable, because the applicant provided clarification as to why the Turbine Plant Closed Cooling Water System is not in scope with respect to the applicable requirement of 10 CFR 54.4(a). Therefore, the staff's concern described in RAI 2.2-2 is resolved.

2.2.3 Conclusion

The staff reviewed LRA Section 2.2, the RAI responses, and the UFSAR supporting information to determine whether the applicant failed to identify any systems and structures within the scope of license renewal. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified, in accordance with 10 CFR 54.4, the systems and structures within the scope of license renewal.

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:

- reactor vessel, reactor vessel internals, and reactor coolant system
- engineered safety features
- auxiliary systems
- steam and power conversion systems

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

The staff's evaluation of the information in the LRA was the same for all mechanical systems. The objective was to determine whether the applicant has identified, in accordance with 10 CFR 54.4, components and supporting structures for mechanical systems that appear to meet the license renewal scoping criteria. Similarly, the staff evaluated the applicant's screening results to verify that all passive, long-lived components are subject to an AMR in accordance with 10 CFR 54.21(a)(1).

In its scoping evaluation, the staff reviewed the applicable LRA sections and drawings, focusing on components that have not been identified as within the scope of license renewal. The staff reviewed relevant licensing basis documents, including the UFSAR, for each mechanical system to determine whether the applicant has omitted from the scope of license renewal components with intended functions delineated under 10 CFR 54.4(a). The staff also reviewed the licensing basis documents to determine whether the LRA specified all intended functions delineated under 10 CFR 54.4(a).

The staff requested additional information to resolve any omissions or discrepancies identified.

After its review of the scoping results, the staff evaluated the applicant's screening results. For those SCs with intended functions delineated under 10 CFR 54.4(a), the staff sought to determine whether (1) the functions are performed with moving parts or a change in configuration or properties or (2) the SCs are subject to replacement after a qualified life or specified time period, as described in 10 CFR 54.21(a)(1). For those meeting neither of these criteria, the staff sought to confirm that these SCs are subject to an AMR, as required by 10 CFR 54.21(a)(1). The staff requested additional information to resolve any omissions or discrepancies identified.

Two-Tier Scoping Review Process for Balance of Plant (BOP) Branch Systems

There are 98 mechanical systems identified as within scope in the LRA, of which 51 systems are BOP systems. These 51 systems include most of the auxiliary systems and all the steam and power conversion systems. The staff performed a two-tier scoping review for the BOP systems.

A Tier 1 review is a less detailed review where the staff reviews the LRA and UFSAR to determine if the applicant failed to identify any component type that is typically found within the

scope of license renewal. During this review the staff evaluated the system's function(s) described in the LRA and UFSAR to verify the applicant has not omitted from the scope of license renewal any component types with the intended functions delineated under 10 CFR 54.4(a).

A Tier 2 review is a detailed review of the LRA, UFSAR, and license renewal boundary drawings to determine if the applicant failed to identify any components within the scope of license renewal and any components subject to an AMR. During this review the staff evaluated the system's function(s) described in the LRA and UFSAR to verify the applicant did not omit from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviews those components that the applicant has identified as within the scope of license renewal to verify that the applicant has not omitted any passive, long-lived components subject to an AMR in accordance with 10 CFR 54.21.

In determining the level of review (i.e., Tier 1 vs. Tier 2), the staff reviewed the LRA and the UFSAR description for each BOP system, focusing on the system's intended function(s). Tier 2 reviews were performed on systems that have:

- safety significance or risk significance
  - high safety significant systems
  - common cause failure of redundant trains
- operating experience indicating likely passive failure
- previous LRA experience

Examples of safety important or risk significant systems are the diesel generator (DG) and support systems and the emergency service water (ESW) system. An example of a system whose failure could result in common cause failure of redundant trains is a drain system providing flooding protection. Examples of systems with operating experience indicating likely passive failures include the main steam system (MSS), feedwater system, and service water system. Examples of systems with identified omissions in previous LRA reviews include spent fuel cooling system and makeup water sources to safety systems.

2.3.1 Reactor Vessel, Reactor Vessel Internals, and Reactor Coolant System

LRA Section 2.3.1 identifies the reactor vessel, reactor vessel internals, and reactor coolant system (RCS) SCs subject to an AMR for license renewal. The applicant described the supporting SCs of the reactor vessel, internals, and RCS in the following LRA sections:

2.3.1.1	Reactor vessel
2.3.1.2	Reactor vessel internals
2.3.1.3	RCS and connected lines
2.3.1.4	Pressurizer
2.3.1.5	Steam generators

The reactor vessel, reactor vessel internals, and RCS contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the RCS potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the RCS performs functions that support fire protection, PTS, SBO, and EQ.

2.3.1.1 Reactor Vessel

2.3.1.1.1 Summary of Technical Information in the Application

LRA Section 2.3.1.1 describes the reactor vessel:

> The reactor vessel system boundary includes the reactor vessel and system portions, including the control rod drive mechanism pressure boundary components and pressure boundary components for both incore flux and core cooling monitoring instrumentation, effectively constituting a part of the reactor coolant pressure boundary. The cylindrical reactor vessel has a welded hemispherical bottom head and a hemispherical upper closure head and contains the core, core supporting structures, control rods, and other core parts addressed in the next section. The upper closure head has penetrations for control rod drive mechanisms (CRDMs), thermocouples, reactor vessel level instrumentation system instruments, and a head vent. The vessel shell has inlet and outlet nozzles in a horizontal plane just below the reactor vessel flange but above the top of the core. The bottom head has penetrations for connection and entry of nuclear incore instrumentation. Conduits extend from the nuclear incore instrumentation penetrations down through the concrete shield area and up to a thimble seal table. The conduits and seal table mechanical seals provide the pressure barrier between the reactor coolant and the containment atmosphere.

LRA Table 2.3.1.1 identifies reactor vessel component types within the scope of license renewal and subject to an AMR. The intended functions of the reactor vessel component types within the scope of license renewal include:

- pressure-retaining boundary
- structural/functional support for safety-related/nonsafety-related components with maintenance of physical integrity and flow path considerations

2.3.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.1 and UFSAR Sections 5.3, 7.7.2.7, and 7.7.2.8 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3, "Scoping and Screening Results: Mechanical Systems."

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In RAI- 2.3.1-1 dated January 28, 2008, the staff requested the applicant to verify that the "hold-down spring", listed in LRA Table 2.3.1.2 is the same spring described in UFSAR 3.9.5.1.2, Upper Core Support Assembly, which restrains axial movements of the upper and lower core support assemblies. In its response dated February 27, 2008, the applicant verified the spring was the same. The staff finds this response acceptable because the components are included in-scope for license renewal.

2.3.1.1.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the reactor vessel components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.2 Reactor Vessel Internals

2.3.1.2.1 Summary of Technical Information in the Application

LRA Section 2.3.1.2 describes the reactor vessel internals consisting of the lower core support, the upper core support, and the incore instrumentation support structures and including the fuel and control rod drive assemblies. The reactor vessel internals support the core, maintain fuel alignment, limit fuel assembly movement, maintain alignment between fuel assemblies and CRDMs, direct coolant flow past the fuel elements and to the pressure vessel head, provide gamma and neutron shielding and provide guides for the incore instrumentation.

> The lower core support structure consists of the core barrel, the core baffle, the lower core plate and support columns, the neutron shield pads, and the core support, which is welded to the core barrel. The lower core support structure is supported at its upper flange from a ledge in the reactor vessel and restrained at its lower end by a radial support system attached to the vessel wall. The upper core support structure consists of the upper support, the upper core plate, the support columns, and the guide tube assemblies. The incore instrumentation support structures consist of an upper system to convey and support thermocouples penetrating the vessel through the head and a lower system to convey and support flux thimble tubes penetrating the vessel through the bottom.

LRA Table 2.3.1.2 identifies reactor vessel internals component types within the scope of license renewal and subject to an AMR. The intended functions of the reactor vessel internals component types within the scope of license renewal include:

- reactor core support and orientation
- control rod assembly support, orientation, guidance, and protection
- passageway for the distribution of reactor coolant to the reactor core
- passageway for incore instrumentation support, guidance, and protection
- secondary core support to limit core support structure downward displacement
- reactor vessel gamma and neutron shielding

2.3.1.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.2 and UFSAR Section 3.9.5 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the reactor vessel internals components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.3 Reactor Coolant System and Connected Lines

2.3.1.3.1 Summary of Technical Information in the Application

LRA Section 2.3.1.3 describes the RCS and connected lines:

> The RCS consists of four similar heat transfer loops connected in parallel to the reactor pressure vessel. Each loop has a reactor coolant pump (RCP), steam generator, piping, and valves. In addition, the system includes a pressurizer, pressurizer relief and safety valves, the reactor vessel head vent system, interconnecting piping, reactor vessel level instrumentation system instruments, and instrumentation for operational control. The pressurizer and steam generators are addressed separately in following sections. All these components are located in the containment building. During operation, the RCS transfers the heat generated in the core to the steam generators that drive the turbine-generator. Borated demineralized water circulating in the RCS at a flow rate and temperature for reactor core thermal-hydraulic performance acts as a neutron moderator and reflector and as a solvent for the neutron absorber for chemical shim control. The design of the RCS pressure boundary that provides a barrier against the release of radioactivity generated within the reactor is for high integrity throughout the life of the plant.

The pressurizer controls RCS pressure by electrical heaters and water sprays that maintain water and steam at saturation conditions. Steam can be formed (by the heaters) or condensed (by the pressurizer spray) to minimize pressure variations due to contraction and expansion of the reactor coolant. Spring-loaded safety and power-operated relief valves of the pressurizer discharge from the RCS steam then piped to the pressurizer relief tank (pressurizer relief discharge system), mixed with quench water, condensed, and cooled.

LRA Table 2.3.1.3 identifies RCS and connected lines component types within the scope of license renewal and subject to an AMR. The intended functions of the reactor coolant system and connected lines component types within the scope of license renewal include:

- prevention of flame propagation from ignition of vent pipe vapors back to the source
- restriction of process flow
- pressure-retaining boundary

2.3.1.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.3 and UFSAR Section 7.7.2.8 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.1.3.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the reactor coolant system and connected lines components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.4 Pressurizer

2.3.1.4.1 Summary of Technical Information in the Application

LRA Section 2.3.1.4 describes the pressurizer, which controls RCS pressure by maintaining water and steam in equilibrium by electrical heaters and coolant sprays. Steam can be formed or condensed to minimize pressure variations caused by contraction or expansion of the reactor coolant. The pressurizer upper head has spring-loaded safety and power-operated relief valves. The pressurizer is a vertical, cylindrical vessel with hemispherical top and bottom heads. Spray line nozzles and relief and safety valve connections are located in the top head. The pressurizer surge line connects the pressurizer bottom nozzle to a reactor coolant hot leg.

Removable electric heaters are installed in the bottom head.

LRA Table 2.3.1.4 identifies pressurizer component types within the scope of license renewal and subject to an AMR. The intended functions of the pressurizer component types within the scope of license renewal include:

- pressure-retaining boundary
- structural/functional support for safety-related/nonsafety-related components with maintenance of physical integrity and flow path considerations

2.3.1.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.4 and UFSAR Section 5.4.10 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.1.4.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the pressurizer components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.5 Steam Generators

2.3.1.5.1 Summary of Technical Information in the Application

LRA Section 2.3.1.5 describes the steam generators, four installed in each unit, one in each reactor coolant loop. All steam generators are Westinghouse Model F, vertical U-tube steam generators with moisture-separating equipment. On the primary side, reactor coolant flows through the inverted U-tubes, entering and exiting through the nozzles in the hemispherical steam generator bottom head divided into inlet and outlet chambers by a vertical partition plate extending from the head to the tube sheet.

On the secondary side, feedwater flows directly into the annulus formed by the outer shell and tube bundle wrapper before entering the boiler section of the steam generator. The water and steam mixture then flows upward through the tube bundle and into the steam drum section. Centrifugal moisture separators, located above the tube bundle, remove most of the moisture entrained in the steam. Steam dryers further improve the steam quality.

LRA Table 2.3.1.5 identifies steam generators component types within the scope of license renewal and subject to an AMR. The intended functions of the steam generators component types within the scope of license renewal include:

- heat exchange between fluid media
- spray shield or curbs for flow direction
- Flow pattern or distribution provision
- restriction of process flow
- physical integrity maintenance to prevent generation of debris or loose parts which could interfere with a safety-related function
- pressure-retaining boundary
- structural/functional support for safety-related/nonsafety-related components with maintenance of physical integrity and flow path considerations

2.3.1.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.5 and UFSAR Section 5.4.2 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the steam generators components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2 Engineered Safety Features

LRA Section 2.3.2 identifies the engineered safety features SCs subject to an AMR for license renewal.

The applicant described the supporting SCs of the engineered safety features in the following LRA sections:

- Containment Spray System
- Emergency Core Cooling Systems
- Containment Isolation Systems

2.3.2.1 Containment Spray System

2.3.2.1.1 Summary of Technical Information in the Application

LRA Section 2.3.2.1 describes the containment spray system, which provides borated water for removing decay heat and iodine from the containment atmosphere in post-accident conditions. The system consists of two trains, each with a pump, spray ring header and spray nozzles, valves, and connecting piping. Baskets with trisodium phosphate located on the containment floor control post-accident sump pH by mixing with the recirculating borated water. Containment emergency sumps located in containment collect borated water to provide suction to the containment spray pumps for recirculation after initial injection.

Water from the refueling water storage tank (RWST) provides suction to the containment spray pumps for initial injection. At the latter stages of the injection phase, operators initiate a manual switch-over to recirculation in which the containment spray pumps take suction from the containment emergency sumps. Each sump has a suction strainer to prevent debris from entering the containment spray system, which is designed to operate over an extended period of time in environmental conditions following a reactor coolant system failure.

The containment spray system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the containment spray system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the containment spray system performs functions that support EQ.

LRA Table 2.3.2.1 identifies containment spray system component types within the scope of license renewal and subject to an AMR:

- capillary tubing (sealed) for Containment (CTMT) pressure sensors
- closure bolting
- eductors - CTMT spray
- encapsulation vessels
- flow orifice/elements
- motor coolers - CTMT spray pumps (channel heads)
- motor coolers - CTMT spray pumps (shells)
- motor coolers - CTMT spray pumps (tubes)
- motor coolers - CTMT spray pumps (tubesheets)
- piping components
- piping components - pipe spools for startup strainers
- pump casings - CTMT spray pumps
- spray nozzles
- tank - spray additive tank (Unit 2 only)
- valve bodies

The intended functions of the containment spray system component types within the scope of license renewal include:

- heat exchange between fluid media
- flow pattern or distribution provision

- pressure-retaining boundary
- structural/functional support for safety-related/nonsafety-related components with maintenance of physical integrity and flow path considerations.

2.3.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.1 and UFSAR Section 6.2.2.2 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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, UFSAR and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the containment spray system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.2 Emergency Core Cooling Systems

2.3.2.2.1 Summary of Technical Information in the Application

LRA Section 2.3.2.2 describes the ECCS, which include the safety injection system, safety injection portion of the chemical volume and control system (CVCS), and residual heat removal (RHR) system. The primary ECCS function following an accident is removal of the stored and fission product decay heat from the reactor core. The ECCS consists of passive injection by the safety injection accumulators, high-head active injection by the centrifugal charging and safety injection pumps, and low-head active injection by the RHR pumps. Long-term recirculation and cooling of ECCS is by RHR pumps and heat exchangers.

The RWST supplies emergency borated cooling water to the high-head safety injection, low-head safety injection, and containment spray during the injection mode. The RWST is designed to hold enough dilute boric acid solution to fill the refueling canal prior to refueling operations and to provide injection water to support the safety injection system. The RWST also can fill the refueling cavity via the refueling water purification pump.

The safety-injection system consists of two safety-injection pumps, four accumulators, piping, and valves. The system provides post-accident, high-head and portions of low-head safety injection for emergency core cooling to limit core damage and fission product release for adequate shutdown margin and includes passive injection of coolant via the safety injection accumulators.

The RHR system consists of two trains of one pump, one heat exchanger, piping, and valves. The system transfers heat from the RCS to the NSCW via the component cooling water system to reduce reactor coolant temperature to the cold shutdown level at a controlled rate during the second part of normal plant cooldown and maintains this temperature until the plant starts up again. During RCS low-temperature operation, RHR system relief valves in the RHR pump suction lines mitigate RCS overpressure transients. RHR system portions also serve as ECCS parts for accident mitigation. Following a loss-of-coolant accident (LOCA) the RHR system is aligned initially to take suction from the RWST and inject into the RCS if RCS pressure is low enough for low-head safety injection. When the ECCS switches from the injection to the recirculation phase, the RHR pumps take suction from the containment emergency sumps and recirculate sump borated water to the RCS at low pressure or provide suction to the safety-injection and charging pumps for high-head recirculation. Each containment emergency sump has a strainer to prevent debris from entering the ECCS.

The ECCS contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the ECCS potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the ECCS performs functions that support fire protection and EQ.

LRA Table 2.3.2.2 identifies ECCS component types within the scope of license renewal and subject to an AMR. The intended functions of the ECCS component types within the scope of license renewal include:

- heat exchange between fluid media
- restriction of process flow
- pressure-retaining boundary
- structural/functional support for safety-related/nonsafety-related components with maintenance of physical integrity and flow path considerations

2.3.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.2 and UFSAR Sections 5.2.2.10, 5.4.7, 6.2.2, and 6.3 using the evaluation methodology described in Safety Evaluation Report (SER) Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In RAI 2.3.2.2-1, dated January 28, 2008, the staff requested additional information on the ECCS sump screens, which were designed in LRA Drawings 1X4LD122 and 131 as not in-scope components. The applicant responded that the ECCS sump screens are in scope components. They are categorized as structural components. Refer to LRA section 2.4.1, Table 2.4.1, and

Table 3.5.2-1, Item 12. The staff finds this response acceptable because the components are included in-scope for license renewal.

The staff also requested that the applicant verify the LRA status of the boron injection surge tank because the tank is listed as an ECCS component in UFSAR Table 6.3.2-4. In its response dated February 27, 2008, the applicant responded that the boron injection surge tank on Unit 1 has been retired in place. Since it has no functions and is empty it is not in scope (refer to boundary drawing 1X4LD119). A boron injection surge tank was never installed on Unit 2 (refer to boundary drawing 2X4LD119).

The staff also requested that the applicant verify the status of the boric acid batching tank. In LRA Drawing 1X4LD118, the tank is highlighted but not listed in Table 2.3.2.2 or discussed in text. The applicant responded that the boric acid batching tanks are in scope components. These tanks are listed in LRA Table 3.3.2-10, Items 38a & 38b. The staff finds this response acceptable because the components are included in-scope for license renewal.

The staff also requested that the applicant verify the status of portions of the RWST liner. In LRA Table 2.3.2.2, the RWST tank liner is listed. In UFSAR 6.3.2.2.9; the tank is described as reinforced concrete tank with a stainless steel liner.

The applicant responded that the RWST tank liner is categorized as a mechanical component and is listed in LRA Table 2.3.2.2, Item 32.

As discussed in LRA section 2.3.2.2, the concrete shell, roof, and base slab which provide structural support for the tank liner are evaluated in the Structural scoping for the Concrete Tank and Valve House Structures, Section 2.4.7. The staff finds this response acceptable because the components are included in-scope for license renewal.

2.3.2.2.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the ECCS components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.3 Containment Isolation System

2.3.2.3.1 Summary of Technical Information in the Application

LRA Section 2.3.2.3 describes the containment isolation system, an engineered safety feature that allows appropriate process fluids to pass through the containment boundary during normal and accident conditions while isolating containment barrier penetrations as required to preserve containment barrier integrity during accident conditions to prevent uncontrolled or unmonitored leakage of radioactive materials to the environment. The containment isolation system is not completely independent. Each piping system which penetrates the containment has containment isolation features which minimize the release of fission products following a design-basis accident. These features are scoped and evaluated in their respective mechanical process systems rather than in the containment isolation system.

2.3.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.3 and UFSAR Sections 6.2.4, and 15.6.5.4 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the containment isolation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3 Auxiliary Systems

LRA Section 2.3.3 identifies the auxiliary systems SCs subject to an AMR for license renewal.

The applicant described the supporting SCs of the auxiliary systems in the following LRA sections: (NOTE: Systems marked with "*" are Balance of Plant systems)

LRA Section	System
2.3.3.1*	new fuel storage
2.3.3.1*	spent fuel storage
2.3.3.2*	spent fuel cooling and purification system
2.3.3.3*	containment building polar bridge crane
2.3.3.3*	fuel handling & RV servicing equipment
2.3.3.3*	spent fuel cask bridge crane
2.3.3.4*	nuclear service cooling water
2.3.3.4*	nuclear service cooling water chemical injection
2.3.3.5*	component cooling water
2.3.3.6*	auxiliary component cooling water
2.3.3.7*	turbine plant cooling water
2.3.3.8*	river intake structure
2.3.3.9*	instrument air
2.3.3.9*	instrument, service, and breathing air
2.3.3.10*	boron recycle
2.3.3.10*	CVCS (non-ECCS portions)
2.3.3.10	CVCS (non-ECCS portions)
2.3.3.11	CB control room area HVAC
2.3.3.11	CB safety feature electrical equipment room HVAC

2.3.3.11 CB wing area, levels A, B, 1 and 2 normal HVAC
2.3.3.11 CB lab hood and laboratory area ventilation
2.3.3.11 CB locker and toilet exhaust
2.3.3.11 CB cable spreading rooms HVAC
2.3.3.11 electrical penetration filter exhaust
2.3.3.11 TSC HVAC
2.3.3.12 AB outside air supply and normal HVAC
2.3.3.12 AB radwaste area filter exhaust and continuous exhaust
2.3.3.12 AB engineered safety features room coolers
2.3.3.12 piping penetration filter exhaust
2.3.3.13 containment building air cooling
2.3.3.13 CTB lower level air circulation
2.3.3.13 CTB preaccess filter
2.3.3.13 CTB minipurge supply and normal preaccess purge supply
2.3.3.13 CTB minipurge exhaust and normal access purge exhaust
2.3.3.13 CTB post LOCA purge exhaust
2.3.3.13 CTB cavity cooling
2.3.3.13 CTB reactor support cooling
2.3.3.13 CTB auxiliary air cooling
2.3.3.13 CTB post-LOCA cavity purge
2.3.3.14 FHB normal HVAC
2.3.3.14 FHB post-accident exhaust
2.3.3.15 ventilation system - diesel generator building
2.3.3.16 ventilation system - auxiliary feedwater pump house
2.3.3.17 electrical tunnel ventilation
2.3.3.17 piping penetration ventilation
2.3.3.17 fire protection facilities HVAC
2.3.3.18 ventilation systems - radwaste buildings
2.3.3.19 fire protection water
2.3.3.19 fire protection seismic category I water
2.3.3.19 fire protection halon
2.3.3.20* emergency diesel generator system
2.3.3.21* demineralized water system
2.3.3.22 hydrogen recombiner and monitoring
2.3.3.23* auxiliary building drain system – nonradioactive
2.3.3.23* auxiliary building flood-retaining rooms, alarms, and drains
2.3.3.23* containment and auxiliary building drain system – radioactive
2.3.3.23* control building drains
2.3.3.23* fuel handling building drains
2.3.3.23* sanitary waste and vent
2.3.3.23* turbine building drain
2.3.3.24* potable water
2.3.3.24* utility water
2.3.3.25* radiation monitoring system
2.3.3.26* reactor makeup water storage tank and degasifier
2.3.3.27* nuclear sampling system – gaseous
2.3.3.27* nuclear sampling system – liquids
2.3.3.27* post-accident sampling
2.3.3.27* turbine plant sampling
2.3.3.28* auxiliary gas system – H2
2.3.3.28* auxiliary gas system – N2

2.3.3.29* essential chilled water
2.3.3.29* normal chilled water
2.3.3.29* special chilled water
2.3.3.30* backflushable filter
2.3.3.30* condensate cleanup
2.3.3.30* waste processing system, gas
2.3.3.30* waste processing system, liquid
2.3.3.31 thermal insulation
2.3.3.32* miscellaneous leak detection

In accordance with Section 2.3, "Scoping and Screening Results – Mechanical Systems," the staff identified the following BOP systems for Tier 1 reviews:

LRA Section	System
2.3.3.23	sanitary waste and vent
2.3.3.23	turbine building drain system
2.3.3.24	potable water
2.3.3.24	utility water
2.3.3.28	auxiliary gas system – H2
2.3.3.30	backflushable filter system
2.3.3.30	condensate cleanup system

As part of the staff's review, the following RAIs identified instances of drawing errors where the continuation notation for piping on one drawing to another drawing was incorrect:

- RAI 2.3.3.4-4
- RAI 2.3.3.4-5
- RAI 2.3.3.6-1
- RAI 2.3.3.6-2
- RAI 2.3.3.23-1
- RAI 2.3.3.26-1

In its response, dated February 27, 2008, the applicant identified the correct locations.

Based on its review, the staff finds the applicant's responses to these RAIs acceptable because the applicant provided the correct drawing continuation references. Therefore, the staff's concerns described in the RAIs are resolved.
The staff's findings for the auxiliary systems are discussed below.

2.3.3.1 Fuel Storage Racks – New and Spent Fuel

2.3.3.1.1 Summary of Technical Information in the Application

LRA Section 2.3.3.1 describes the fuel storage racks for new and spent fuel. The fuel handling building houses the new fuel storage area and the spent fuel pool. The new fuel storage area houses new fuel storage racks for temporary dry storage of new fuel assemblies. Each rack is composed of individual vertical cells that can be fastened together in any number to form a module that can be bolted firmly to anchors in the floor of the new fuel storage area. The new fuel storage rack design includes storage for 162 fuel assemblies at a center-to-center spacing of 21 inches for minimal separation between adjacent fuel assemblies of 12 inches, sufficient to

maintain a subcritical array even when the building is flooded with unborated water or during any DBE.

Spent fuel is stored in high-density racks. Each rack in the Unit 1 spent fuel pool consists of several cells welded together to form the rack top grid and at the bottom to a supporting grid structure. The Unit 2 spent fuel pool consists of an assemblage of cells interconnected along their contiguous corners in a honeycomb cellular structure. None of these free-standing modules are anchored to the floor or braced to the wall. The design of the racks with the soluble boron in the fuel storage pool is relied upon to keep the stored fuel subcritical for all analyzed events as described in the UFSAR. There are storage locations for 1476 assemblies in the Unit 1 pool and 2098 in the Unit 2 pool.

The fuel storage racks - new and spent fuel contain safety-related components relied upon to remain functional during and following DBEs.

LRA Table 2.3.3.1 identifies fuel storage racks - new and spent fuel component types within the scope of license renewal and subject to an AMR:

- failed fuel rod storage basket
- new fuel storage rack assembly
- spent fuel storage racks

The intended functions of the fuel storage racks - new and spent fuel component types within the scope of license renewal include:

- reactivity control
- structural/functional support for safety-related/nonsafety-related components with maintenance of physical integrity and flow path considerations

2.3.3.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.1 and UFSAR Sections 4.3.2.6.1 and 9.1 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.1.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the fuel storage racks - new and spent

fuel components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.2 Spent Fuel Cooling and Purification System

2.3.3.2.1 Summary of Technical Information in the Application

LRA Section 2.3.3.2 describes the spent fuel cooling and purification system, which removes decay heat generated by spent fuel assemblies stored in the spent fuel pool and which can maintain water clarity and purity in the spent fuel pool, the fuel transfer canal, the refueling cavity, and the RWST.

The spent fuel cooling and purification system consists of two cooling trains, each with one heat exchanger and pump, piping, and valves. One purification loop, with demineralizer, filter, piping, valving, and instrumentation, services both cooling loops. There is also a surface skimmer loop. Each cooling train is designed to maintain spent fuel pool temperatures and heat loads as described in the UFSAR.

The spent fuel cooling and purification system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the spent fuel cooling and purification system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the spent fuel cooling and purification system performs functions that support EQ.

LRA Table 2.3.3.2 identifies spent fuel cooling and purification system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- demineralizer vessels
- flow orifice/elements
- heat exchangers - SFP HXs (channel heads)
- heat exchangers - SFP HXs (shells)
- heat exchangers - SFP HXs (tubes)
- heat exchangers - SFP HXs (tubesheets)
- piping components
- piping components - piping spools for startup strainers
- pump casings - refuel water purification pumps
- pump casings - SFP pumps
- pump casings - SFP skimmer pumps
- strainer elements
- strainer housings
- valve bodies

The intended functions of the spent fuel cooling and purification system component types within the scope of license renewal include:

- protection from debris
- heat exchange between fluid media
- pressure-retaining boundary

2.3.3.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.2 and UFSAR Section 9.1.3 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the spent fuel cooling and purification system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.3 Overhead Heavy and Refueling Load Handling System

2.3.3.3.1 Summary of Technical Information in the Application

LRA Section 2.3.3.3 describes the overhead heavy and refueling load handling system, which includes the containment building (reactor) polar bridge crane, spent fuel cask bridge crane, and fuel handling and reactor vessel servicing equipment.

The containment building (reactor) polar bridge crane is a steel double-box girder, electric, overhead, top-running, motorized bridge crane with a 134-foot span mounted on a circular runway rail supported by the containment building superstructure. The bridge consists of two asymmetrical, welded plate box girders with full-depth diaphragms held together by structural end tie girders. The primary function of the polar crane is hoisting as required for the reactor head and internals during refueling and servicing operations.

The crane's rated operational load capacity is based on the integrated reactor head, the heaviest refueling lift requirement.

The primary function of the spent fuel cask bridge crane is to transport spent fuel casks between the railcar loading and unloading area and the spent fuel storage area. The crane may be in use during normal plant operation or when the plant is shut down for refueling or maintenance. The crane is also for unpacking and transporting new fuel to the new fuel pit and for construction and maintenance lifts as required in the fuel handling and auxiliary buildings.

The fuel handling and reactor vessel servicing equipment for core alterations (fuel shuffle and fuel movement, core unload and reload), the refueling machine in the containment building and the fuel handling machine bridge crane in the fuel handling building are designed to protect against fuel damage during handling and transfer operations.

The overhead heavy and refueling load handling system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the overhead heavy and refueling load handling system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3.3 identifies overhead heavy and refueling load handling system component types within the scope of license renewal and subject to an AMR:

- base plates and anchors for attachment to structures, and retaining clips
- crane (including bridge & trolley) structural girders
- crane rails

2.3.3.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.3 and UFSAR Sections 9.1.4 and 9.1.5 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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, and UFSAR to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the overhead heavy and refueling load handling system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.4 Nuclear Service Cooling Water Systems (NSCW)

2.3.3.4.1 Summary of Technical Information in the Application

LRA Section 2.3.3.4 describes the NSCW systems, which include the NSCW and the NSCW chemical injection systems. The NSCW system, composed of two redundant, completely independent, full-capacity flow trains, provides essential cooling to safety-related equipment and to some nonsafety-related auxiliary components. Each train has three 50-percent capacity vertical centrifugal pumps, one forced-draft cooling tower, piping, and valves. The system supplies cooling water for the containment coolers, control building essential chiller condensers, various engineered safety feature (ESF) pump coolers, standby diesel generator jacket water coolers, and the component cooling water (CCW) and auxiliary component cooling water (ACCW) heat exchangers.

The NSCW cooling towers, the ultimate heat sink for the plant, are required for safe shutdown. They remove heat from the NSCW system during normal operation, safe shutdown or cooldown of the reactor, or accident conditions. Each cooling tower consists of a basin which contains the

ultimate heat sink water and of an upper structure which transfers the NSCW heat loads to the atmosphere. The upper structure is a vertical, circular, concrete mechanical draft tower with motor-driven fans for heat transfer to the atmosphere by direct contact of water droplets from spray manifolds with forced air flow.

The combined storage capacity of the two tower basins per unit meets short-term (30 days) storage requirements for the ultimate heat sink without makeup. The mechanical portion of the NSCW cooling towers includes the piping, valves, and mechanical draft fans.

The NSCW chemical injection system, which injects biocide, dispersant, and corrosion inhibitor solutions to the NSCW system to inhibit biological growth, prevent deposition of suspended solids, and reduce copper tube corrosion, is comprised of chemical injection pumps, chemical mixing and storage tanks, drums, or both, and piping components for transferring chemical solutions to the injection points downstream of the NSCW pumps at the NSCW cooling tower basins. The chemical injection equipment is located in the NSCW chemical control building.

The NSCW systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the NSCW systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the NSCW systems perform functions that support fire protection and EQ.

LRA Table 2.3.3.4 identifies NSCW systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow orifice/elements
- oil coolers - NSCW pumps thrust bearings (coils)
- piping components
- pump casings - NSCW system pumps
- pump casings - NSCW transfer pumps
- spray nozzles
- valve bodies

The intended functions of the NSCW systems component types within the scope of license renewal include:

- heat exchange between fluid media
- flow pattern or distribution provision
- restriction of process flow
- pressure-retaining boundary

2.3.3.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.4 and UFSAR 9.2.1 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the

applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.4 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. In addition to the RAIs 2.3.3.4-4 and 2.3.3.4-5 related to drawing continuation errors described in Section 2.3.3, the applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.4-1, dated January 28, 2008, the staff noted that drawings 1X4LD133-1, 1X4LD133-2, 2X4LD133-1, and 2X4LD133-2, locations G-6, G-7, and G-8 show NSCW cooling tower fans as within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). However, the fan casings/housings are not included in LRA Table 2.3.3.4 as a component type subject to an AMR. The applicant was requested to provide additional information to explain why the NSCW tower fan casings/housings are not included in LRA Table 2.3.3.4 as component types subject to an AMR.

In its response, dated February 27, 2008, the applicant stated:

> The NSCW fan, composed of the motor driver, gearbox, shaft, hub assembly and blades, is an active assembly, not subject to an AMR. The stack that forms the fan's housing for flow direction control is constructed of concrete and is an integral part of the NSCW cooling tower structure. The housing is in scope and is included in Table 2.4.6 as NSCW cooling tower stack.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.4-1 acceptable because the applicant provided clarification that the fan housing in question is within the scope of license renewal and is included in Table 2.4.6 as part of the "NSCW cooling tower stack." Therefore, the staff's concern described in RAI 2.3.3.4-1 is resolved.

In RAI 2.3.3.4-2, dated January 28, 2008, the staff noted that drawings 1X4LD133-1 and 2X4LD133-1 (D-4) show pipe sections 131-1" and 130-1" and drawings 1X4LD133-2 and 2X4LD133-2 (D-4) show pipe sections 132-1" and 369-1" that are within the scope of license renewal based on criterion 10 CFR 54.4(a)(2). None of these pipelines show in-scope anchoring that assures these pipelines are adequately anchored for spatial interaction.

The applicant was requested to provide additional information explaining how the pipelines listed above are adequately anchored to prevent spatial interaction.

In its response, dated February 27, 2008, the applicant stated:

> The above pipe lines are in scope for attached or connected piping (10 CFR 54.4(a)(2)). In this case, attached piping bounds spatial interaction - the entire lines out to their termination points are in the scope of license renewal and are age managed. These lines terminate at either a blind flange or welded pipe cap and thus the (a)(2) concerns associated with them do not propagate into other systems or to other nonsafety-related segments of the NSCW system. As part of the plant's CLB, these lines are seismically analyzed and seismically supported, with the pipe supports being in the scope of license renewal and age managed. These segments of nonsafety-related piping cannot fail in a way that would compromise safety-related

equipment, either by failure of attached piping or a pressure boundary breech resulting in a spatial interaction.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.4-2 acceptable because the applicant stated that the subject pipe sections, as part of the plant's CLB, are seismically analyzed and supported. Therefore, the staff's concern described in RAI 2.3.3.4-2 is resolved.

In RAI 2.3.3.4-3, dated January 28, 2008, the staff noted that drawings 1X4LD133-1, 2X4LD133-1, 1X4LD133-2, and 2X4LD133-2 (D-4) show pipe sections 505-2", 057-2", 007-2", and 007-2", respectively, that are within the scope of license renewal based on criterion 10 CFR 54.4(a)(2). None of these pipe sections show in-scope anchoring that assures these pipe sections are adequately anchored for spatial interaction. The applicant was requested to provide additional information explaining how these pipelines are adequately anchored to prevent spatial interaction.

In its response, dated February 27, 2008, the applicant stated:

> The above pipe lines are in scope for attached or connected piping (10 CFR 54.4(a)(2)). In this case, attached piping bounds spatial interaction - the entire lines out to their termination points are in the scope of license renewal and are age managed. These lines terminate at a blind flange and thus the (a)(2) concerns associated with them do not propagate into other systems or to other nonsafety-related segments of the NSCW system. As part of the plant's CLB, these lines are seismically analyzed and seismically supported, with the pipe supports being in the scope of license renewal and age managed.
>
> These segments of nonsafety-related piping cannot fail in a way that would compromise safety-related equipment, either by failure of attached piping or a pressure boundary breech resulting in a spatial interaction.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.4-3 acceptable because the applicant stated that the subject pipe sections, as part of the plant's CLB, are seismically analyzed and supported. Therefore, the staff's concern described in RAI 2.3.3.4-3 is resolved.

2.3.3.4.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the nuclear service cooling water system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.5 Component Cooling Water System

2.3.3.5.1 Summary of Technical Information in the Application

LRA Section 2.3.3.5 describes the closed-loop CCW system as an intermediate heat transfer

system between potentially radioactive heat sources and the NSCW system to reduce the probability of radioactive releases to the environment from a leaking component. The CCW system cools the spent fuel pool heat exchangers, the RHR heat exchangers, and the RHR pump seal coolers.

The CCW system, consisting of two redundant trains, each with one heat exchanger, three 50-percent centrifugal pumps, one surge tank, piping, and valves, is designed to operate at lower pressure than is the NSCW system to prevent potentially contaminated CCW water from entering the NSCW system, which is open to atmosphere through the NSCW cooling towers.

The CCW system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the CCW system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the CCW system performs functions that support fire protection.

LRA Table 2.3.3.5 identifies CCW system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow orifice/elements
- heat exchangers - CCW HXs (channel heads)
- heat exchangers - CCW HXs (shells)
- heat exchangers - CCW HXs (tubes)
- heat exchangers - CCW HXs (tubesheets)
- motor coolers - CCW pumps (channel heads)
- motor coolers - CCW pumps (shells)
- motor coolers - CCW pumps (tubes)
- motor coolers - CCW pumps (tubesheets)
- piping components
- piping components - pipe spools for startup strainers
- pump casings - CCW pumps
- tanks - CCW chemical addition feeder tanks
- tanks - CCW surge tanks
- valve bodies

The intended functions of the CCW system component types within the scope of license renewal include:

- heat exchange between fluid media
- restriction of process flow
- pressure-retaining boundary

2.3.3.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.5 and UFSAR Section 9.2.2 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the CCW system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.6 Auxiliary Component Cooling Water System (1217)

2.3.3.6.1 Summary of Technical Information in the Application

LRA Section 2.3.3.6 describes the ACCW system, which removes heat from the heat exchangers and components that handle radioactive fluids necessary for normal plant startup, normal power operation, normal shutdown and cooldown, and refueling. Not essential for safe plant shutdown under accident conditions, the ACCW system is composed of two 100-percent capacity ACCW heat exchangers, two 100-percent capacity ACCW pumps, one ACCW surge tank, piping, and valves. The ACCW system accomplishes cooling through an intermediate closed-loop design cooled in turn by water directly from the NSCW system.

Because it may be contaminated by radioactive materials, the ACCW system is designed for lower pressures than those for the NSCW system, which is open to the atmosphere through the ultimate heat sink cooling towers, so the cooling systems do not release radioactive materials to the environment. The system cools the normal charging pump motor coolers, seal water heat exchanger, catalytic hydrogen recombiners, waste gas compressors, pressurizer sample coolers, reactor coolant sample cooler, reactor coolant drain tank heat exchanger, reactor coolant pump (RCP) motor coolers, thermal barriers, bearing lube oil coolers, letdown heat exchanger, excess letdown heat exchanger, and ACCW pump and motor coolers.

The ACCW system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the ACCW system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the ACCW system performs functions that support fire protection and EQ.

LRA Table 2.3.3.6 identifies ACCW system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow orifice/elements
- heat exchangers - ACCW HXs (channel heads)
- heat exchangers - ACCW HXs (shells)
- heat exchangers - ACCW HXs (tubes)
- heat exchangers - ACCW HXs (tubesheets)
- motor coolers - ACCW pumps (channel heads)
- motor coolers - ACCW pumps (shells)

- motor coolers - ACCW pumps (tubes)
- motor coolers - ACCW pumps (tubesheets)
- piping components
- piping components - pipe spools for startup strainers
- pump casings - ACCW pumps
- tanks - ACCW chemical addition feeder tanks
- tanks - ACCW surge tanks
- valve bodies

The intended functions of the ACCW system component types within the scope of license renewal include:

- restriction of process flow
- pressure-retaining boundary

2.3.3.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.6 and UFSAR Section 9.2.8 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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 areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The staff identified RAIs 2.3.3.6-1 and 2.3.3.6-2 involving instances of drawing errors where continuation notation for the piping from one drawing to another drawing was incorrect. These are described in Section 2.3.3.

2.3.3.6.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the ACCW auxiliary component cooling water system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.7 Turbine Plant Cooling Water System

2.3.3.7.1 Summary of Technical Information in the Application

LRA Section 2.3.3.7 describes the turbine plant cooling water (TPCW) system, which supplies cooling water to remove heat from nonsafety-related heat exchangers: turbine plant closed-loop cooling water heat exchangers, main turbine lube oil coolers, normal cooling water system

chillers, steam generator blowdown trim heat exchangers, CVCS chillers, generator hydrogen coolers, isophase bus coolers, vacuum pump seal water coolers, and generator stator coolers.

The failure of nonsafety-related SCs in the TPCW system could potentially prevent the satisfactory accomplishment of a safety-related function. LRA Table 2.3.3.7 identifies TPCW system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow orifice/elements
- piping components
- strainer housings
- valve bodies

The intended function of the TPCW system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.7 and UFSAR Section 9.2.11 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the TPCW system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.8 River Intake Structure System

2.3.3.8.1 Summary of Technical Information in the Application

LRA Section 2.3.3.8 describes the river intake structure system, which provides makeup water to the circulating water system hyperbolic cooling towers and an alternate source of makeup to the NSCW cooling towers and dilutes the discharge of plant effluent as required to meet 10 CFR Part 20 limits.

The failure of nonsafety-related SCs in the river intake structure system could potentially prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3.8 identifies river intake structure system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping components
- valve bodies

The intended function of the river intake structure system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.8 and UFSAR Sections 10.4.5.2.2C and 10.4.5.2.3 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.8.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the river intake structure system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.9 Compressed Air System

2.3.3.9.1 Summary of Technical Information in the Application

LRA Section 2.3.3.9 describes the compressed air system, which continuously supplies filtered, dry, oil-free compressed air for pneumatic instrument operation and control of pneumatic actuators. The system also supplies compressed, normally filtered, dry, and oil-free service air to outlets throughout the plant for operation of pneumatic tools and for other service air requirements. There are one reciprocating compressor and two rotary compressor trains located in each unit. The outlets from the air receivers of these three trains for each unit connect to a common compressed air supply line. Piping for the third reciprocating compressor train located in Unit 1 can be aligned to either the Unit 1 or Unit 2 compressed air supply line.

The compressed air supply line in each unit branches to supply both the service air system and the instrument air system. The service air system consists of a prefilter, a dryer, and an after-filter from which the air flows to the various service air loops. The instrument air system consists of two dryers in parallel, each with a pre-filter and after-filter. The air from the system flows to the various instrument air loops in the unit.

The compressed air system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the compressed air system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the compressed air system performs functions that support EQ.

LRA Table 2.3.3.9 identifies compressed air system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow orifice/elements
- piping components
- valve bodies

The intended functions of the compressed air system component types within the scope of license renewal include:

- restriction of process flow
- pressure-retaining boundary

2.3.3.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.9 and UFSAR Section 9.3.1 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.9.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the compressed air system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.10 Chemical and Volume Control and Boron Recycle Systems

2.3.3.10.1 Summary of Technical Information in the Application

LRA Section 2.3.3.10 describes the CVCS and the boron recycle system. The CVCS maintains the required RCS inventory by regulating the programmed pressurizer water level through continuous charging and letdown of reactor coolant water for the control of water chemistry conditions, activity level, and soluble chemical neutron absorber concentration.

The CVCS also injects seal water into the RCPs. Portions of the system contain borated water at a concentration higher than that of the RCS to maintain reactor shutdown margin.

The CVCS consists of one normal charging and two standby centrifugal charging pumps. The centrifugal charging pumps provide safety injection flow as described in LRA Section 2.3.2.2. In addition, the system has a letdown heat exchanger, an excess letdown heat exchanger, a regenerative heat exchanger, a volume control tank, piping, valves, and filters. The CVCS has demineralizer vessels and chemical tanks to control RCS water chemistry and the system recycles reactor grade water. Portions of the CVCS functioning as parts of the ECCS inject flow to the RCS during post-accident injection and recirculation. LRA Section 2.3.2.2 describes ECCS functions.

The CVCS boron recycle system portion processes reactor coolant effluent fit for reuse as makeup and decontaminates the effluent by demineralization. The CVCS thermal regeneration system portion is usable during reactor coolant boration and dilution operations, when RCS letdown flow may be directed to the thermal regeneration demineralizers to adjust reactor coolant boric acid concentration.

The CVCS and boron recycle systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the CVCS and boron recycle systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the CVCS and boron recycle systems perform functions that support fire protection, SBO, and EQ.

LRA Table 2.3.3.10 identifies CVCS and boron recycle systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- demineralizer vessels
- filter housings
- flow orifice/elements
- heat exchangers - excess letdown HXs (channel heads)
- heat exchangers - excess letdown HXs (shells)
- heat exchangers - excess letdown HXs (tubes and tubesheets)
- heat exchangers - letdown chillers (channel heads)
- heat exchangers - letdown chillers (shells)
- heat exchangers - letdown chillers (tubes)
- heat exchangers - letdown HXs (channel heads)
- heat exchangers - letdown HXs (shells)
- heat exchangers - letdown HXs (tubes and tubesheets)
- heat exchangers - letdown reheat HXs (channel heads)
- heat exchangers - letdown reheat HXs (shells)
- heat exchangers - letdown reheat HXs (tubes and tubesheets)
- heat exchangers - moderating HXs (channel heads)
- heat exchangers - moderating HXs (shells)
- heat exchangers - moderating HXs (tubes and tubesheets)
- heat exchangers - regenerative HXs (channel heads)
- heat exchangers - regenerative HXs (shells)
- heat exchangers - regenerative HXs (tubes and tubesheets)
- letdown orifices

- motor coolers - normal charging pumps (channel heads)
- motor coolers - normal charging pumps (shells)
- motor coolers - normal charging pumps (tubes)
- motor coolers - normal charging pumps (tubesheets
- piping components
- piping components - pipe spools for startup
- strainers
- pump casings - boric acid transfer pumps
- pump casings - CVCS recycle feed pumps
- pump casings - normal charging pumps
- pump casings - zinc addition injection pumps
- tank diaphragms - boric acid storage tanks
- tanks - boric acid batching tanks
- tanks - boric acid storage tanks
- tanks - boron meter tanks
- tanks - chemical mixing tanks
- tanks - recycle holdup tanks
- tanks - volume control tanks
- valve bodies

The intended functions of the CVCS and boron recycle systems component types within the scope of license renewal include:

- restriction of process flow
- physical integrity maintenance to prevent generation of debris or loose parts which could interfere with a safety-related function
- pressure-retaining boundary

2.3.3.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.10 and UFSAR Sections 9.3.4.1 and 9.3.4.2 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.10.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the CVCS and boron recycle system

components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.11 Ventilation Systems – Control Building

2.3.3.11.1 Summary of Technical Information in the Application

LRA Section 2.3.3.11 describes the control building ventilation systems, which include the following:

- control room area HVAC system
- control building safety feature electrical equipment room HVAC system
- control building wing area, levels A, B, 1, and 2 normal HVAC system
- control building lab hood and laboratory area ventilation system
- control building locker and toilet exhaust system
- control building cable spreading rooms HVAC system
- electrical penetration filter exhaust system
- onsite technical support center HVAC system

The control room area HVAC system operates in either normal or emergency mode. In the normal mode the system supplies conditioned air to the control room area during normal plant operating conditions for personnel comfort and a suitable operating environment for equipment.

If gaseous fission product levels exceed limits in the outside air intake, the control room HVAC system would be re-aligned from normal to emergency mode where a small amount of outside air filtered by high-efficiency filtration units maintains control room envelope pressurization. The system also switches to the emergency mode upon a safety injection signal or manual actuation. The four safety-related filtration units have train-related cooling coils which take cooling water from the essential chilled water system. Both Units 1 and 2 share the control room emergency HVAC system, the air ducts serving the control room forming a common system connected to the safety-related air handling units.

The control building safety feature electrical equipment room HVAC system provides a proper environment and temperature for electrical equipment and maintenance personnel during normal and postulated accident conditions. During normal operations, cooling is by coils containing cooling water from the normal chilled water system. Under design-basis accident conditions, two cooling trains are by cooling coils with cooling water from the essential chilled water system. Power for each train of the system is from a separate and independent Class 1E power system. Continuous exhaust minimizes the accumulation of hydrogen gas within the battery rooms.

The control building wing area levels A, B, 1, and 2 normal HVAC systems provide ventilation, cooling, heating, and smoke removal for operating personnel during normal conditions. Cooling coils contain cooling water from the normal chilled water system.

The control building laboratory hood and laboratory area ventilation system provides exhaust and auxiliary makeup airflow necessary for the proper operation of the laboratory hoods. The system also purges the laboratory area of airborne radioactive contamination. Air in the hoods and laboratory area pass through carbon filters before discharging to the atmosphere. Safety-related system components are limited to the tornado dampers and their ductwork.

The control building locker and toilet exhaust system purges the locker, shower, storage, toilet, and control building level 2 battery areas by exhausting to the atmosphere the air supplied to these areas during normal operating conditions.

The control building cable spreading rooms HVAC system cools, heats, and ventilates the cable spreading, auxiliary relay, normal air-conditioning, electric equipment, and computer rooms during normal conditions.

The system provision of emergency cooling to the auxiliary relay, normal air-conditioning, and electric equipment rooms is a safety-related function. These emergency cooling coils contain cooling water from the essential chilled water system. The other safety-related portions of this system are the tornado dampers and their ductwork.

The electrical penetration filter exhaust system fans and filtration units for Unit 1 were abandoned in place and never installed on Unit 2. Ductwork and dampers for this system are in use for normal ventilation.

The onsite technical support center HVAC system provides environmental control for habitability, supports computer operational requirements, and filters potentially radioactive particulates and iodine gas during normal and emergency plant operations. This system is not safety-related but has certain fire dampers within the scope of license renewal.

The control building ventilation systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the control building ventilation systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the control building ventilation systems perform functions that support fire protection and SBO.

LRA Table 2.3.3.11 identifies control building ventilation systems component types within the scope of license renewal and subject to an AMR:

- AC units (ESF) housings
- closure bolting
- control room filter and fan unit housings
- control room filter and fan unit moisture eliminators
- cooling coils (essential chilled water)
- cooling coils (normal chilled water)
- damper housings
- duct silencer housings
- ductwork and fittings
- fan housings
- flexible connectors
- heater housings
- piping components
- sealants

The intended functions of the control building ventilation systems component types within the scope of license renewal include:

- heat exchange between fluid media

- missile barrier
- moisture elimination or reduction
- pressure-retaining boundary

2.3.3.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.11 and UFSAR Sections 6.4, and 9.4.1 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.11.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the control building ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.12 Ventilation Systems – Auxiliary Building

2.3.3.12.1 Summary of Technical Information in the Application

LRA Section 2.3.3.12 describes the auxiliary building ventilation systems, which include the following:

- auxiliary building outside air supply and normal HVAC
- auxiliary building radwaste area filter exhaust and continuous exhaust system
- auxiliary building ESF room coolers
- piping penetration filter exhaust system

The auxiliary building outside air supply and normal HVAC system provides the outside air required to maintain acceptable auxiliary building activity. The system also heats and cools the building to maintain acceptable temperatures during normal operation. This system works in conjunction with the auxiliary building radwaste area filter exhaust system, which filters and exhausts the air supply to maintain negative pressurization in the auxiliary building for radioactivity control. A containment isolation signal isolates the auxiliary building outside air supply and normal HVAC system from the building's penetration filter exhaust system.

The auxiliary building radwaste area filter exhaust and continuous exhaust system maintains negative pressure in the auxiliary building by exhausting from the building more air than is supplied so no unfiltered potentially contaminated air leaks to the environment. This system also exhausts air from the radwaste transfer building and radwaste transfer tunnel, filtering all exhaust air to collect any fission products before discharging it through the equipment building

stack. A containment isolation signal isolates the auxiliary building radwaste area filter exhaust and continuous exhaust system from the auxiliary building penetration filter exhaust system.

The auxiliary building ESF room coolers provide cooling to safety-related switchgear, motor control centers, and pump rooms during normal, post-accident, and loss-of-offsite-power conditions. Individual fan-coil units use train-related essential chilled water during such emergency conditions.

The safety-related piping penetration filter exhaust system minimizes the release to the outside atmosphere of airborne radioactivity from containment leakage into the piping penetration areas during accident conditions by exhausting air to maintain negative pressure in those areas and filtering the exhaust air to remove fission products before releasing it through the vent stack. A portion of the exhaust air passes through cooling coils and recirculates back to the piping penetration areas. A containment ventilation isolation signal isolates the piping penetration filter exhaust system from the normal auxiliary building supply and exhaust systems, energizing the piping penetration exhaust fan and filter. Cooling coils contain cooling water from the NSCW system.

The auxiliary building ventilation systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the auxiliary building ventilation systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the auxiliary building ventilation systems perform functions that support fire protection and EQ.

LRA Table 2.3.3.12 identifies auxiliary building ventilation systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- cooling coils (essential chilled water)
- cooling coils (normal chilled water)
- cooling coils (NSCW)
- damper housings
- ductwork and fittings
- fan housings
- flexible connectors
- piping components
- piping penetration area cooler housings
- piping penetration filter and fan unit housings
- piping penetration filter and fan unit moisture eliminators
- room cooler housings

The intended functions of the auxiliary building ventilation systems component types within the scope of license renewal include:

- heat exchange between fluid media
- missile barrier
- moisture elimination or reduction
- pressure-retaining boundary

2.3.3.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.12 and UFSAR Section 9.4.3 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In reviewing LRA Section 2.3.3.12, the staff identified areas in which additional information was necessary to complete the review of the results of the applicant's scoping and screening. Therefore, by letter dated January 28, 2008, the staff issued a request for additional information concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAI and the applicant's related response.

In RAI 2.3.3.12-1, dated January 28, 2008, the staff identified several non-safety-related fans, not identified on the drawings as in-scope, but identified as being subject to an AMR. The Scope Determination Summary states that non-safety-related fan housings in this system are relied upon as missile barriers (for the fan element). Therefore, the staff requested the applicant to clarify whether these components are subject to aging management review.

Applicant's Response and Staff's Evaluation

In a letter dated February 27, 2008, the applicant stated:

> The fans are an airfoil design. The fan manufacturer asserts that the airfoil fan blade design used for these fans does not fail catastrophically in such a manner that a missile could be ejected. Therefore, the associated fan housings are not considered in scope under 10 CFR Part 54.4(a)(2) criterion as missile barriers.

The applicant also stated that the Scoping Determination Summary (Page 2.3-70) in the LRA will be revised to clarify that only certain fan housings perform a missile barrier function. Based on its review, the staff finds the applicant's response to RAI 2.3.3.12-1 acceptable.

2.3.3.12.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI response, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the auxiliary building ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.13 Ventilation Systems – Containment Building

2.3.3.13.1 Summary of Technical Information in the Application

LRA Section 2.3.3.13 describes the containment building (CTB) ventilation systems, which include the following:

- containment building air cooling system
- containment building lower level air circulating system
- containment building preaccess filter system
- containment building minipurge supply and normal preaccess purge supply systems
- containment building minipurge exhaust and normal preaccess purge exhaust systems
- containment building post-LOCA purge exhaust system
- containment building cavity cooling system
- containment building reactor support cooling system
- containment building auxiliary air cooling system
- containment building post-LOCA cavity purge system

The safety-related containment building air cooling system reduces the containment temperature and pressure following a LOCA or main streamline break accident inside containment by removing thermal energy. The system consists of eight air coolers per unit and their ductwork and dampers. The containment coolers are divided into two trains with four fan coolers each. Every cooler receives a start signal automatically upon a safety injection signal. The containment building air cooling system also detects reactor coolant leakage during normal operation. If air cooler condensate collected and measured in a standpipe rises above a preset level in the standpipe, a high condensate flow alarm annunciates in the control room.

The containment building lower level air circulating system mixes containment lower level air to prevent local hot spots. The system fans provide horizontal circulation in the area below the operating deck during normal operations.

The containment building preaccess filter system, with the normal purge system, controls airborne radioactivity inside containment.

This system circulates and filters containment air without makeup to reduce radioactivity in the containment atmosphere below the level required for personnel access for inspection, maintenance, and refueling operations.

The containment building minipurge supply and normal preaccess purge supply systems filter

outside air to the containment atmosphere for adequate ventilation and personnel comfort while the plant is shut down and for reduction of airborne contaminants and control of pressure buildup inside containment during normal operations.

The containment building minipurge exhaust and normal preaccess purge exhaust systems support the containment building minipurge supply and normal preaccess purge supply systems with the necessary containment ventilation air exhaust and filtration. Air exhaust is through the plant vent.

The containment building post-LOCA purge exhaust system allows containment purging as a backup to the hydrogen recombiner system to maintain post-accident hydrogen concentration below the combustible level. Use of the system post-LOCA may be in conjunction with a portable air compressor through the seismic Category I portion of the service air piping to provide the purge motive force. The air removed through ducting in the containment dome area passes through the seismic Category I containment penetrations and the filter units where it exhausts through the vent stack.

The containment building cavity cooling system cools the reactor cavity. The containment building cavity cooling units operate with NSCW system cooling water in conjunction with the containment building air cooling system to cool the primary shield concrete and nuclear instrumentation. The system operates during normal and loss-of-offsite-power conditions. Upon loss of offsite power loading of the cooling fans is automatic on a bus energized by the diesel generator but the fans must be loaded manually following a LOCA. Safety-related portions of the system include the cooling coils and cavity pressure relief dampers. This system is also within the scope of license renewal under 10 CFR 54.4(a)(2) due to the missile barrier function of its fan housings.

The containment building reactor support cooling system operates in conjunction with the reactor cavity cooling system to cool the reactor supports. The containment building reactor support cooling fans exhaust air from the reactor vessel supports to keep the concrete within its operating temperature limit during normal and loss-of-offsite-power conditions.

The containment building auxiliary air cooling system removes excess thermal energy from the containment atmosphere due to heat losses from operating equipment during normal power generation and refueling outages. The system augments the containment cooling system cooling capacity by an amount equivalent to the heat lost from the CRDM unit fans. The system detects reactor coolant leakage during normal operation by collecting and measuring air cooler condensate in a standpipe.

The containment building post-LOCA cavity purge system prevents hydrogen pocketing in the reactor cavity after a LOCA by supplying air to the reactor cavity to maintain hydrogen concentration below the combustible level, a safety-related function. The system has a Class 1E power supply, each redundant train connected to separate safety buses.

The system meets seismic Category I criteria and starts automatically upon a safety injection signal.

The containment building ventilation systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the containment building ventilation systems potentially could prevent the satisfactory

accomplishment of a safety-related function. In addition, the containment building ventilation systems perform functions that support EQ.

LRA Table 2.3.3.13 identifies containment building ventilation systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- cooling coils (NSCW)
- CTB aux cooling unit housings
- CTB cooling unit housings
- damper housings
- ductwork and fittings
- fan housings
- flexible connectors
- flow orifice/elements
- piping components
- valve bodies

The intended functions of the CTB ventilation systems component types within the scope of license renewal include:

- heat exchange between fluid media
- restriction of process flow
- missile barrier
- pressure-retaining boundary

2.3.3.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.13 and UFSAR Sections 6.2.1, 6.2.2, 6.5.1, and 9.4.6 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In reviewing LRA Section 2.3.3.13, the staff identified areas in which additional information was necessary to complete the review of the results of the applicant's scoping and screening. Therefore, by letter dated January 28, 2008, the staff issued a request for additional information concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1).

The following paragraphs describe the staff's RAI and the applicant's related response.

In RAI 2.3.3.13-1, dated January 28, 2008, the staff identified that the CRDM unit fans were not identified on the drawings as in-scope and being subject to an AMR when the applicant had indicated in other areas that the housings for some fans in the containment building are

considered in scope under 10 CFR Part 54.4(a)(2) criterion as missile barriers. Therefore, the staff requested the applicant to clarify whether these components are subject to AMR, or justify their exclusion.

Applicant's Response and Staff's Evaluation

In a letter dated February 27, 2008, the applicant stated:

> The housings for the CRDM unit fans, 1(2)1509B7001 000 through 1(2) 1509B7004000, perform a missile barrier function in accordance with 10 CFR 54.4(a)(2) and should have been shown as in scope on boundary drawings 1X4LD214-1 and 2X4LD214-1. Therefore, Containment Building CRDM Cooling System will be removed from LRA Table 2.2-2, "Systems and Structures Not Within the Scope of License Renewal," and added to Table 2.2-1. A description of the system will also be added to the Auxiliary System Description in LRA Section 2.3.3.13. This system description will describe the basis for the Containment Building CRDM Cooling System meeting 10 CFR 54.4(a)(2) criterion.

The commodity type fan housings (ID No. 7d and 7e) in LRA Table 3.3.2-13 provide the AMR for these fan housings.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.13-1 acceptable, because it is the staff's understanding, based on the applicant's response to the staff's RAI, that the CRDM unit fan housings are within the scope of license renewal in accordance with 10 CFR 54.4(a), and are subject to an AMR in accordance with 10 CFR 54.21(a) (1).

2.3.3.13.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI response, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the containment building ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.14 Ventilation Systems – Fuel Handling Building

2.3.3.14.1 Summary of Technical Information in the Application

LRA Section 2.3.3.14 describes the fuel-handling building ventilation systems, which include the fuel-handling building normal HVAC and fuel-handling building post-accident exhaust systems. The fuel-handling building normal HVAC system heats, cools, ventilates, and filters fuel-handling building (shared by Units 1 and 2) air to maintain an atmosphere suitable for personnel and equipment during normal operation. Redundant radiation monitors in the fuel-handling building normal exhaust ductwork detect high radiation levels. If radiation levels exceed setpoints, a signal isolates the fuel-handling building normal exhaust system and initiates the fuel-handling building post-accident exhaust system.

The fuel-handling building post-accident exhaust system prevents ex-filtration of contaminated air from the fuel-handling building by filtering and exhausting air from the area after its isolation from the normal fuel-handling building ventilation subsystem. The fuel-handling building post-accident exhaust system maintains a negative pressure within the area following a fuel-handling accident. The system consists of two 100-percent capacity exhaust filtration units, piping, ductwork, and dampers and shares the exhaust ductwork from the isolation dampers to the post-accident exhaust filtration units with the fuel-handling building normal HVAC system. If a fuel-handling accident releases radioactivity, radiation monitors in the normal fuel-handling building exhaust duct sense high radioactivity and transmit a high-radiation signal to the balance of plant safety actuation system, which in turn generates a fuel-handling building isolation signal which causes the isolation dampers to close, isolating the fuel-handling building from the normal supply and exhaust. The exhaust filtration units start automatically upon the isolation signal and duct the exhaust from the filtration units to the plant vent. The fuel-handling building post-accident exhaust system also can be actuated manually from the control room.

The fuel-handling building ventilation systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the fuel-handling building ventilation systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the fuel-handling building ventilation systems perform functions that support fire protection and EQ.

LRA Table 2.3.3.14 identifies fuel-handling building ventilation systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- cooling coils (normal chilled water)
- damper housings
- ductwork and fittings
- fan housings
- fuel-handling building post-accident filter and fan unit housings
- fuel-handling building post-accident filter and fan unit moisture eliminators
- flexible connectors
- piping components
- valve bodies

The intended functions of the fuel handling-building ventilation systems component types within the scope of license renewal include:

- missile barrier
- moisture elimination or reduction
- pressure-retaining boundary

2.3.3.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.14 and UFSAR Section 9.4.2 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In reviewing LRA Section 2.3.3.13, the staff identified areas in which additional information was necessary to complete the review of the results of the applicant's scoping and screening. Therefore, by letter dated January 28, 2008, the staff issued a request for additional information concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

In RAI 2.3.3.14-1, dated January 28, 2008, the staff identified that the fuel handling building normal AC unit fans and fuel pool area recirculating air handling unit fans were not identified on the drawings as in-scope, but were identified as being subject to an AMR. The Scope Determination Summary states that non-safety-related fan housings associated with this system are relied upon as missile barriers (for the fan element). Therefore, the staff requested the applicant to clarify whether these components are subject to AMR.

Applicant's Response and Staff's Evaluation

In a letter dated February 27, 2008, the applicant stated:

> The fans are an airfoil design. The fan manufacturer asserts that the airfoil fan blade design used for these fans does not fail catastrophically in such a manner that a missile could be ejected. Therefore, the associated fan housings are not considered in scope under 10 CFR Part 54.4(a)(2) criterion as missile barriers.

The applicant also stated that the Scoping Determination Summary (Page 2.3-70) in the LRA will be revised to qualify that only certain fan housings perform a missile barrier function.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.14-1 acceptable.

In RAI 2.3.3.14-2, dated January 28, 2008, the staff concludes fuel pool area recirculating air handling system ductwork was not identified on the drawings as in-scope or being subject to an AMR. The Scope Determination Summary states that certain ductwork and dampers associated with the Fuel Handling Building Normal HVAC System interface with the Fuel Handling Building Post-Accident Exhaust System and must maintain integrity in order to maintain negative pressure in the Fuel Handling Building post-accident.

Therefore, the staff requested the applicant to clarify whether these components are in scope and subject to AMR.

Applicant's Response and Staff's Evaluation

In a letter dated February 27, 2008, the applicant stated:

> The ductwork from PASS 1-2702-P5-SAP does not perform an in-scope function. NEI95-10 Appendix F section 5.2.2.1 provides the basis for air and gas systems not being a hazard to other plant equipment. The failure of the non-safety related portion of ductwork is not a credible event which could impact the portion of duct that is in-scope for 10 CFR Part 54.4(a)(1). Therefore, the ductwork from PASS

1-2702-P5-SAP is not considered in scope under 10 CFR Part 54.4(a)(2) criterion.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.14-2 acceptable, because it is the staff's understanding, based on the applicant's response to the staff's RAI, that the ductwork does not perform an in scope function and therefore is not within the scope of license renewal in accordance with 10 CFR 54.4(a).

In RAI 2.3.3.14-3, dated January 28, 2008, the staff identified fuel pool area recirculating air handling system ductwork and booster that were not identified on the drawings as in-scope or being subject to an AMR. The Scope Determination Summary states that certain ductwork and dampers associated with the Fuel Handling Building Normal HVAC System interface with the Fuel Handling Building Post-Accident Exhaust System and must maintain integrity in order to maintain negative pressure in the Fuel Handling Building post-accident. Therefore, the staff requested the applicant to clarify whether these components are in scope and are subject to AMR.

Applicant's Response and Staff's Evaluation

In a letter dated February 27, 2008, the applicant stated:

> The ductwork from PASS 2-2702-P5-SAP and Booster Fan 2-1541-B7-001-000 does not perform an in-scope function. NEI 95-10 Appendix F section 5.2.2.1 states that industry operating experience has shown no failures due to aging that have adversely impacted the accomplishment of a safety function. Failure of these non-safety related portions of ductwork is not a credible event which could impact the portion of duct that is in-scope for 10 CFR Part 54.4(a)(1). Therefore, the ductwork from PASS 2-2702-P5-SAP and Booster Fan 2-1541-B7-001-000 is not considered in scope under 10 CFR Part 54.4(a)(2) criterion.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.14-3 acceptable, because it is the staff's understanding, based on the applicant's response to the staff's RAI, that the ductwork and booster fan do not perform an in scope function and therefore are not within the scope of license renewal in accordance with 10 CFR 54.4(a).

2.3.3.14.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the fuel handling building ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.15 Ventilation Systems – Diesel Generator Building

2.3.3.15.1 Summary of Technical Information in the Application

LRA Section 2.3.3.15 describes the diesel generator building ventilation system, which

ventilates and removes heat from the building during diesel generator operation and supplies sufficient heat for easy starting of the diesel generators and for personnel occupancy. The system is divided into two subsystems, ESF and non-ESF. During normal plant operation, the non-ESF heating system maintains a minimum temperature when the diesel generators are not running. Non-ESF building ventilation is also utilized as required for maintenance and personnel access.

The ESF ventilation system maintains the maximum temperature of the building below analyzed limits with the diesel generator operating. Building ventilation is by 100-percent outside air at summer design temperatures and by recirculation and outside air as the temperature drops in winter. Power for the ESF ventilation equipment is by the Class 1E bus of the same train as the diesel generator set ventilated.

The diesel generator building ventilation system contains safety-related components relied upon to remain functional during and following DBEs. In addition, the diesel generator building ventilation system performs functions that support fire protection.
LRA Table 2.3.3.15 identifies diesel generator building ventilation system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- damper housings
- ductwork and fittings
- fan housings
- filter housings - EDG control panel supply ventilation
- flexible connectors

The intended function of the diesel generator building ventilation system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.15.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.15 and UFSAR Section 9.4.7 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In reviewing LRA Section 2.3.3.15, the staff identified areas in which additional information was necessary to complete the review of the results of the applicant's scoping and screening. Therefore, by letter dated January 28, 2008, the staff issued an RAI concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAI and the applicant's related response.

In RAI 2.3.3.15-1, dated January 28, 2008, the staff identified that the diesel generator building ventilation system unit heater fans were not identified on the drawings as in-scope or being subject to an AMR. The Scope Determination Summary states that non-safety-related fan

housings associated with this system are relied upon as missile barriers (for the fan element). Therefore, the staff requested the applicant to clarify whether these components are in scope and subject to an AMR.

In a letter dated February 27, 2008, the applicant stated:

> The Non-ESF Exhaust fan housings, perform a missile barrier function per 10 CFR 54.4(a)(2), and should have been shown as in scope on boundary drawings 1X4LD217 and 2X4LD217. Unit heaters, 1(2)-1566-U7001-000 through 1(2)-1566-U7-020-000, also perform a missile barrier function per 10 CFR 54.4(a)(2).

The applicant will add commodity type Fan Housings (ID No.4) in LRA Table 3.3.2.15. They will also provide the AMR for the Fan Housings, and a new commodity type Heater Housings to Tables 2.3.3-15 and 3.3.2-15, the latter of which will provide the AMR for the Heater Housings. The scoping determination (LRA Page 2.3-89) is also revised to reflect the addition in accordance with 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.15-1 acceptable, because it is the staff's understanding, based on the applicant's response to the staff's RAI, that the fan housings are within the scope of license renewal in accordance with 10 CFR 54.4(a), and are subject to an AMR in accordance with 10 CFR 54.21(a) (1).

2.3.3.15.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI response, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the diesel generator building ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.16 Ventilation Systems – Auxiliary Feedwater Pump House

2.3.3.16.1 Summary of Technical Information in the Application

LRA Section 2.3.3.16 describes the auxiliary feedwater pumphouse ventilation system, which provides heating, cooling and ventilation for an environment suitable for equipment and maintenance personnel. The system operates whenever the pumps operate during normal, accident, or loss-of-offsite-power conditions. This system utilizes both ESF and non-ESF outside air supply units. The ESF fans maintain the temperature in the pump rooms within analyzed limits. Pneumatically-operated dampers open automatically for natural ventilation of the turbine-driven auxiliary feedwater pump room during SBO.

The auxiliary feedwater pumphouse ventilation system contains safety-related components relied upon to remain functional during and following DBEs. In addition, the auxiliary feedwater pumphouse ventilation system performs functions that support fire protection and SBO.

LRA Table 2.3.3.16 identifies auxiliary feedwater pumphouse ventilation system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- damper housings
- ductwork and fittings
- fan housings

The intended function of the auxiliary feedwater pumphouse ventilation system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.16 and UFSAR Section 9.4.8 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In reviewing LRA Section 2.3.3.16, the staff identified areas in which additional information was necessary to complete the review of the results of the applicant's scoping and screening. Therefore, by letter dated January 28, 2008, the staff issued an RAI concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAI and the applicant's related response.

In RAI 2.3.3.16-1, dated January 28, 2008, the staff identified that the auxiliary feedwater pump house ventilation system unit heater fans were not identified on the drawings as in-scope or being subject to an AMR. The Scope Determination Summary states that non-safety-related fan housings associated with the system are relied upon as missile barriers (for the fan element). Therefore, the staff requested the applicant to clarify whether these components are in scope and subject to an AMR.

In a letter dated February 27, 2008, the applicant stated:

> The Housings for unit heaters, 1(2)-1593-U7-001-000 through 1(2)-1593-U7-007-000, perform a missile barrier function per 10 CFR 54.4(a)(2), and should have been shown as in scope on boundary drawings 1X4LD227 and 2X4LD227.

As a result, the applicant LRA Tables 2.3.3.16 (Item 4) and 3.3.2.16 (Items 4a and 4b), will be revised to include the missile barrier function. The scoping determination (LRA Page 2.3-91) is also revised to reflect the addition in accordance with 10 CFR54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.16-1 acceptable, because it is the staff's understanding, based on the applicant's response to the staff's RAI, that the fan housings are within the scope of license renewal in accordance with 10 CFR 54.4(a), and are subject to an AMR in accordance with 10 CFR 54.21(a) (1).

2.3.3.16.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI response, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the auxiliary feedwater pump house ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.17 Ventilation Systems – Miscellaneous

LRA Section 2.3.3.17 describes the miscellaneous ventilation systems, which include the following:

- electrical tunnel ventilation system
- piping penetration ventilation system
- fire protection facilities ventilation system

The electric tunnel ventilation system ventilates the tunnels carrying safety-related train-oriented cables, normal cables, or both to prevent excessive heat during normal operation, shutdown, refueling, and accident conditions. Essential system components ventilate the two diesel power cable tunnels (train A and train B), the two NSCW tower cable tunnels (train A and train B), and the turbine building and auxiliary building train A tunnel. Normal system components ventilate the turbine building chase to control building tunnel. Each tunnel has its own subsystem.

The piping penetration ventilation system provides cooling air to the main steam and feedwater pipe restraints in the main steam area and steam tunnel to keep concrete temperatures below limits. The system functions during normal plant operation, startup, cold shutdown, cooldown and hot standby, and refueling operations and remains functional during loss of offsite power. Power is from the non-Class 1E standby power system.

The fire protection facilities ventilation system uses fans and louvers to ventilate the fire protection pumphouses and fire protection valve houses and maintain the air temperature within these structures at or below design temperature during fire pump operation. Two diesel-driven fire pumps are located in one of the pumphouses and an electric motor-driven fire pump in the other. The pump room ventilation components are within the scope of license renewal for fire protection.

The miscellaneous ventilation systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the miscellaneous ventilation systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the miscellaneous ventilation systems perform functions that support fire protection and EQ.

LRA Table 2.3.3.17 identifies miscellaneous ventilation systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- damper housings
- ductwork and fittings

- fan housings
- filter housings - tunnel supply air
- flexible connectors

The intended functions of the miscellaneous ventilation systems component types within the scope of license renewal include:

- missile barrier
- pressure-retaining boundary

2.3.3.17A Ventilation Systems – Electric Tunnel Ventilation

2.3.3.17A.1 Summary of Technical Information in the Application

The electric tunnel ventilation system ventilates the tunnels carrying safety-related train-oriented cables, normal cables, or both to prevent excessive heat during normal operation, shutdown, refueling, and accident conditions. Essential system components ventilate the two diesel power cable tunnels (train A and train B), the two NSCW tower cable tunnels (train A and train B), and the turbine building and auxiliary building train A tunnel. Normal system components ventilate the turbine building chase to control building tunnel. Each tunnel has its own subsystem.

2.3.3.17A.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.17 and UFSAR Section 9.4.9.2 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In reviewing LRA Section 2.3.3.17, the staff identified areas in which additional information was necessary to complete the review of the results of the applicant's scoping and screening. Therefore, by letter dated January 28, 2008, the staff issued an RAI concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAI and the applicant's related response.

In RAI 2.3.3.17A-1, dated January 28, 2008, the staff identified that electrical tunnel ventilation system drawing shows that the exhaust duct and fan are in scope, but the makeup air duct for this space were not identified on the drawings as in-scope or being subject to an AMR. The Scope Determination Summary states that non-safety-related fan housings associated with the system are relied upon as missile barriers (for the fan element). Therefore, the staff requested the applicant to clarify whether these components are in scope and subject to an AMR.

In a letter dated February 27, 2008, the applicant stated that the makeup air passageway and associated components perform a pressure boundary function for makeup air to the tunnels and should have been shown as in scope for 10 CFR 54.4(a)(2) on boundary drawings 1X4LD238 and 2X4LD238. The pressure boundary intended function will be added to the concrete

components (Component Type IDs 1-4) in License Renewal Application tables 2.4.5 and 3.5.2-5 to account for the concrete portion of the passageways which serves a pressure boundary function for the makeup air.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.17A-1 acceptable, because it is the staff's understanding, based on the applicant's response to the staff's RAI, that the makeup air passageway and associated components are within the scope of license renewal in accordance with 10 CFR 54.4(a), and are subject to an AMR in accordance with 10 CFR 54.21(a) (1).

In RAI 2.3.3.17A-2, dated January 28, 2008, the staff identified that the electric tunnel ventilation system fan for the North-South Turbine Building Chase to Control Building tunnel ventilation and associated ductwork were not identified on the drawings as in-scope as being subject to an AMR therefore, the staff requested the applicant to clarify whether these components are in scope and subject to an AMR.

In a letter dated February 27, 2008, the applicant stated:

> the North-South Turbine Building Chase to Control Building Tunnel Ventilation Fan 1(2)-1540-B7-007-000 and associated ductwork are not credited in the design calculations for exhausting the Turbine Building and Auxiliary Building Train A Tunnel. The purpose of these fans is to recirculate and, thereby, prevent a stagnant air condition in the adjoining Turbine Building Chase to Control Building Tunnel during normal plant conditions. Therefore, the North-South Turbine Building Chase to Control Building Tunnel Ventilation Fan 1(2)-1540-B7-007-000 and associated ductwork are not in scope for license renewal.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.17A-2 acceptable, because it is the staff's understanding, based on the applicant's response to the staff's RAI, that the North-South Turbine Building Chase to Control Building. Tunnel Ventilation Fan (1(2)-1540-B7-007-000) and associated duct are not in scope of license renewal in accordance with 10 CFR 54.4(a), and are not subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3.3.17A.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the electric tunnel ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.17B Ventilation Systems – Piping Penetration Ventilation

2.3.3.17B.1 Summary of Technical Information in the Application

The piping penetration ventilation system provides cooling air to the main steam and feedwater pipe restraints in the main steam area and steam tunnel to keep concrete temperatures below limits. The system functions during normal plant operation, startup, cold shutdown, cooldown

and hot standby, and refueling operations and remains functional during loss of offsite power. Power is from the non-Class 1E standby power system.

2.3.3.17B.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.17 and UFSAR Section 9.4.9.3 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.17B.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the piping penetration ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.17C Ventilation Systems – Fire Protection Facilities HVAC

2.3.3.17C.1 Summary of Technical Information in the Application

The fire protection facilities ventilation system uses fans and louvers to ventilate the fire protection pumphouses and fire protection valve houses and maintain the air temperature within these structures at or below design temperature during fire pump operation. Two diesel-driven fire pumps are located in one of the pumphouses and an electric motor-driven fire pump in the other. The pump room ventilation components are within the scope of license renewal for fire protection.

2.3.3.17C.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.17 and UFSAR Section 9.5.1 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.17C.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to

identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the fire protection facilities HVAC system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.18 Ventilation Systems – Radwaste Buildings HVAC

2.3.3.18.1 Summary of Technical Information in the Application

LRA Section 2.3.3.18 describes the radwaste building ventilation systems, which include the ventilation systems for the radwaste transfer building, radwaste transfer tunnel, and dry active waste (DAW) Facilities.

The functions of the radwaste transfer building, radwaste transfer tunnel, and DAW facilities HVAC systems are to:

- heat, cool, and ventilate the DAW facility for proper operation of equipment and personal comfort of maintenance or operations personnel
- distribute and exhaust air suitably to reduce possible concentrations of radioactive and chemical impurities in the process areas
- draw effluent exhaust air from the radwaste transfer building through the auxiliary building filtration system
- ventilate the tunnel as required for periodic inspection

The radwaste transfer building and radwaste transfer tunnel HVAC systems are abandoned except for the auxiliary building filtration system exhaust ductwork from the auxiliary building radwaste area filter exhaust and continuous exhaust system; however, a fire damper in the west fire-rated wall to prevent smoke and fire from translating to the auxiliary building via the radwaste transfer tunnel is in the fire protection program, which is credited for 10 CFR 50.48 compliance and is within the scope of license renewal for fire protection. The radwaste building ventilation systems perform functions that support fire protection.

LRA Table 2.3.3.18 identifies radwaste building ventilation systems component types within the scope of license renewal and subject to an AMR:

- damper housings
- ductwork and fittings

The intended function of the radwaste building ventilation systems component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.18.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.18 and UFSAR Section 9.4.3.3 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the radwaste building HVAC system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.19 Fire Protection Systems

2.3.3.19.1 Summary of Technical Information in the Application

LRA Section 2.3.3.19 describes the fire protection systems, which include the following:

- fire protection water system
- fire protection seismic Category 1 water system
- fire protection halon systems

The fire protection water system minimizes both the probability and the consequences of postulated fires by adequate means for prompt fire detection, suppression, and control. The primary goals of the fire protection water system are to ensure performance of design functions required for safe plant shutdown and to minimize the probability of radioactive releases to the environment in a fire. To prevent or limit fire damage to safety-related SCs so at least one redundant train of equipment is available for safe shutdown, the system relies on fire prevention, fire suppression, fire detection and annunciation, suppression system automatic supervision, fire separation and confinement, fire extinguishment, fire brigade implements, and plant design features to minimize fires and their consequences. Fire water suppression systems include fire tanks and pumps, automatic and manual spray and sprinkler systems, hose stations, fire hydrants and hose houses, and fire mains or yard loop headers to supply water to extinguish fires. Consumables and short-lived components (*e.g.*, fire extinguishers, self-contained breathing apparatus air bottles, fire brigade accouterments like boots, gloves, and helmets, and fire hoses) are included in this system.

Screening of the fire detection and actuation portion of this system is as part of the electrical and instrumentation and controls systems (see LRA Section 2.5), of fire dampers as parts of the assigned HVAC system, of other passive fire barriers as parts of the structural systems (see LRA Section 2.4), and of the RCP oil collection system as part of the RCS and connected lines (LRA Section 2.3.1.3).

The fire protection - seismic Category 1 water system supplies fire-extinguishing water for manual hose stations in areas with equipment required for safe shutdown after a safe shutdown

earthquake that might disable the normal fire protection system. This system fights fires following a safe shutdown earthquake if no other source of fire-fighting water is available. The system is completely manual with hose stations and stand pipes in the containment, diesel generator, auxiliary, and control buildings. The NSCW system supplies water by manual valves normally locked closed.

The fire protection halon system, which protects by halon fire-extinguishing gas electrical equipment which supports safe plant shutdown, is composed of halon cylinders, discharge piping, local halon control panels, and instruments. Shutdown panels in the control building shutdown panel rooms and ventilation equipment in the control building records storage room supporting safe plant shutdown are protected from fire by packaged halon flooding systems. Other plant spaces and electrical equipment not supporting safe plant shutdown but fire-protected by packaged halon systems include the plant operating computer; the service building communications room; the service building plant documentation storage rooms; and the technical support center communication, computer, cathode ray tube (CRT) display, and electrical equipment rooms.

The fire protection systems contain safety-related components relied upon to remain functional during and following DBEs. In addition, the fire protection system performs functions that support fire protection and EQ.

LRA Table 2.3.3.19 identifies fire protection systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- fire hydrants
- flame arrester elements
- flame arrester housings
- flexible connectors
- flow orifice/elements
- fusible links and sprinkler head bulbs
- hose station nozzles and hose connections
- hose stations
- piping components
- pump casings - fire pumps (diesel-driver, motor-driven, and jockey pumps)
- sight glasses
- silencers
- spray shields
- sprinkler heads and spray nozzles
- strainer elements
- strainer housings
- tanks - fuel oil storage tanks (fire pump diesel)
- tanks - fire protection water storage tanks
- valve bodies

The intended functions of the fire protection systems component types within the scope of license renewal include:

- protection from debris

- prevention of flame propagation from ignition of vent pipe vapors back to the source
- spray shield or curbs for flow direction
- flow pattern or distribution provision
- restriction of process flow
- pressure-retaining boundary

2.3.3.19.2 Staff Evaluation

The staff reviewed the VEGP LRA, Section 2.3.3.19, (UFSAR), Section 9.5.1; NUREG-1137, "Safety Evaluation Report Related to the Operation of Vogtle Electric Generating Plant, Units 1 and 2," through Supplement 5; and NUREG-1137, "Safety Evaluation Report Related to the Operation of Vogtle Electric Generating Plant, Units 1 and 2," through Supplement 9; approving the VEGP Fire Protection Program listed in the VEGP Units 1 and 2 Operating License Condition 2.G, using the evaluation methodology described in SER, Section 2.3, and the guidance in SRP-LR, Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff also reviewed VEGP Units 1 and 2 commitments to Title 10 CFR 50.48, "Fire protection" (i.e., approved fire protection program), using their commitment documents to the Branch Technical Position (BTP) Chemical and Mechanical Engineering Branch (CMEB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," Revision 2, July 1981, documented in the fire protection CLB.

The staff's review of LRA, Section 2.3.3.19, identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.19-1, dated January 28, 2008, the staff stated that the following LRA drawings show fire protection system components as out of scope (i.e., not colored in red):

LRA drawing CX4LD173-2:

- Fire Hydrants
- Fire Protection Piping to Turbine Building, Steam Tunnel, and Radwaste Solidification Building
- Intake Structure

LRA drawing CX4LD173-4, in the following locations:

- Dry Active Waste Processing Facility
- Dry Active Waste Storage Building

LRA drawing 1X4LD174-1, Halon 1301 fire protection system in the following locations:

- Computer Room Level A
- Computer CRT Display and Communication Rooms Level 1
- Radwaste Solidification Building Contamination Oil Room Level 1
- Radwaste Solidification Building Elevation 192'-0"

LRA drawing 2X4LD174-1, Halon 1301 fire protection system's in the following location:

- Computer Room Level A

The staff requested that the applicant verify whether the above systems and components are in 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).

If these components are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion. By letter dated February 27, 2008, the applicant stated that:

> The fire protection SCs that are relied upon in the event of a fire to maintain the ability to perform reactor plant safe shutdown functions at VEGP (including plant SCs that are relied upon to perform safe shutdown in the event of a fire), or to minimize radioactive releases to the environment in the event of a fire, are in-scope for license renewal - see VEGP-LR-TE-007, "Technical Evaluation VEGP Fire Protection Scoping." For the fire protection system, certain SCs are in scope for license renewal and certain SCs are not in scope, depending on whether they are relied upon for 10 CFR 50.48 and Branch Technical Position (BTP) CMEB 9.5-1 compliance or not (hereafter referred to as "regulatory compliance"). The following is a breakdown of fire protection SCs and a discussion of in-scope applicability:
>
> Drawing CX4LD173-2: The fire hydrants listed in UFSAR Table 9.5.1-10D are required for regulatory compliance and are in scope and highlighted as such on the drawing. Those fire hydrants not in UFSAR Table 9.5.1-10D are not required for regulatory compliance and are not in scope and thus not highlighted on the drawing. The fire protection piping to the Turbine Building (including steam tunnels) is not in scope because the fire protection system in the Turbine Building is not relied upon for regulatory compliance (FSAR Appendix 9B, paragraph C.7.h). Refer to the answer to RAI 2.1-2 for discussion regarding non-safety related components in the Turbine Building.
>
> The fire protection system in the Radwaste Solidification Building is not in scope because the building has been abandoned in place and there is no radioactive material stored there (UFSAR Section 11.4.2.4).

Since the Intake Structure is not in the scope of license renewal, the fire protection system in this structure is not in scope. See License Renewal Civil Boundary Drawing AX1D45L01. In evaluating this response, the staff finds that it was incomplete and that review of LRA, Section 2.3.3.19, could not be completed. Several yard fire hydrants are excluded from the scope of license renewal and from subject to an AMR.

During a conference call, the staff questioned, in RAI 2.3.3.19-1, the applicant's methodology, which excluded certain fire hydrants from the scope of the license renewal and subject to an AMR. In its response dated June 23, 2008, the applicant stated that:

> Fire protection SCs that are relied upon in the event of a fire to maintain the ability to perform reactor plant safe-shutdown functions at VEGP (including plant SCs that are relied upon to perform safe-shutdown in the event of a fire), or to minimize radioactive releases to the environment in the event of a fire are in-scope for license renewal. For the fire protection system, certain SCs are in scope for license renewal and certain SCs are not in scope, depending on whether they are relied upon for 10 CFR 50.48 and BTP CMEB 9.5-1 compliance or not (hereafter referred to as "regulatory compliance").

The CLB for VEGP's fire protection system is as follows:

The fire protection systems described in the VEGP UFSAR conform to General Design Criterion 3 as stated in UFSAR Section 3.0 (10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants," Criterion 3, "Fire Protection"). The scoping criteria in 10 CFR 54.4(a)(3) states that plant SCs within the scope of this part are "...relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRCs regulation for fire protection (10 CFR 50.48)..." In addition to compliance with General Design Criterion 3 and 10 CFR 50.48, VEGP also utilizes the detailed guidance of BTP CMEB 9.5.1, "Guidelines for Fire Protection for Nuclear Power Plants."

10 CFR 50.48 dictates that each applicant must have a fire protection plan that satisfies Criterion 3 of Appendix A to 10 CFR 50. Criterion 3, "Fire Protection," stipulates: "Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room. Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on structures, systems, and components *important to safety*. Firefighting systems shall be designed to assure that their rupture or inadvertent operation does not significantly impair the *safety capability* of these structures, systems, and components." 10 CFR 50.48 requires that the plan describe specific features necessary to implement the program such as automatic and manually operated fire detection and suppression systems, and the means to limit fire damage to SCs important to safety so that the capability to shut down the plant safely is ensured.

The VEGP fire protection program is described in detail in the UFSAR and was approved as described in the UFSAR and other licensing documents by the NRC in the operating license:

> Southern Nuclear shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility, and submittals dated July 2, August 4 and 13, October

10 and 24, November 5, and December 19, 1986, and January 2, 1987, as approved in the SER (NUREG-1137) through Supplement 5 subject to the following provision:

Southern Nuclear may make changes to the approved fire protection program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe-shutdown in the event of a fire.

The SER (NUREG-1137) was reviewed through Supplement 9 to help make scoping determinations.

NUREG-1800 section 2.1.3.1.3, "Regulated Events," is a source of additional guidance on applying the scoping criteria of 10 CFR 54.4(a)(3). It states that "...all SCs that are relied upon in the plant's CLB (as defined in 10 CFR 54.3), plant-specific experience, industry-wide experience (as appropriate), and safety analyses or plant evaluations to perform a function that demonstrates compliance with NRC regulations identified under 10 CFR 54.4(a)(3), are required to be included within the scope of the rule." In addition, it limits the extent of the review with the statement that "an applicant need not consider hypothetical failures or second-, third-, or fourth-level support systems in determining the SCs within the scope of the rule for 10 CFR 54.4(a)(3)." This guidance is not intended to exclude any support system...that is specifically relied upon for compliance with the applicable NRC regulation. The guidance also recognizes that "mere mention of an SC in the analysis or evaluation does not necessarily constitute support of an intended function as required by the regulation." Thus, the mention of a system, structure, or component in an analysis or evaluation (e.g., UFSAR, etc.) does not in and of itself constitute reliance on the SC for regulatory compliance. Fire protection components also exist solely to satisfy insurance requirements and are likewise not relied upon for regulatory compliance and are not in the CLB.

In general, every fire protection system, structure, and component was reviewed against the current licensing basis and scoping determinations were made based on whether the SC is part of the CLB or not.

For the fire protection water system, portions of the system that are in scope for 10 CFR 54.4 a(3) are separated from portions of the system that are not in scope by manual isolation valves that are normally open. These valves remain normally open so that in the event of a fire in a not-in-scope portion of the system, water may be immediately available for fire suppression following automatic initiation of the detection/suppression system(s) in the not-in-scope portion. This also applies to not-in-scope yard fire hydrants that may be used to manually suppress fires. Should an age related pressure boundary failure occur in the not-in-scope portion of the system such that a significant system pressure drop results, an alarm would notify plant personnel and the fire water pump(s) would start automatically. Following the alarm and pump start, plant personnel would investigate the cause and manually close the isolation valve(s) separating the failed not-in-scope portion of the system from the in-scope portion, as warranted, considering the need to preserve fire water inventory for 10 CFR 50.48 compliance. The design of the system provides multiple pumps and a large volume of stored water which can be used to maintain system pressure while the location of a leak is identified and isolated. Ample time is available to isolate a leak in a not-in-scope location before operability of the 50.48 protection features can be affected. Therefore, terminating the license renewal boundary at an open manual isolation valve is acceptable.

Based on its review, the staff finds the applicant's response to the first portion of RAI 2.3.3.19-1 acceptable. The fire hydrants included in scope of license renewal encompass the fire hydrants included in Table 9.5.1-10D, UFSAR Amendment 28, November 14, 1985, and reviewed and approved by the staff in Supplement 4 to NUREG-1137, December 1985, as a part of the original CLB of VEGP. This report is referenced directly in the VEGP fire protection CLB and summarizes the fire protection program and commitments to 10 CFR 50.48 using BTP CMEB 9.5-1. Supplement 4 to NUREG-1137 reviewed the VEGP UFSAR Amendments 24, 25, and 28, in which the applicant made substantial changes to its fire hazards analysis for compliance with the guidelines set forth in BTP CMEB 9.5-1. Originally VEGP UFSAR Amendment 28, Table 9.5.1-10D, consisted of four hydrants for Unit 1. After Unit 2 commercial operation, seven hydrants were added in Table 9.5.1-10D based on the Unit 2 fire hazard analysis.

The staff finds the hydrants in question are not credited to meet the requirements of Appendix R for achieving safe-shutdown in the event of a fire and were correctly excluded from the scope of license renewal and not subject to an AMR. Therefore, the staff's concern described in the first portion of RAI 2.3.3.19-1 is resolved.

In its response, by letter dated February 27, 2008, the applicant stated that, in Drawing CX4LD173-4:

> The fire protection systems in the Dry Active Waste Processing Facility and Dry Active Waste Storage Building are in the scope of license renewal. Although these buildings are in the scope of license renewal, they are categorized as structures and are not highlighted on mechanical boundary drawing CX4LD173-4 because this drawing is strictly a mechanical boundary drawing as stated in the drawing title block. Structures are sometimes shown on mechanical boundary drawings for clarity in describing the mechanical system, but the structure itself is not highlighted on the mechanical boundary
> drawings. For the highlighted in-scope structures, see License Renewal Civil Boundary Drawing AX1D45L01.

Based on its review, the staff finds the applicant's response to the second portion of RAI 2.3.3.19-1 acceptable because the applicant explained that the fire suppression systems and components in the Dry Active Waste Processing Facility and Dry Active Waste Storage Building are in scope of license renewal and subject to an AMR. The applicant identified that, although the Dry Active Waste Processing Facility and Dry Active Waste Storage Building are in scope of license renewal and categorized as structures, they are not highlighted on mechanical boundary drawing CX4LD173-4. However, these structures are highlighted on the civil boundary drawing AX1D45L01. Therefore, the staff is adequately assured that the above fire suppression systems and components for fire suppression in the Dry Active Waste Processing Facility and Dry Active Waste Storage Building will be considered appropriately during the aging management activities. Therefore, the staff's concern described in the second portion of RAI 2.3.3.19-1 is resolved.

In its response, by letter dated February 27, 2008, the applicant stated that in, Drawing 1X4LD174-1:

> The Halon systems in the Computer Room Level A, Computer CRT Display and Communication Rooms Level 1, Radwaste Solidification Building Contamination Oil Room Level 1, and the Radwaste Solidification Building Elevation 192'-0" are shown not highlighted on drawing 1X4LD174-1. UFSAR Table 9.5.1-10,

> paragraph 4.1, lists the fixed Halon systems required for regulatory compliance and these systems are highlighted on drawing 1X4LD174-1. The above listed Halon systems are not in this table because they are not required for regulatory compliance and are thus not in the scope of license renewal. The fire protection system in the Radwaste Solidification Building is not in scope because it has been abandoned in place and there is no radioactive material stored there (FSAR Section 11.4.2.4).

In its response, by letter dated February 27, 2008, the applicant stated that in, Drawing 2X4LD174-1:

> The Halon system in the Computer Room Level A is shown not highlighted on drawing 2X4LD174-1. UFSAR Table 9.5.1-10, paragraph 4.1, lists the fixed Halon systems required for regulatory compliance and these systems are highlighted on drawing 2X4LD174-1. The above listed Halon system is not in this table because it is not required for regulatory compliance and is thus not in the scope of license renewal.

The staff finds that the applicant's two responses shown above, acceptable. The total flooding Halon 1301 systems in Computer Room Level A, Computer CRT Display and Communication Rooms Level 1, Radwaste Solidification Building Contamination Oil Room Level 1, and the Radwaste Solidification Building Elevation 192'-0, do not mitigate fires in areas containing equipment important to safe operation of the plant, nor are they credited with achieving safe-shutdown in the event of a fire. Although the total flooding Halon 1301 fire suppression system for the above areas are addressed in the NUREG-1137, these systems in question are not credited to meet the requirements of Appendix R for achieving safe-shutdown in the event of a fire. The staff has confirmed that the applicant correctly excluded the above total flooding Halon 1301 fire suppression systems from scope of license renewal and subject to an AMR. Therefore, the staff's concerns described in the third and fourth portions of RAI 2.3.3.19-1 are resolved.

In RAI 2.3.3.19-2, dated January 28, 2008, the staff stated that LRA, Section 2.3.3.19, discusses requirements for the fire water supply system but does not mention trash racks and traveling screens for the fire pump suction water supply. Trash racks and traveling screens are located upstream of the fire pump suctions to remove any major debris from the fresh or raw water. Trash racks and traveling screens are necessary to remove debris from and prevent clogging of the fire protection water supply system. Trash racks and traveling screens are typically considered to be passive, long-lived components. Both trash racks and traveling screens are located in a fresh or raw water/air environment and are typically constructed of carbon steel. Carbon steel in a fresh or raw water environment or water/air environment is subject to loss of material, pitting, crevice formation, and microbiologically influenced corrosion, and fouling. The staff requested that the applicant explain the apparent exclusion of the trash racks and traveling screens that are located upstream of the fire pump suctions from 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).

By letter dated February 27, 2008, the applicant provided the following response:

> VEGP's fire pumps take suction from fire water storage tanks and as such, do not have trash racks and traveling screens. See LRA drawing CX4LD173-1.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.19-2 acceptable because it adequately described that the intended function supporting the fire pump suction supply is accomplished from the water storage tanks for Units 1 and 2. The fire pumps at VEGP do not take suction from a natural source or bay; therefore, trash racks and traveling screens are not required. Additionally, water tanks are in license renewal scope and are subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.19-2 is resolved.

In RAI 2.3.3.19-3, dated January 28, 2008, the staff stated that LRA, Table 2.3.3-19, excludes several types of fire protection components that appear in NUREG-1137 and its supplements and/or the UFSAR, and which also appear in the LRA drawings colored in red. These components are listed below:

- Hose racks
- Yard hose houses
- Interior fire hose stations
- Pipe fittings
- Pipe supports and hangers
- Couplings
- Threaded connections
- Restricting orifices
- Interface flanges
- Dikes for oil spill confinement
- Floor drains and curbs for fire-fighting water
- Filter housing
- Heater housing
- Chamber housing
- Actuator housing
- Halon storage tanks/bottles
- Buried outside diesel fuel storage tanks
- Buried fire protection piping and underground fire main loop
- Heat exchanger (bonnet)
- Heat exchanger (shell)
- Heat exchanger (tube)
- Post-indicator sectional control valves
- Turbocharger
- Tank heater
- Thermowells
- Expansion joints
- Gear box housing
- Lubricating oil collecting system components (reactor coolant pump)
- Engine intake and exhaust silencers/muffler (diesel driven fire pump)
- Backflow prevention devices
- Flame retardant coating for cables
- Fire retardant coating for structural steel supporting walls and ceilings
- Fire barrier penetration seals
- Fire barrier walls, ceilings, floor, and slabs
- Fire doors
- Fire rated enclosures

The staff requested that the applicant verify whether the components listed above should be included in LRA, Table 2.3.3.19. If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

By letter dated February 27, 2008, the applicant stated that:

> For the most part, the above listed fire protection components are in the scope of license renewal. In some cases, the item is not specifically listed in Table 2.3.3.19 but is included as one of the component types listed in the table. For example, "pipe fittings" and several other components listed above are included as "piping components" in Table 2.3.3.19. This is consistent with the guidance provided in NEI 95-10, Revision 6, and Appendix B. The following is a breakdown of how each component is treated in license renewal:

1) Hose racks are in scope and form part of a hose station, and as such, are included as "hose stations" in Table 2.3.3.19.
2) Yard hose houses are not in the scope of license renewal because they are not required for regulatory compliance and are a second level support system for yard fire hydrants and fire hydrant fire hoses. These structures are small sheds associated with yard fire hydrants and serve as a convenient location for storing tools and the accompanying fire hydrant fire hoses. These structures also afford limited protection from the weather for the fire hydrants and fire hoses. However, convenience of fire hydrant accessory storage and limited protection from the weather for the fire hydrants and fire hoses are not credited in license renewal and not required for regulatory compliance. Hypothetical failure of a hose house, which is a second level support system, need not be considered in determining the SCs within the scope of the rule under 10 CFR 54.4(a)(3) -see NUREG-1800, Revision 1, Section 2.1.3.1.3. The cast iron fire hydrants are in scope and age managed in the outdoor environment (fire hydrants in Table 2.3.3.19) and the fire hoses are in scope but are short-lived, being subject to periodic replacement and as such, do not require an AMR.
3) Interior fire hose stations are in scope and included in hose station nozzles and hose connections and hose stations in Table 2.3.3.19.
4) Pipe fittings are in scope and included in "piping components" in Table 2.3.3.19.
5) Pipe supports and hangers are in scope and considered structural components and covered in Table 2.4.12.
6) Couplings are in scope and included in "piping components" in Table 2.3.3.19.
7) Threaded connections are in scope and included in "piping components" in Table 2.3.3.19.
8) Restricting orifices are in scope and included in "flow orifice/element" in Table 2.3.3.19.
9) Interface flanges are in scope and included in "piping components" in Table 2.3.3.19.
10) Dikes for oil spill confinement are considered to be part of the in-scope structure in which they are located and are included in structural concrete commodities in LRA section 2.4.

11a) Curbs for containment of spilled water, including fire fighting water, are considered to be part of the in-scope structure in which they are located and are also included in structural concrete commodities in LRA Section 2.4.

11b) Floor drains for processing spilled water, including fire fighting water, are

included in the "Drains Systems" and are found in Table 2.3.3.23. The structures for which the drain systems are in scope include the containment building, the auxiliary building, and the control building, and the fuel handling building. The NSCW structure has a leak detection system with associated level switches and alarms. The drain or leak detection features for these structures are in scope primarily for mitigation of flooding due to a line break. However, release of fire protection system water in these structures would also be processed by these in-scope drains. The drain systems for the other structures that contain in-scope fire protection systems are not credited in the CLB for mitigation of flooding and are therefore not in the scope of license renewal. Flooding analyses have determined that flooding in these structures will not impact any safety-related equipment. References: VEGP-LR-TE-010, "Scoping Methodology for Nonsafety Related Equipment that Could Affect Safety Related Equipment," Section 5.3.2; UFSAR Sections 3F.2.4, 3.4.1, and 9.3.3.

12) Filter housings are in scope and included as "strainer housings" in Table 2.3.3.19.
13) Heater housings are associated with the fire water pump diesel engines' on-skid heat exchangers. The fire pump diesel engines and the on-skid equipment are in scope but are complex active assemblies, not subject to an AMR.
14) Chamber housings include retard chambers in fire suppression systems. Chambers are in scope and included as "piping components" in Table 2.3.3.19.
15) Actuator housings include dry pilot actuator housings in fire suppression systems. Actuator housings are in scope and included as "valve bodies" in Table 2.3.3.19.
16) Halon storage bottles are in scope and are short-lived, being subject to periodic replacement and as such, do not require an AMR.
17) The fire pump diesel fuel oil storage tanks are in scope but are not buried, being located outside, above ground level. They are included in Table 2.3.3.19 as "tanks -F. O. storage tanks (fire pump diesel)."
18) The buried fire protection piping and underground fire main loop are in scope and included in Table 2.3.3.19 as follows: piping components; fire hydrants; valve bodies; closure bolting.
19) Heat exchanger bonnets are associated with the fire water pump diesel engines' on-skid heat exchangers. The fire pump diesel engines and the on-skid equipment are in scope but are complex active assemblies, not subject to an AMR.
20) Heat exchanger shells are associated with the fire water pump diesel engines' on-skid heat exchangers. The fire pump diesel engines and the on-skid equipment are in scope but are complex active assemblies, not subject to an AMR.
21) Heat exchanger tubes are associated with the fire water pump diesel engines' on-skid heat exchangers. The fire pump diesel engines and the on-skid equipment are in scope but are complex active assemblies, not subject to an AMR.
22) The post-indicator sectional control valves are in scope and included as "valve bodies" in Table 2.3.3.19.
23) The turbochargers are associated with the fire water pump diesel engines and are mounted on the engines. The fire pump diesel engines, their appurtenances, and the on-skid equipment are in scope but are complex active assemblies, not subject to an AMR.

24) There are no tank heaters associated with the fire protection system tanks -fire water storage tanks or fire pump diesel fuel oil storage tanks.
25) Thermowells are in scope and included as "piping components" in Table 2.3.3.19.
26) Expansion joints are in scope and included as "flexible connectors" in Table 2.3.3.19.
27) Gear box housings for such components as electric motor driven equipment are in scope but are part of the complex active assembly and not subject to an AMR.
28) The lubricating oil collecting system components (reactor coolant pump) are in scope and included in the RCS in Table 2.3.1.3 as follows: RCP lube oil drain tank; RCP lube oil drain tank flame arrestor element; RCP lube oil drain tank flame arrestor housing; RCP lube oil drip pans and enclosure; piping components.
29) The engine intake and exhaust silencers/mufflers (diesel driven fire pump) are in scope. The mufflers are mounted on the fire pump house roof and are included in Table 2.3.3.19 as "silencers." The intake silencers are mounted on the engine skids and are part of the complex active engine assembly and as such, do not require an AMR.
30) The backflow prevention devices include check valves and are included in Table 2.3.3.19 as "valve bodies".
31) Flame retardant coatings are not used at VEGP for cables.
32) Fire retardant coatings for structural steel supporting walls and ceilings are in scope and included in LRA Section 2.4.12 and Table 2.4.12, Item 13.
33) Fire barrier penetration seals are in scope and included in LRA Section 2.4.12 and Table 2.4.12, Item 18.
34) Fire barrier walls, ceilings, floors, and slabs are in scope and included in LRA Section 2.4.12 and Table 2.4.12, Items 14 and 15.
35) Fire doors are in scope and included in LRA Section 2.4.12 and Table 2.4.12, Item16.
36) Fire rated enclosures are in scope and included in LRA Section 2.4.12 and Table 2.4.12, Items 12 and 17.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.19-3 acceptable. Although the applicant states that they consider some components to be included in other line items, the descriptions of the line items in the LRA do not actually list all these components specifically. Further the applicant has committed to interpret some components, for example, dikes for oil spill confinement and curbs for fire-fighting, as being included in structural concrete commodities in LRA, Section 2.4. Floor drains for processing spilled water, including fire-fighting water are included in "Auxiliary System Drains Systems" in LRA Table 2.3.3.23. The applicant has included the following items in the scope of license renewal and subject to an AMR because of their intended functions as part of the pressure boundary: (1) hose racks are included in hose stations commodity; (2) interior fire hose stations are included in hose station nozzles and hose connection commodity; (3) pipe fittings, couplings, threaded connections, interface flanges, chamber housing, and thermowells are included in piping components commodity; (4) pipe supports, fire retardant coatings for structural steel, fire barrier penetration seals, fire barrier wall, ceiling, floor, and slabs, fire doors, and fire rated enclosures are included in Section 2.4.12 and Table 2.4.12; (5) buried fire protection piping and underground fire main loop are included in Table 2.3.3.19 as piping components, fire hydrants, valve bodies and closure bolting; (6) restricting orifices are included in flow orifice/element commodity (7) actuator housings, backflow prevention devices, and post-indicator sectional control valves are included

in valve bodies commodity;(8) expansion joints are included in flexible connectors commodity; (9) lubricating oil collection system components are included in Table 2.3.1.3.

The applicant considered the Halon 1301 storage bottles to be in the scope of license renewal but excluded from the AMR. The applicant stated that Halon storage bottles are replaced periodically and, therefore, not subject to an AMR. The applicant excluded Halon storage bottles from an AMR under 10 CFR 54.21(a)(1)(ii) on a plant-specific basis. The applicant routinely monitors Halon storage bottles based on performance or condition criteria ensuring that storage bottles will maintain their intended function. Because the applicant has interpreted the Halon storage bottles as part of an active component (condition monitoring to determine whether the Halon storage bottles are at the end of their qualified lives), the staff concludes that the component was correctly excluded from the scope of license renewal and is not subject to an AMR.

For each of the following components, the staff finds that they were not included in the line item descriptions in the LRA for an AMR: heat exchanger bonnets, shells, and tubes; fire pump turbocharger; gear box housings; diesel driven fire pump intake silencers; and heater housings. The staff recognizes that the applicant's interpretation of these components as active will result in more vigorous oversight of their condition and performance.

Because the applicant has interpreted heat exchanger bonnets, shells, and tubes; fire pump turbocharger; gear box housings; diesel driven fire pump intake silencers; and heater housings as active, the staff concludes their exclusion from scope of license renewal is correct and that they are not subject to an AMR.

The staff finds that the yard hoses were not included in the line item descriptions in the LRA table. The applicant stated that yard fire hydrants are housed in small sheds; fire hoses are in scope but are short-lived, being subject to periodic replacement. Therefore, they do not require an AMR. The staff recognizes the applicant's interpretation of these components as passive (short-lived component), which will result in more vigorous oversight of the condition and performance of the components. The staff concludes that the above components were excluded correctly from the scope of license renewal and are not subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.19-3 is resolved.

In RAI 2.3.3.19-4, dated January 28, 2008, the staff informed the applicant that NUREG-1137 and its supplements listed various types of fire suppression systems provided in the plant areas for fire suppression activities. The fire suppression systems in various areas are:

- Total flooding Halon 1301 systems for two shutdown panel rooms, computer room, and five non-safety-related areas in the control building.
- Dry standpipe for the control building, containment building, and auxiliary building
- Deluge systems for charcoal filter assemblies
- Dry pre-action sprinkler systems below the reactor coolant pumps and in areas of high cable tray concentrations
- Cable spreading room automatic pre-action sprinkler system

- Wet standpipe and hose system throughout the plant

The staff requested that the applicant verify whether the above fire suppression systems installed in various areas of the plant are in 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). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requested that the applicant provide justification for the exclusion.

By letter dated February 27, 2008, the applicant stated that:

The above listed fire protection systems are in the scope of license renewal as follows:

1) The total flooding Halon 1301 systems required for regulatory compliance are in scope. See response to 2.3.3.19-1 for details.
2) The dry standpipe systems for the control building, containment building, and auxiliary building are in scope. See License Renewal Boundary Drawings 1X4LD174-6 and 2X4LD174-6.
3) The deluge systems for charcoal filter assemblies are in scope. See License Renewal Boundary Drawings 1X4LD205-1, 1X4LD208-1, 1X4LD209, 1X4LD213-1, 1X4LD213-2, AX4LD204-1, AX4LD206-1, AX4LD206-3, AX4LD215, AX4LD235, 2X4LD205-1, 2X4LD208-1, 2X4LD213-1, and 2X4LD213-2. It is noted that two charcoal filters (1-1562-N7-001 & 002) on boundary drawing 1X4LD209 in the control building on Unit 1 have been abandoned in place and the charcoal removed from the filter units. The manual fire protection spray systems for these two filters are not required and are not in-scope. The fire protection in-scope boundary terminates at the first isolation valve in each filter unit's fire water supply header. The high temperature fire alarm that was in each filter's charcoal bed has been disabled.
4) The dry pre-action sprinkler systems below the reactor coolant pumps and in areas of high cable tray concentrations in the containment building were never installed. See NUREG-1137, Supplement No.2, Section 9.5.1.6.
5) The cable spreading room automatic pre-action sprinkler systems are in scope. See License Renewal Boundary Drawings 1X4LD174-3, rooms R-A44 and R-225 at coordinates D-2 and G-3 respectively; 2X4LD174-3, rooms R-A23 and R-224 at coordinates D-2 and G-3, respectively.
6) The wet standpipe and hose system throughout the plant is in scope. See License Renewal Boundary Drawings 1X4LD174-2, 1X4LD174-3, 1X4LD174-4, 2X4LD174-2, 2X4LD174-3, and 2X4LD174-4.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.19-4 acceptable.

The applicant stated that all above mentioned fire suppression systems in various area of the plant are in scope; except for the Unit 1 control building charcoal filter deluge system because the two charcoal filters for this system have been abandoned in place. Further, the applicant informed the staff that the dry-action sprinkler systems, which were to be located below the reactor coolant pumps and in areas of high cable tray concentrations in the containment building, were never installed.

The total flooding Halon 1301 systems in Computer Room Level A, Computer CRT Display, and Communication Rooms Level 1, do not mitigate fires in areas containing equipment important to safe operation of the plant, nor are they credited with achieving safe-shutdown in the event of a fire. Although the total flooding Halon 1301 fire suppression system for the above areas are addressed in the NUREG-1137, these systems in question are not credited to meet the requirements of Appendix R for achieving safe-shutdown in the event of a fire. The staff has confirmed that the applicant correctly excluded the above total flooding Halon 1301 fire suppression systems from scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.19-4 is resolved.

2.3.3.19.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the fire protection system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.20 Emergency Diesel Generator System

2.3.3.20.1 Summary of Technical Information in the Application

LRA Section 2.3.3.20 describes the emergency diesel generator (EDG) system, which consists of one diesel generator per safety-related load group complete with its accessories and fuel storage and transfer systems and which generates onsite electric power to feed the standby power system. The standby power system provides alternating current power for safe shutdown of the plant in loss of offsite power. There are two EDGs per unit, each connected exclusively to a single 4.16kV safety feature bus of a load group. Each unit has two 4.16kV Class 1E trains, and the safety-related equipment on both trains is similar. The trains are redundant and for each unit one train is adequate to satisfy minimum ESF demand caused by a LOCA and a simultaneous loss of preferred power supply. The fuel oil storage for each unit is sized for seven days of operation to meet the ESF load plus an additional amount for periodic testing of the diesel generator. The EDG support systems provide stored energy to start the EDGs along with cooling, lubrication, and combustion air intake and exhaust to allow the EDGs to perform their function. The NSCW system supplies cooling water to the EDG jacket water coolers.

The EDG system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the EDG system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the EDG system performs functions that support fire protection and SBO.

LRA Table 2.3.3.20 identifies EDG system component types within the scope of license renewal and subject to an AMR:

- air receivers
- closure bolting
- collection troughs (EDG lube oil leakage)
- eductors - EDG fuel oil ejector assembly
- electric heater housings
- filter housings
- flame arrester elements

- flame arrester housings
- flexible connectors
- flow orifice/elements
- heat exchangers - EDG jacket water HXs (channel heads)
- heat exchangers - EDG jacket water HXs (shells)
- heat exchangers - EDG jacket water HXs (tubes)
- heat exchangers - EDG jacket water HXs (tubesheets)
- heat exchangers - EDG lube oil HXs (channel heads)
- heat exchangers - EDG lube oil HXs (shells)
- heat exchangers - EDG lube oil HXs (tubes)
- heat exchangers - EDG lube oil HXs (tubesheets)
- oil reservoirs - EDG lube oil sumps
- piping components
- pump casings - EDG fuel oil engine-driven pumps
- pump casings - EDG fuel oil storage tank pumps
- pump casings - EDG jacket water chemical addition pumps
- pump casings - EDG jacket water keep-warm pumps
- pump casings - EDG jacket water pumps
- pump casings - EDG lube oil keep-warm pumps
- pump casings - EDG lube oil pumps
- silencers
- strainer elements
- strainer housings
- tanks - EDG fuel oil day tanks
- tanks - EDG fuel oil line leakage tanks
- tanks - EDG fuel oil storage tanks
- tanks - EDG jacket water chemical addition tanks
- valve bodies
- vent screens - tank vents

The intended functions of the EDG system component types within the scope of license renewal include:

- protection from debris
- heat exchange between fluid media
- prevention of flame propagation from ignition of vent pipe vapors back to the source
- restriction of process flow
- pressure-retaining boundary

2.3.3.20.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.20 and UFSAR Sections 8.3.1.1.3, 9.5.4 through 9.5.8 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.20 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.20-1, dated January 28, 2008, the staff noted that drawings 1X4LD170-1, 1X4LD170-2, 2X4LD170-1, and 2X4LD170-2 (G-7) indicate jacket water standpipes that are within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). The applicant was requested to provide additional information explaining why the standpipes are not listed in LRA Table 2.3.3.20 as a component type subject to an AMR.

In its response, dated February 27, 2008, the applicant stated:

> The Emergency Diesel Generator System jacket water system standpipe is not listed in LRA Table 2.3.3.20 as a separate component type subject to an AMR. However, the standpipes are included in the component type, "Piping Components" as shown in Table 2.3.3.20 Item No. 20 and Table 3.3.2-20 Items 20c, 20d and 20k. The standpipes are vertical, cylindrical piping components constructed of carbon steel; therefore, they have been classified in the LRA as piping components.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.20-1 acceptable because the applicant provided clarification that the standpipes are included as Item No. 20 "Piping Components" in the AMR tables. Therefore, the staff's concern described in RAI 2.3.3.20-1 is resolved.

In RAI 2.3.3.20-2, dated January 28, 2008, the staff noted that drawings 1X4LD170-1, 1X4LD170-2, 2X4LD170-1, and 2X4LD170-2 (E-6) and as described in the UFSAR Section 9.5.8.2.3 indicate that the housings for the turbocharger and aftercooler form a pressure boundary for intake air going to the engine intake manifolds and should be in scope for license renewal based on criterion 10 CFR 54.4(a)(1). The applicant was requested to provide additional information explaining why the turbocharger/aftercooler housings with their pressure boundary and heat exchange functions are not listed in LRA Table 2.3.3.20 for components subject to an AMR.

In its response, dated February 27, 2008, the applicant stated:

> The turbocharger and after-cooler are skid mounted equipment of the Emergency Diesel Generators assembly and thus considered part of this complex assembly - emergency diesel generator engine. Therefore, no AMR of the housing for these components is required due to the complex active assembly classification of this assembly, i.e., this component/assembly does not meet the AMR criteria for an integrated plant assessment per 10 CFR 54.21(a)(1)(i). Consequently, the turbocharger/aftercooler housings with their pressure boundary and heat exchange functions are not listed in LRA Table 2.3.3.20 for components subject to an AMR.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.20-2 acceptable

because the applicant stated that the turbocharger/aftercooler housings are skid mounted equipment of the complex assembly – emergency diesel generator, and do not meet the AMR criteria for an integrated plant assessment per 10 CFR 54.21(a)(1)(i). Therefore the staff's concern described in RAI 2.3.3.20-2 is resolved.

In RAI 2.3.3.20-3, dated January 28, 2008, the staff noted that drawings 1X4LD170-1, 1X4LD170-2, 2X4LD170-1, and 2X4LD170-2 (E-3) and (B-3) indicate that manhole covers which provide a pressure boundary for the diesel fuel oil day and storage tanks are within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). The applicant was requested to provide additional information explaining why the manhole covers are not listed in LRA Table 2.3.3.20 for components subject to an AMR.

In its response, dated February 27, 2008, the applicant stated:

> Tank manways were not identified as a separate component type for tanks in mechanical systems. The manways for the diesel fuel oil day and fuel oil storage tanks were included as part of the tank. In the LRA Table 2.3.3.20, the manway covers for the diesel fuel oil day and storage tanks are covered under Item 31 and 33 respectively.
>
> In the LRA Table 3.3.2-20, the AMR of the diesel fuel oil day tank manways are covered by Items 31a and 31c.
>
> The AMR of the diesel fuel oil storage tank manways and covers are covered by Items 33a and 33c of this table as well.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.20-3 acceptable, because the applicant provided clarification that the manway covers for the diesel fuel oil day and storage tanks are considered an integral part of the tank components listed in the AMR tables. Therefore, the staff's concern described in RAI 2.3.3.20-3 is resolved.

In RAI 2.3.3.20-4, dated January 28, 2008, the staff noted that drawings 1X4LD170-1, 1X4LD170-2, 2X4LD170-1, and 2X4LD170-2 locations (H-7), (C-8), (D-2), (C-2), and (E-3) indicate tank vents that are within the scope of license renewal. LRA Table 2.3.3.20 lists tank vent screens as components that provide debris protection for a vent, but none of the vents show a debris screen. The applicant was requested to provide additional information explaining which tank vents on the drawings do or do not have the tank vent screen component that is listed as Item 36 in LRA Table 2.3.3.20.

In its response, dated February 27, 2008, the applicant stated:

> Vent screens that cover tank vents for debris/ bird protection on the various EDG System atmospheric vents to outdoors have been put in scope. Since no equipment tag numbers apply and no material documentation could be found, the vent screens are assumed to be carbon steel based on the piping material. Piping and instrument diagrams used to develop the referenced LRA boundaries did not show screens for tank vents; although, area physical drawings do identify screen covers for the diesel fuel oil storage tank vents; no screen covers were identified for the diesel fuel oil day tank vents. Since the vents for both tanks provide the same function, it was assumed that screen covers were installed on the diesel fuel day tank vents as well.

By telecom dated April 17, 2008, the applicant was advised that the staff will proceed based on having the screens in place. The applicant acknowledged staff's position and stated that they are planning to inspect the plant in the near future to verify screen installation and screen materials.

In a letter dated February 16, 2009, the applicant provided a revision to the LRA concerning diesel generator day tank vent line inspections. The new commitment, number 42, provides for an inspection to verify screen installation prior to the period of extended operation.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.20-4 acceptable, because the applicant stated the screens are in scope and committed to verify screen materials and vents with screens. Therefore, the staff's concern described in RAI 2.3.3.20-4 is resolved.

In RAI 2.3.3.20-5, dated January 28, 2008, the staff noted that drawings 1X4LD170-1, 1X4LD170-2, and 2X4LD170-1 (D-4) indicate that the concrete vault roof has a vent that is within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). Those drawings cover the diesel generator trains A and B for plant Unit #1 and train A for plant Unit #2. However, drawing 2X4LD170-2 for train B of plant Unit #2 does not show a vent for the concrete vault roof. The applicant was requested to provide additional information explaining why the concrete vault roof vent is missing on drawing 2X4LD170-2 for diesel generator plant Unit #2 Train B.

In its response, dated February 27, 2008, the applicant stated:

> It has been determined from review of domestic supporting drawings that the concrete vault roof vent missing on drawing 2X4LD170-2 is an error and the vent should be shown as on 2X4LD170-1.
>
> The diesel fuel oil storage tank pump house forming plans sections and details show the roof vents for both trains of both units.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.20-5 acceptable, because the applicant provided clarification that the concrete vault roof vent was missing from drawing 2X4LD170-2 in error and should be shown and in scope for license renewal. Therefore, the staff's concern described in RAI 2.3.3.20-5 is resolved.

In RAI 2.3.3.20-6, dated January 28, 2008, the staff noted that drawing 2X4LD170-2 (F/G-6) indicates the 343-3/4" pipeline and associated drain are within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). However, drawings 1X4LD170-1, 1X4LD170-2, and 2X4LD170-1 for the same location indicates that the similar 343-3/4" and 339-3/4" pipelines are within the scope of license renewal based on criterion 10 CFR 54.4(a)(2), rather than 10 CFR 54.4(a)(1), and the drain is not within the scope of license renewal. The applicant was requested to provide additional information to define the correct criterion to use for all four of these drawings for the 343-3/4" and 339-3/4" drain pipelines and their respective drains.

In its response, dated February 27, 2008, the applicant stated:

> License renewal drawing 2X4LD170-2 (F/G-6) inadvertently shows the 343-3/4" pipeline and associated drain within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). This pipeline 343-3/4" is within the scope of license renewal based on criterion 10 CFR 54.4(a)(2), rather than

> 10 CFR 54.4(a)(1) which is the same in scope bases as pipeline 339-3/4" shown on 2X4LD170-2 (F/G-6). These lines function as drain piping from the diesel generator spill collection trough and are classified as non-safety related.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.20-6 acceptable because the applicant provided clarification that the 343-3/4" pipeline on drawing 2X4LD170-2 (F/G-6) should have been shown in scope for criterion 10 CFR 54.4(a)(2), rather than criterion 10 CFR 54.4(a)(1). Therefore, the staff's concern described in RAI 2.3.3.20-6 is resolved.

In RAI 2.3.3.20-7, dated January 28, 2008, the staff noted that drawing 2X4LD170-1 (C/D-8), indicates a lube oil press fill pipeline located outside the engine piping boundary and connected to a three-inch pipeline within the engine piping boundary that is entirely within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). However, drawings 1X4LD170-1, 1X4LD170-2, and 2X4LD170-2, for the same general location and pipeline characteristics, indicate the lube oil press fill piping is not within the scope of license renewal. The applicant was requested to provide additional information to define the correct criterion to be applied to the lube oil press fill pipeline outside the engine piping boundary on all four drawings referenced above.

In its response, dated February 27, 2008, the applicant stated:

> Per review of the License Renewal drawing 2X4LD170-1 at (C/D-8) regarding scoping of the lube oil press fill pipeline, the boundary line for this pipeline should have been shown as red not gray for drawings 1X4LD170 -1 & 2 and 2X4LD170-2. The lube oil press fill piping is within the scope of license renewal based on criterion 10 CFR 54.4(a)(1).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.20-7 acceptable because the applicant provided clarification that the lube oil press fill pipelines on drawings 1X4LD170 –1 &2 and 2X4LD170-2 are in scope for criterion 10 CFR 54.4(a)(1). Therefore, the staff's concern described in RAI 2.3.3.20-7 is resolved.

In RAI 2.3.3.20-8, dated January 28, 2008, the staff noted that drawing 2X4LD170-1 (E-8) shows sections of 037-10" and 035-10" piping within the scope of license renewal based on criterion 10 CFR 54.4(a)(2) with a continuation to drawing 2X4LD135-1 (G-6). The continuation location G-6 on drawing 2X4LD135-1 indicates the 037-10" and 035-10" piping are within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). It appears that the sections of 037-10" and 035-10" piping shown on drawing 2X4LD170-1 between the engine piping boundary and the continuation marker to drawing 2X4LD135-1 should also be in-scope based on criterion 10 CFR 54.4(a)(1) as are the other emergency diesel generators shown in LR drawings 2X4LD170-2, 1X4LD170-1, and 1X4LD170-2. The applicant was requested to provide additional information clarifying why the subject piping on drawing 2X4LD170-1 (E-8) meets the requirements of criterion 10 CFR 54.4(a)(2), rather than 10 CFR 54.4(a)(1).

In its response, dated February 27, 2008, the applicant stated:

> From a review of the drawings 2X4LD170-1 and 2X4LD135-1 and a re-visit of the 10 CFR 54.4(a)(1) criterion against the function of the pipelines, 037-10" and 035-10", it is concluded that the sections of piping shown on drawing 2X4LD170-1 between the engine piping boundary and the continuation

marker to drawing 2X4LD135-1 are in-scope based on criterion 10 CFR 54.4(a)(1), and should have been indicated as the other pipelines are for this function shown on LR drawings 2X4LD170-2, 1X4LD170-1, and 1X4LD170-2.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.20-8 acceptable because the applicant provided clarification that on drawing 2X4LD170-1 the sections of 037-10" and 035-10" pipelines between the engine piping boundary and the continuation marker to drawing 2X4LD135-1 should have been in scope for criterion 10 CFR 54.4(a)(1). Therefore, the staff's concern described in RAI 2.3.3.20-8 is resolved.

2.3.3.20.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the emergency diesel generator system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.21 Demineralized Water System

2.3.3.21.1 Summary of Technical Information in the Application

LRA Section 2.3.3.21 describes the demineralized water (DW) system, which stores and delivers deionized water to various plant systems. Demineralized water is not required for any safety-related function.

The DW system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the DW system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3.21 identifies DW system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow orifice/elements
- piping components
- piping components - pipe spools for startup strainers
- pump casings - demineralized water transfer booster pumps
- valve bodies

The intended function of the DW system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.21.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.21 and UFSAR Section 9.2.3 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.21 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.21-1, dated January 28, 2008, the staff noted drawing AX4LD190-2 (E-3) shows pipe section 172-1" in-scope for 10 CFR 54.4(a)(2). The continuation to AX4LD123-2 (A-6) is not shown as in-scope for license renewal. The applicant was asked to provide additional information detailing the license renewal boundary for pipe section 172-1" on drawing AX4LD123-2 (A-6).

In its response, dated February 27, 2008, the applicant stated:

> The segment of line A-1210-172-1" which appears on mechanical boundary drawing AX4LD123-2 was inadvertently not shown as being in scope for 10 CFR 54.4(a)(2). This line segment is in scope for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.21-1 acceptable because the applicant explained that the piping in question is within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.21-1 is resolved.

2.3.3.21.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the DW water system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.22 Hydrogen Recombiner and Monitoring System

2.3.3.22.1 Summary of Technical Information in the Application

LRA Section 2.3.3.22 describes the hydrogen recombiner and monitoring system, which was installed to monitor and control post-accident containment hydrogen. The applicant intends to downgrade the recombiners to nonsafety-related and to abandon them in place. The hydrogen monitors also will be downgraded to nonsafety-related; however, piping for these monitors penetrating containment has a containment integrity safety function. Until these CLB changes are processed, these components are within the scope of license renewal as safety-related.

The hydrogen recombiner and monitoring system contains safety-related components relied upon to remain functional during and following DBEs. In addition, the hydrogen recombiner and monitoring system performs functions that support EQ.

LRA Table 2.3.3.22 identifies hydrogen recombiner and monitoring system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- hydrogen recombiner (containment) housings
- piping components
- valve bodies

The intended functions of the hydrogen recombiner and monitoring system component types within the scope of license renewal include:

- spray shield or curbs for flow direction
- pressure-retaining boundary

2.3.3.22.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.22 and UFSAR Section 6.2.5 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.22.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the hydrogen recombiner and monitoring system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.23 Drain Systems

2.3.3.23.1 Summary of Technical Information in the Application

LRA Section 2.3.3.23 describes the drain systems, which consist of collection piping, valves, equipment drains, floor drains, vents, seals, cleanouts, oil and sediment interceptors, acid neutralization tanks, collection sumps, sump pumps, and collection tanks with discharge pumps, piping, and valves.

The drains within the scope of license renewal include the following systems:

- containment and auxiliary building drain system – radioactive
- auxiliary building drain system – nonradioactive

- auxiliary building flood-retaining rooms, alarms, and drains
- control building drain system
- fuel-handling building drains
- sanitary waste and vent
- turbine building drain system

The containment and auxiliary building drain system - radioactive is designed to drain water in the containment building and tritiated water in the other buildings. Water drained into the system enters the plant liquid waste processing system for recycling or disposal.
The auxiliary building drain system – nonradioactive drains normally nonradioactive equipment and floor liquid waste from open areas of the auxiliary building to the floor drain tank via the auxiliary building sump or the penetration room sump. This system also includes miscellaneous drains that convey fluids to other sumps and empty or drain the sumps.

The auxiliary building flood-retaining rooms, alarms, and drain system prevents drain or flood water from backing up into selected important auxiliary building rooms. The system retains post-LOCA radioactive liquid leakage within the water-tight flood-retaining rooms up to the maximum expected flood level by water-tight doors evaluated as parts of component supports and bulk commodities (LRA Section 2.4.12).

The control building drain system collects water from fire protection sprinklers in the control building, equipment building, technical support center, and connected electrical tunnels as well as from incidental leaks. The system routes water to a sump below the control building. Sump pumps transfer the water to the turbine building oil separator. The system also provides an alternate route to the waste monitor tank in the auxiliary building for processing radioactive liquid.

The fuel-handling building drainage system collects water in the fuel-handling building drain sump from drains within the building. Fuel-handling building drain sump pumps transfer water from the building's drain sump to the waste monitor tank for processing or disposal.

The sanitary waste and vent system provides plumbing drains and vents for toilets, locker rooms, showers, and janitor rooms in the control and turbine buildings.

The turbine building drain system removes all liquid wastes from the turbine building for disposal to the waste water effluent system. This system also monitors and, if necessary, removes radioactive contaminants from these wastes if radioactive material appears in the drains from a tube leak in one of the steam generators. Filters and demineralizers that remove radioactive contaminants from wastes processed by this system are located in the auxiliary building.

The drain systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the drain systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the drain systems perform functions that support EQ.

LRA Table 2.3.3.23 identifies drain systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- drain bodies

- floor drain plugs
- piping components
- pump casings - CCW drain tank pumps
- tanks - acid neutralizing sumps
- valve bodies

The intended function of the drain systems component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.23.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.23 and UFSAR Sections 9.3.3 and 11.2 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review of the sanitary waste and vent and the turbine building drain systems, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has not omitted from the scope of license renewal any component types with intended functions delineated under 10 CFR 54.4(a).

During its review of the remaining drain systems, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.23 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. In addition to the RAI 2.3.3.23-1 related to drawing continuation errors discussed in Section 2.3.3, the applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.23-2, dated January 28, 2008, the staff noted that drawings 1X4LD145-6 and 2X4LD145-6 (B-2) show pipe 256-4" as not within the scope of license renewal. Drawings 1X4LD145-5 and 2X4LD145-5 (D-4) show pipe 256-4" within the scope of license renewal based on criterion 10 CFR 54.4(a)(2). The applicant was requested to provide additional information clarifying why pipe 256-4" on drawings 1X4LD145-6 and 2X4LD145-6 (B-2) is not within the scope of license renewal.

In its response, dated February 27, 2008, the applicant stated:

> Line 1215-256-4" as shown on drawings 1X4LD145-6 and 2X4LD145-6 is in scope for 10 CFR 54.4(a)(2). Drawings 1X4LD145-6 and 2X4LD145-6 should have shown this line highlighted as in scope for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.23-2 acceptable because the applicant provided clarification that line 1215-256-4" on drawings 1X4LD145-6 and 2X4LD145-6 should have been shown highlighted as in scope for 10 CFR 54.4(a)(2). Therefore, the staff's concern described in RAI 2.3.3.23-2 is resolved.

In RAI 2.3.3.23-3, dated January 28, 2008, the staff noted that drawings 1X4LD179-2 and 2X4LD179-2 (D-7) show pipeline 097-2" within the scope of license renewal based on criterion

10 CFR 54.4(a)(2) continuing to drawings 1X4LD124-2 (F-4) and 2X4LD124-2 (G-4). Drawings 1X4LD124-2 and 2X4LD124-2 could not be located in the boundary drawing package. The applicant was requested to provide additional information to verify that the continuation from drawings 1X4LD179-2 and 2X4LD179-2 has been made to the correct drawings and locations and provide the drawings.

In its response, dated February 27, 2008, the applicant stated:

> Line 1407-097-2" on drawings 1X4LD179-2 and 2X4LD179-2 continues to P&ID AX4DB124-2. P&ID AX4DB124-2 shows the point where this line exits the Auxiliary Building into the Radwaste Transfer Tunnel. There are no safety related components in the Radwaste Transfer Tunnel, so potential spatial interactions are not a concern and the in-scope portion of the line ends at the Auxiliary Building to Radwaste Transfer Tunnel boundary. However, P&ID AX4DB124-2 was not redrawn into a license renewal mechanical boundary drawing. To resolve this discrepancy, mechanical boundary drawings 1X4LD179-2 and 2X4LD179-2 should have been revised to include the Auxiliary Building to Radwaste Transfer Tunnel boundary for clarity.

By telecom dated April 17, 2008, the applicant verified that there were no new component types within the boundary for which the drawings were not provided.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.23-3 acceptable because the applicant provided clarification that the license renewal boundary ends at the Auxiliary Building to Radwaste Transfer Tunnel boundary and stated that there were no new component types within the boundary for which drawings were not provided. Therefore, the staff's concern described in RAI 2.3.3.23-3 is resolved.

2.3.3.23.3 Conclusion

For the sanitary waste and vent and the turbine building drain systems, the staff reviewed the LRA and the UFSAR to determine whether the applicant failed to identify any component types that are typically found within the scope of license renewal and finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the sanitary waste and vent and the turbine building drain systems component types within the scope of license renewal, as required by 10 CFR 54.4(a).

For the remaining drain systems, the staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the

- containment and auxiliary building drain system – radioactive,
- auxiliary building drain system – nonradioactive,
- auxiliary building flood-retaining rooms, alarms, and drains,
- control building drain system, and
- fuel-handling building drains

as components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.24 Potable and Utility Water Systems

2.3.3.24.1 Summary of Technical Information in the Application

LRA Section 2.3.3.24 describes the potable and utility water systems. The potable water system chemically treats, stores, and distributes well water for drinking to the units. The utility water system provides water for general washdown purposes at utility stations throughout the plant (nonradioactive process areas). Utility water also serves for sump pump bearing lubrication and miscellaneous cooling purposes (*e.g.*, cooling of the steam generator blowdown samples). The failure of nonsafety-related SCs in the potable and utility water systems could potentially prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3.24 identifies potable and utility water systems component types within the scope of license renewal and subject to an AMR:

- arresters (water hammer)
- closure bolting
- piping components
- pump casings - hot water recirculation pumps
- strainer housings
- valve bodies
- water heater housings and jackets

The intended functions of the potable and utility water systems component types within the scope of license renewal include:

- spray shield or curbs for flow direction
- pressure-retaining boundary

2.3.3.24.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.24 and UFSAR Section 9.2.4 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has not omitted from the scope of license renewal any component types with intended functions delineated under 10 CFR 54.4(a).

2.3.3.24.3 Conclusion

The staff reviewed the LRA and the UFSAR to determine whether the applicant failed to identify any component types that are typically found within the scope of license renewal and finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the potable and utility water systems component types within the scope of license renewal, as required by 10 CFR 54.4(a).

2.3.3.25 Radiation Monitoring System (1609)

2.3.3.25.1 Summary of Technical Information in the Application

LRA Section 2.3.3.25 describes the radiation monitoring system, which monitors radiation levels in the process flow streams of plant fluid systems, measures direct gamma radiation, and provides corresponding indications, recordings, alarms, and controls. For normally radioactive fluid systems with direct or diluted discharge paths to the surrounding environment, the radiation monitoring system actuation functions limit further discharge if activity concentrations exceed preset levels. The system also provides information for detecting and monitoring RCS leakage.

Radiation monitors fall into five functional classifications:

- process monitors, which determine concentrations of radioactive material in plant fluid systems. The primary-to-secondary leak detection monitors (N16 and noble gas leak rate detectors) are included in this category.
- effluent monitors, which measure radioactivity discharged to the environs
- airborne monitors, which provide operator information on airborne concentrations of radioactive gases and particulate radioactivity at various points in the ventilation ducts
- area monitors, which provide operator information on external gamma radiation levels at fixed points throughout the plant
- post-accident (or high-range) monitors designed to assess and follow potential pathways for release of radioactive materials during accident conditions

The radiation monitors themselves are instrumentation components and therefore are addressed in the scoping and screening for the electrical and instrumentation and controls systems (LRA Section 2.5). Mechanical aspects (*e.g.;* process line components) are addressed in the mechanical scoping and screening.

The radiation monitoring system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the radiation monitoring system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the radiation monitoring system performs functions that support EQ.

LRA Table 2.3.3.25 identifies radiation monitoring system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping components
- valve bodies

The intended function of the radiation monitoring system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.25.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.25 and UFSAR Sections 11.5 and 12.3.4 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.25 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.25-1, dated January 28, 2008, the staff noted that drawings 1X4LD133-1, 1X4LD133-2, 2X4LD133-1, and 2X4LD133-2 (H-3), and drawings 1X4LD136 and 2X4LD136 (A-3) and (E-3) show radiation monitors that are identified as in scope for license renewal based on criterion 10 CFR 54.4(a)(2). Each radiation monitor is connected to 1 inch sensing lines identified as within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). Also, the staff noted that for similar equipment on drawings 1X4LD213-2 and 2X4LD213-2 (D-1) radiation monitors are within the scope of license renewal based on criterion 10 CFR 54.4(a)(2) but have equivalent anchors on each end. The applicant was requested to provide additional information explaining why the radiation monitors on drawings 1X4LD133-1, 1X4LD133-2, 1X4LD136, 2X4LD133-1, 2X4LD136, and 2X4LD133-2 are not within the scope of license renewal based on criterion 10 CFR 54.4(a)(1) as are the connecting pipe sections.

In its response, dated February 27, 2008, the applicant stated:

> The radiation monitors on mechanical boundary drawings 1X4LD133-1, 1X4LD133-2, 1X4LD136, 2X4LD133-1, 2X4LD136, 2X4LD133-2, 1X4LD213-2 and 2X4LD213-2 are not in scope for 10 CFR 54.4(a)(1) scoping criteria because they do not ensure the integrity of the reactor coolant pressure boundary; ensure the capability to shut down the reactor and maintain it in a safe shutdown condition; or ensure the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11, as applicable.
>
> The safety classifications of both the radiation monitors and the connecting pipe sections are established in the current licensing basis in accordance with regulatory guidance. Refer to LRA section 2.1, Scoping and Screening Methodology, for additional discussion.
>
> Also note that the radiation monitors on mechanical boundary drawings 1X4LD213-2 and 2X4LD213-2 do not have equivalent anchors on each end. Boundary endpoint clarification note #4 indicates that the radiation monitors are the equivalent anchors. However, given that there are no piping endpoints at the radiation monitors, it would be more appropriate to describe these radiation monitor packages as non-safety related piping that is

connected at both ends to safety related piping. Boundary endpoint clarification note # 4 on mechanical boundary drawings 1X4LD213-2 and 2X4LD213-2 is unnecessary and should not have been included.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.25-1 acceptable because the in scope classification of the radiation monitor and sensing lines are consistent with the plant licensing bases. Therefore, the staff's concern described in RAI 2.3.3.25-1 is resolved.

2.3.3.25.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI response, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the radiation monitoring system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.26 Reactor Makeup Water Storage System

2.3.3.26.1 Summary of Technical Information in the Application

LRA Section 2.3.3.26 describes the reactor makeup water storage system (RMW), which supplies recycled and deaerated demineralized water to safety-related surge tanks. This system also supplies water to the boric acid mixing tee for daily use as an RCS diluent and to various gas strippers, pumps, tanks, and pipelines for cleaning and flushing operations. It is an assured seismic Category I make-up source to the spent fuel pool and an assured backup seismic Category I makeup source to the CCW and ACCW surge tanks. The reactor makeup water storage tank degasifier recirculates and degasifies the demineralized water to reduce the oxygen content to primary plant usage specifications.

The reactor makeup water storage tanks are constructed of concrete with a stainless steel liner. The tank liner is evaluated in this section as a mechanical component. The concrete shell, roof, and base slab are evaluated in the structural scoping for the concrete tank and valve house structures (LRA Section 2.4.7). The reactor makeup water storage tanks have floating diaphragms which minimize oxygen absorption.

The reactor makeup water storage system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the reactor makeup water storage system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3.26 identifies reactor makeup water storage system component types within the scope of license renewal and subject to an AMR. The intended functions of the reactor makeup water storage system component types within the scope of license renewal include:

- restriction of process flow
- physical integrity maintenance to prevent generation of debris or loose parts which could interfere with a safety-related function
- pressure-retaining boundary

2.3.3.26.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.26 and UFSAR Section 9.2.7 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.26 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. In addition to RAI 2.3.3.26-1 related to drawing continuation errors described in Section 2.3.3, the applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.26-2, dated January 28, 2008, the staff noted drawing 1X4LD184 (C-8) shows a drawing continuation of 163-1" piping, within the scope of license renewal based on criterion 10 CFR 54.4(a)(2), to drawing 1X4LD129 (G-6). Part of the 163-1" piping on 1X4LD129 (G-6) to In-Scope Boundary Endpoint Clarification Symbol A11 is shown as not in scope for license renewal. The applicant was asked to provide additional information justifying the boundary locations.

In its response, dated February 27, 2008, the applicant stated:

> Mechanical boundary drawing 1X4LD129 shows that the in scope portion of line 1228-163-1" ends at an anchor, and refers to endpoint clarification Note #11. Note #11 indicates that the pipe is in scope for attached pipe considerations up to the identified anchor. Note #11 also states that the spatial interaction boundary extends beyond the identified anchor. No endpoint should have been shown at this location. Where spatial interaction concerns bound the attached anchor endpoint, the line should have been shown as in scope all the way to the spatial interaction endpoint.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.26-2 acceptable because the applicant explained that the entire piping between the anchor A11 and the spatial interaction endpoint is in scope for license renewal.

Therefore, the staff's concern described in RAI 2.3.3.26-2 is resolved.

In RAI 2.3.3.26-3, dated January 28, 2008, the staff noted drawing 1X4LD129 (H-2) shows pipe section 172-1" splits and connects to a 172-3/4" line and a 172-1" line. The drawing also shows that part of the 172-1" line before the split, as well as the 172-3/4" line, as nonsafety-related and within the scope of license renewal for spatial effects. Yet no portion of the continuing 172-1" line that is connected to the catalytic hydrogen re-combiner is within the scope of license renewal. The applicant was asked to provide additional information to clarify why this line is not included in the scope of license renewal as per requirements of 10 CFR 54.4(a)(2).

In its response, dated February 27, 2008, the applicant stated:

On mechanical boundary drawing 1X4LD129 the Reactor Makeup Water (RMW) System piping was put in scope up to the boundaries of that system. After additional review of this drawing, the RMW System boundaries do not clearly coincide with 10 CFR 54.4(a)(2) endpoints as defined in NEI 95-10, Appendix F. The mechanical boundary drawings 1X4LD129 and 2X4LD129 should have shown the RMW System piping to the catalytic hydrogen recombiners as in scope for 10 CFR 54.4(a)(2) up to the connections to the recombiners. The catalytic hydrogen recombiners are already in scope for 10 CFR 54.4(a)(2) as equivalent anchors.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.26-3 acceptable because the applicant explained that the mechanical boundary drawings 1X4LD129 and 2X4LD129 should have shown the RMW System piping to the catalytic hydrogen recombiners as in scope for 10 CFR 54.4(a)(2) up to the connections to the recombiners. Therefore, the staff's concern described in RAI 2.3.3.26-3 is resolved.

2.3.3.26.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the reactor makeup water storage system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.27 Sampling Systems

2.3.3.27.1 Summary of Technical Information in the LRA

LRA Section 2.3.3.27 describes the sampling systems, which consists of the following:

- nuclear sampling system - liquids
- nuclear sampling system - gaseous
- turbine plant sampling system
- post-accident sampling system

The nuclear sampling system – liquids supplies representative process liquid samples to the for laboratory analysis to guide operation of the RCS, the RHR system, safety injection system, waste processing system, and CVCS. The nuclear sampling system – liquids is for manual operation and has no emergency function; however, certain valves in the system have a containment isolation function, and lines which penetrate containment are relied upon for containment integrity.

The nuclear sampling system – gaseous supplies representative process stream gas samples for laboratory analysis from the CVCS and gaseous waste and boron recycle systems as required to support plant operation. The nuclear sampling system – gaseous is for manual operation only during periods of normal plant operation.

The turbine plant sampling system collects, cools, analyzes, controls, alarms, and records water quality from various sampling points in the secondary plant systems. The system monitors water

samples from the steam generator blowdown lines, the turbine cycle, and the circulating water system to control water chemistry and permit appropriate corrective action.

The post-accident sampling system takes and returns post-accident containment atmosphere samples via system piping and skid-mounted equipment. The original system design included the capability, now eliminated, to obtain fluid samples from the RCS and the containment sumps. Post-accident fluid samples from the RCS and the containment sumps can be obtained by the nuclear sampling system – liquids. Certain system lines and valves are relied upon for containment isolation and integrity.

The sampling systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the sampling systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the sampling systems perform functions that support SBO and EQ.

LRA Table 2.3.3.27 identifies sampling systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- corrosion product monitors (shells and heads)
- filter housings
- flow orifice/elements
- piping components
- pump casings - SGBD sample pumps
- rotameter housings
- sample baths - steam generator blowdown bath (shells)
- sample coolers - primary and secondary-side samples (shells and end plates)
- strainer housings
- valve bodies

The intended functions of the sampling systems component types within the scope of license renewal include:

- restriction of process flow
- pressure-retaining boundary

2.3.3.27.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.27 and UFSAR Section 9.3.2 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.27 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.27-1, dated January 28, 2008, the staff noted that drawing 2X4LD171-8 (E-5), turbine plant sampling system, pipe section 139-1½" downstream of valve 094 is shown as not within the scope of license renewal for criterion 10 CFR 54.4(a)(2). While drawing 1X4LD171-8 (E-5), Turbine Plant Sampling System, shows this piping within the scope of license renewal. The applicant was asked to provide additional information to justify the omission of the 2X4LD171-8 pipe section 139-1½" from the applicable requirements of 10 CFR 54.4(a)(2) and provide the license renewal boundary for 139-1½".

In its response, dated February 27, 2008, the applicant stated:

> Line 1305-139-1½" downstream of valve 094 on mechanical boundary drawing 2X4LD171-8 was inadvertently omitted from scope. This drawing should have shown all of line 1305-139-1½" in scope for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.27-1 acceptable because the applicant explained that the piping in question is within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.27-1 is resolved.

In RAI 2.3.3.27-2, dated January 28, 2008, the staff noted that drawings 1X4LD171-8 and 2X4LD171-8 have 16 within the scope of license renewal to not within the scope of license renewal transitions identified for 3/8" piping downstream of the steam generator main steam sample coolers that meets the 10 CFR 54.4(a)(2) criterion. There is not enough information provided to identify the transition location. The applicant was asked to provide additional information to identify these LR boundaries and to justify the boundary locations with respect to the applicable requirements of 10 CFR 54.4(a)(2) for the following locations on both drawings:

> Location D-3, downstream of valve 008.
> Location E-3, downstream of valve 007.
> Location F-3, downstream of valve 006.
> Location G-3, downstream of valve 005.
> Location D-6, downstream of valve 010.
> Location E-6, downstream of valve 011.
> Location F-7, downstream of valve 012.
> Location G-8, downstream of valve 009.

In its response, dated February 27, 2008, the applicant stated:

> The sample lines described above are shown as in scope for 10 CFR 54.4(a)(2) criteria up to the point where they exit from the Auxiliary Building into Main Steam and Feedwater Tunnel 1T1 (2T1 on Unit 2). The sample lines downstream of the sample coolers are only in scope for potential spatial interaction effects. There are no safety related systems or components in Tunnels 1T1 or 2T1, therefore the 10 CFR 54.4(a)(2) spatial interaction criteria do not apply once the sample lines have exited the Auxiliary Building. Refer to the answer to RAI 2.1-2 for non-safety related components in the Turbine Building.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.27-2 acceptable because the applicant explained why these sample lines are not in scope. Therefore, the staff's concern described in RAI 2.3.3.27-2 is resolved.

In RAI 2.3.3.27-3, dated January 28, 2008, the staff noted that drawings 1X4LD110 and 2X4LD110 (F-8), Post Accident Sampling System, show the piping associated with penetration 86C as not within the scope of license renewal based on criterion 10 CFR 54.4(a). The applicant was asked to provide additional information to justify the omission of this piping from the applicable requirements of 10 CFR 54.4(a).
In its response, dated February 27, 2008, the applicant stated:

> Line 2702-008-1" which is associated with penetration 86C on mechanical boundary drawings 1X4LD110 and 2X4LD110 is in scope. These drawings should have shown line 2702-008-1" in scope for 10 CFR 54.4(a)(1).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.27-3 acceptable because the applicant explained that the piping in question is within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.27-3 is resolved.

2.3.3.27.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the sampling system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.28 Auxiliary Gas Systems

2.3.3.28.1 Summary of Technical Information in the Application

LRA Section 2.3.3.28 describes the auxiliary gas systems, which include the auxiliary gas system - nitrogen and the auxiliary gas system - hydrogen.

The auxiliary gas system-nitrogen supplies nitrogen for pressurizing, blanketing, and purging of various plant components.

The auxiliary gas system-hydrogen supplies hydrogen to the generator for cooling, to the CVCS for oxygen scavenging, and to the waste gas decay tanks and the reactor coolant drain tanks.

The auxiliary gas systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the auxiliary gas systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the auxiliary gas systems perform functions that support EQ.

LRA Table 2.3.3.28 identifies auxiliary gas systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping components
- valve bodies

The intended function of the auxiliary gas systems component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.28.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.28 and UFSAR Section 9.3.5 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review of the auxiliary gas system - nitrogen, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

During its review of the auxiliary gas system – hydrogen, the staff evaluated the system functions described in the LRA and the UFSAR to verify that the applicant has not omitted from the scope of license renewal any component types with intended functions delineated under 10 CFR 54.4(a).

2.3.3.28.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the auxiliary gas system - nitrogen components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

The staff reviewed the LRA and UFSAR associated with the auxiliary gas system – hydrogen to determine whether the applicant failed to identify component types that are typically found within the scope of license renewal and finds no such omissions. On the basis of its review, the staff

concludes that the applicant has adequately identified the auxiliary gas system – hydrogen component types within the scope of license renewal, as required by 10 CFR 545.4(a).

2.3.3.29 Chilled Water Systems

2.3.3.29.1 Summary of Technical Information in the Application

LRA Section 2.3.3.29 describes the chilled water systems, which consist of the following:

- normal chilled water system
- essential chilled water system
- special chilled water system

The normal chilled water system supplies chilled water throughout the plant to all air-conditioning and air cooling units required during normal plant operation. Each unit's system also can be connected to supply chilled water for use in one containment building auxiliary air cooling unit and one reactor cavity cooling unit during refueling outages.

The essential chilled water system supplies chilled water to the cooling coils of the various ESF rooms or areas, including battery rooms, switchgear rooms, control rooms, ESF pump rooms, penetration areas, and the spent fuel pool heat exchanger and pump rooms. Both trains of essential chilled water actuate automatically upon either a safety injection signal or control room isolation signal; however, in a loss of offsite power system actuation is manual. Power for each essential chilled water train is by the emergency bus for the equipment it cools.

The special chilled water system supplies the necessary cooling water to air-cooling systems for the onsite technical support center and the standby central alarm station.

The chilled water systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the chilled water systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the chilled water systems perform functions that support fire protection.

LRA Table 2.3.3.29 identifies chilled water systems component types within the scope of license renewal and subject to an AMR:

- air separator
- closure bolting
- electric heater housings
- essential chillers - condenser (channel heads)
- essential chillers - condenser (shells)
- essential chillers - condenser (tubes)
- essential chillers - condenser (tubesheets)
- essential chillers - evaporator (channel heads)
- essential chillers - evaporator (shells)
- essential chillers - evaporator (tubes)
- essential chillers - evaporator (tubesheets)
- flow orifice/elements
- oil reservoirs - chiller compressors
- piping components

- piping components - pipe spools for startup strainers
- pump casings - chilled water pumps
- pump casings - chiller motor driven oil pumps
- sight glasses
- strainer elements
- strainer housings
- tanks - chilled water chemical feed pots
- tanks - chilled water expansion tanks
- tanks - chiller economizers
- valve bodies

The intended functions of the chilled water systems component types within the scope of license renewal include:

- protection from debris
- heat exchange between fluid media
- restriction of process flow
- pressure-retaining boundary

2.3.3.29.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.29, and UFSAR Section 9.2.9, and UFSAR Table 3.2.2-1 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.29 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.29-1, dated January 28, 2008, the staff noted that drawings 1X4LD233, 2X4LD233, 1X4LD234, and 2X4LD234 show numerous essential chilled water cooling coils that are within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). Also, drawings AX4LD231 and AX4LD232 show numerous normal chilled water cooling coils that are within the scope of license renewal based on criterion 10 CFR 54.4(a)(2). The applicant was requested to provide additional information explaining why the cooling coil component type was omitted from LRA Table 2.3.3.29 for components subject to an AMR.

In its response, dated February 27, 2008, the applicant stated:

> The cooling coil component type(s) are included within the LRA ventilation system which corresponds to their associated component tag number. For instance, essential and normal chilled water cooling coil component types are included in the control and auxiliary building ventilation component type tables,

2.3.3.11 and 2.3.3.12, respectively. Therefore, the component types were not duplicated in the chilled water system Table 2.3.3.29.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.29-1 acceptable because the applicant explained that the essential and normal chilled water cooling coil component types are included in the control and auxiliary building ventilation component tables, 2.3.3.11 and 2.3.3.12 respectively. Therefore, the staff's concern described in RAI 2.3.3.29-1 is resolved.

In RAI 2.3.3.29-2, dated January 28, 2008, the staff noted that the license renewal AMR Table 2.3.3.29 did not include some of the typical components that are listed in AMR tables of other plant LRAs, including the housings for the chiller compressor/motor, compressor oil cooler, oil filter, oil pump, and the refrigerant dryer filter. The applicant was requested to provide additional information to explain why these components are not included in LRA Table 2.3.3.29 as components subject to an AMR.

In its response, dated February 27, 2008, the applicant stated:

> The chiller compressor oil is cooled as the lube oil piping passes through the refrigerant filled motor, therefore the chiller compressor does not have a separate sub-component which functions as an oil cooler.
>
> The oil pump is listed in LRA Table 2.3.3.29, Item No. 17, as "Pump Casings - Chiller Motor Driven Oil Pumps."
>
> The chiller compressor housings, chiller compressor lube oil filters, and refrigerant filter dryers were omitted from the application and will be added to LRA Table 2.3.3.29. In addition, the chiller compressor purge tanks were omitted from the application and will be added to LRA Table 2.3.3.29.
>
> LRA Table 3.3.2-29 will be revised to include AMR results for the chiller compressor housings, chiller compressor lube oil filters, refrigerant filter dryers, and chiller compressor purge tanks. In addition, LRA Table 3.3.2-29 will be revised to include AMR results for the following components in the chiller compressor lube oil and refrigerant sub-systems that were not included in the initial AMR results:
>
> - Closure Bolting (copper alloy)
> - Flow Orifice / Elements
> - Piping Components
> - Sight Glasses
> - Strainer Elements
> - Strainer Housings
> - Valve Bodies

Based on its review, the staff finds the applicant's response to RAI 2.3.3.29-2 acceptable because the applicant explained that LRA AMR Tables 2.3.3.29 and 3.3.2-29 would be updated to include missing components that were not included in the initial AMR results. Therefore, the staff's concern described in RAI 2.3.3.29-2 is resolved.

2.3.3.29.3 Conclusion

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the

applicant failed to identify any components within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the chilled water system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.30 Waste Management Systems

2.3.3.30.1 Summary of Technical Information in the Application

LRA Section 2.3.3.30 describes the waste management systems, which include the following:

- backflushable filter system
- condensate cleanup system
- waste processing system, liquid
- waste processing system, gas

The backflushable filter system consists of two major subsystems which filter and transport radioactive crud:

- backflushable filters subsystem for filtering crud during normal operation in the CVCS, boron recycle system, liquid waste processing system, spent fuel cooling and purification system, and steam generator blowdown system

- crud collection subsystem consisting of a backflushable filter crud tank (equipped with a sprayball) and two crud tank pumps which collect and transport the crud solution to the radwaste solidification system or alternate radwaste building for disposal.

The backflushable filter system is nonsafety-related, intermittent during infrequent filter backflushing operations, and isolated most of the time.

The condensate cleanup system maintains the required purity of feedwater for the steam generators by filtration to remove corrosion products, ion exchange to remove condenser leakage impurities, or both filtration and ion exchange.

The condensate cleanup system consists of the condensate filter demineralizer, the backwash recovery, the spent resin disposal, and the spent resin dewatering systems, all of which are retired in place.

The condensate polishing system is included in the condensate cleanup system. The condensate polishing system (full-flow condensate filter/demineralizers) filters suspended corrosion products from the condensate and removes ionic contaminants to minimize localized corrosion in the steam generator, turbine, and feedwater systems.

The waste processing system, liquid controls, collects, processes, handles, stores, and disposes of liquid radioactive waste generated by normal operation, including anticipated operational occurrences. This system has three subsystems that perform the following activities:

- the recycle subsystem processes reactor grade water entering the system via equipment leaks and drains, valve leakoffs, pump seal leakoffs, tank overflows, and other tritiated water sources and makes it available for reuse in the plant

- the liquid waste subsystem collects and processes nonreactor-grade liquid wastes, including wastes from floor drains, equipment drains for nonreactor grade sources, laundry and hot shower drains, spent and excess radioactive samples, and other nonreactor grade sources

- the spent resin collection subsystem transports spent resin to the spent resin storage tank

The waste processing system, gas, removes fission product gases from the RCS in the volume control tank, the boron recycle system, the reactor coolant drain tank, and the liquid waste processing system. The waste processing system, gas, has a long-term storage capacity for fission product gases, eliminating any need for scheduled discharges of radioactive gases.

The waste processing system, gas, performs no function for safe shutdown of the plant; however, the system distributes the stored activity inventory so that, in a waste gas decay tank failure, the dose will be a fraction of the 10 CFR Part 100 permissible limit with the curie content of each waste gas decay tank individually limited in accordance with the technical requirements manual; hence, the waste gas decay tanks are safety-related. The tanks and the piping and valves out to the first isolation valve are safety-related,

and the safety-related portion includes the common piping header for the discharge of the pressure relief valves for the tanks.

A safety-related interface allows the CLB to consider a waste processing system, gas release and a recycle hold-up tank gaseous release separately. Without the safety-related interface, consideration of the two releases would have to be concurrent; therefore, the interface components mitigate accident consequences and are within the scope of license renewal.

The waste management systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the waste management systems potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the waste management systems perform functions that support EQ.

LRA Table 2.3.3.30 identifies waste management systems component types within the scope of license renewal and subject to an AMR:

- accumulators
- closure bolting
- equipment frames - catalytic H_2 recombiner skid
- equipment frames - waste gas compressor skid
- filter housings
- flow orifice/elements
- gas traps
- piping components
- piping components - pipe spools for startup strainers
- pump casings - gas decay drain pumps
- tanks - backflushable filter crud tanks

- tanks - waste gas decay shutdown tanks
- tanks - waste gas decay tanks
- valve bodies

The intended function of the waste management systems component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.30.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.30 and UFSAR Sections 11.4.2.3.2, 10.4.6, 11.2, and 11.3 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review of the backflushable filter system and the condensate cleanup system, the staff evaluated the system functions described in the LRA and the UFSAR to verify that the applicant has not omitted from the scope of license renewal any component types with intended functions delineated under 10 CFR 54.4(a).

During its review of the waste processing system, liquid and waste processing system, gas, the staff evaluated the system functions described in the LRA and UFSAR to verify that the

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

The staff's review of LRA Section 2.3.3.30 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.30-1, dated January 28, 2008, the staff noted drawing 1X4LD111 (H-7) shows pipe section 314-2" as within the scope of license renewal based on criterion 10 CFR 54.4(a)(2) with the license renewal boundary identified by note A2 and the continuation portion not within the scope of license renewal. However, the continuation of pipe 314-2" on 1X4LD127 (A-8) is also identified as within the scope of license renewal. The applicant was asked to provide additional information detailing the license renewal boundary for pipe section 314-2" on drawings 1X4LD111 (H-8) and 1X4LD127 (A-8).

In its response, dated February 27, 2008, the applicant stated:

> A detail review of the piping isometrics that identify the equivalent anchors for the pipe section 314-2" shown on License Renewal drawing 1X4LD111 (H-7) which continues to drawing 1X4LD127 (A-8) confirms that this line should have been shown in scope per criterion 10CFR 54.4(a)(2). This discrepancy represents a duplication in identifying equivalent anchors for this section of pipe. It has been determined that the in-scope pipe section (314-2") per criterion (a)(2) should continue to drawing 1X4LD127 (A-8) and terminate at note 8 downstream.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.30-1 acceptable

because the applicant explained that the in scope pipe section (314-2") should continue to drawing 1X4LD127 (A-8) and terminate at note A8. Therefore, the staff's concern described in RAI 2.3.3.30-1 is resolved.

In RAI 2.3.3.30-2, dated January 28, 2008, the staff noted drawings 1X4LD111 (H-3) and 1X4LD127 (F-7) show pipe sections 376-1/2" not within the scope of license renewal. This line connects to 255-3/4" inside the 10 CFR 54.4(a)(2) boundary identified on 1X4LD127. Additionally, 376-1/2" connects to 048-3" valve 025 on drawing 1X4LD111 which is identified within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). The applicant was asked to provide additional information detailing the license renewal boundary for pipe sections 376-1/2" on drawings 1X4LD111 (H-3) and 1X4LD127 (F-7).

In its response, dated February 27, 2008, the applicant stated:

> Mechanical boundary drawing 1X4LD127 should have taken credit for existing pipe supports so that the end point of the in-scope portion of line 1901-199-3/8" terminated before the connection to line 1901-001-3." This removes part of line 1901-199-3/8," all of line 1901-001-3," and all of line
>
> 1901-255-3/4" from scope. Refer to the answer to RAI 2.3.3.30-4 for additional discussion of line 1901-376-1/2".

Based on its review, the staff finds the applicant's response to RAI 2.3.3.30-2 acceptable because the applicant stated that:

> Connecting line to 255-3/4" as well as 376-1/2" are not included in scope. These lines are non-safety related and are not in scope for 10 CFR 54.4(a)(1). Also these lines are not in scope for 10 CFR 54.4(a)(2) connected pipe criteria because the CLB considers that the non-safety related small bore line can not affect the large bore safety related line and spatial interaction criteria because all safety related SCs inside containment are assumed to be qualified for spray effects or submergence.

Therefore, the staff's concern described in RAI 2.3.3.30-2 is resolved.

In RAI 2.3.3.30-3, dated January 28, 2008, the staff noted drawing 1X4LD114 (G-3) shows pipe section 369-1/2" within the scope of license renewal based on criterion for 10 CFR 54.4(a)(2). However, the continuation of pipe section 369-1/2" on drawing 1X4LD127 (G-7) shows it is not within the scope of license renewal. The applicant was asked to provide additional information detailing the license renewal boundary for pipe sections 369-1/2" on drawings 1X4LD114 (G-3) and 1X4LD127 (G-7).

In its response, dated February 27, 2008, the applicant stated:

> Mechanical boundary drawing 1X4LD114 inadvertently showed lines 1901-382-1/2" and 1901-369-1/2" as being in scope for 10 CFR 54.4(a)(2). However, these lines are not in scope. Mechanical boundary drawing 1X4LD127 correctly shows line 1901-369-1/2" as not in scope. Refer to the answer to RAI 2.3.3.30-4 for additional discussion.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.30-3 acceptable

because the applicant explained that 1901-382-1/2" and 1901-369-1/2" are non-safety related and are not in scope for 10 CFR 54.4(a)(1). Also, these lines are not in scope for 10 CFR 54.4(a)(2) connected pipe criteria because the CLB considers that the non-safety related small bore line can not affect the large bore safety related line and spatial interaction criteria because all safety related SCs inside containment are assumed to be qualified for spray effects or submergence. Therefore, the staff's concern described in RAI 2.3.3.30-3 is resolved.

In RAI 2.3.3.30-4, dated January 28, 2008, the staff noted drawing 1X4LD114, (G-3) and (F-3), shows pipe sections 369-1/2" within the scope of license renewal based on criterion 10 CFR 54.4(a)(2) and 428-1/2" within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). The following pipe sections which also continue to the reactor coolant drain tanks are not within the scope of license renewal:

1X4LD114 and 2X4LD114 (F-5) 364-1/2"
1X4LD114 and 2X4LD114 (G-5) 363-1/2"
1X4LD114 and 2X4LD114 (G-5) 365-1/2"
1X4LD114 and 2X4LD114 (F-5) 366-1/2"
1X4LD114 and 2X4LD114 (G-6) 362-1/2"
1X4LD114 and 2X4LD114 (G-7) 370-1/2"
1X4LD114 and 2X4LD114 (G-7) 375-1/2"
1X4LD114 (G-8) 370-1/2"
1X4LD114 and 2X4LD114 (E-3) 371-1/2"
2X4LD114 (F-4) 428-1/2", Note 428-1/2" is in scope for 10 CFR 54.4(a)(1) on 1X4LD114 (F-4).
2X4LD114 (G-3) 369-1/2", Note 369-1/2" is in scope for 10 CFR 54.4(a)(2) on 1X4LD114 (G-3).
2X4LD114 (G-4) 382-1/2", Note 382-1/2" is in scope for 10 CFR 54.4(a)(2) on 1X4LD114 (G-4).

The applicant was asked to provide additional information detailing the license renewal boundaries for the above pipe sections and explain the apparent difference in scoping methodologies.

In its response, dated February 27, 2008, the applicant stated:

> Mechanical boundary drawing 1X4LD114 inadvertently showed lines 1901-382-1/2" and 1901-369-1/2" as being in scope for 10 CFR 54.4(a)(2). Refer to the answer to RAI 2.3.3.30-3. These lines are not in scope. See below for 10 CFR 54.4(a)(2) criteria discussion.
>
> Mechanical boundary drawing 1X4LD114 inadvertently showed line 1901-428-1/2" as being in scope for 10 CFR 54.4(a)(1). Line 1901-428-1/2" is Project Classification 427, which is non-safety related and therefore not in scope for 10 CFR 54.4(a)(1). See below for 10 CFR 54.4(a)(2) criteria discussion.
>
> Lines 1901-362-1/2," 1901-363-1/2," 1901-364-1/2," 1901-365-1/2," 1901-366-1/2," 1901-369-1/2," 1901-370-1/2," 1901-371-1/2," 1901-375-1/2," 1901-382-1/2," and 1901-428-1/2" on each unit are non-safety related valve packing leakoff lines. Because they are non-safety related they are not in scope for 10 CFR 54.4(a)(1).

> These lines are not in scope for 10 CFR 54.4(a)(2) connected pipe criteria because the CLB considers that the non-safety related small bore line can not affect the large bore safety related line. In general the stress calculations consider the loads imposed on a large bore line by ½" or ¾" tubing to be insignificant and those loads are neglected. The small bore line is considered to be decoupled. Therefore the 10 CFR 54.4(a)(2) connected pipe criteria does not apply.
>
> These lines are not in scope for 10 CFR 54.4(a)(2) spatial interaction criteria because all safety related SCs inside containment are assumed to be qualified for spray effects or submergence, where required, to address a high energy line break or LOCA. Furthermore, the pipe supports for these lines are in scope so seismic 2/1 is not a concern and the lines operate at low pressure so pipe whip is not a concern.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.30-4 acceptable because the applicant explained that the subject lines are non-safety related and are not in scope for 10 CFR 54.4(a)(1). Also these lines are not in scope for 10 CFR 54.4(a)(2) connected pipe criteria because the CLB considers that the non-safety related small bore line can not affect the large bore safety related line and spatial interaction criteria because all safety related SCs inside containment are qualified for spray effects or submergence. Therefore, the staff's concern described in RAI 2.3.3.30-4 is resolved.

In RAI 2.3.3.30-5, dated January 28, 2008, the staff noted drawing 2X4LD124 (A-5) shows the license renewal boundary for pipe section 045-2" from the Boron Recycle System (BRS) recycle evaporator as within the scope of license renewal based on criterion 10 CFR 54.4(a)(2). This in-scope line is continued from drawing AX4LD123-1. However, the same section of pipe on Unit 1 is identified as not within the scope of license renewal in drawing 1X4LD124 (A-5). The applicant was asked to provide additional information explaining the apparent difference in scoping methodologies for pipe section 045-2" on drawings 1X4LD124 (A-5) and 2X4LD124 (A-5).
In its response, dated February 27, 2008, the applicant stated:

> The scoping methodologies for Unit 1 and Unit 2 piping line number 045-2" are the same. A section of Unit 2 piping line number 2-1901-045-2" is located on Level B of the auxiliary building in the vicinity of safety related components that are within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). The corresponding section of Unit 1 piping (line number 1-1901-045-2") is located in a separate area of the auxiliary building such that there is no potential for spatial interaction with safety related components. Therefore, only the Unit 2 piping section is within the scope of license renewal based on criterion 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.30-5 acceptable because the applicant explained that a section of Unit 2 piping line number 2-1901-045-2" is located on Level B of the auxiliary building in the vicinity of safety related components that are within the scope of license renewal based on criterion 10 CFR 54.4(a)(1). The corresponding section of Unit 1 piping is located in a separate area of the auxiliary building such that there is no potential for spatial interaction with safety related components. Therefore, the staff's concern described in RAI 2.3.3.30-5 is resolved.

2.3.3.30.3 Conclusion

The staff reviewed the LRA and UFSAR associated with the backflushable filter system and the condensate cleanup system to determine whether the applicant failed to identify component types that are typically found within the scope of license renewal and finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the backflushable filter system and the condensate cleanup system component types within the scope of license renewal, as required by 10 CFR 54.4(a).

The staff reviewed the LRA, UFSAR, RAI responses, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal for the waste processing system, liquid, and the waste processing system, gas. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the waste processing system, liquid, and the waste processing system, gas, components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.31 Thermal Insulation

2.3.3.31.1 Summary of Technical Information in the Application

LRA Section 2.3.3.31 describes the thermal insulation, which minimizes heat loss from components and protects personnel from high-temperature components. Insulation in areas with safety-related equipment retains structural integrity during and after a seismic Category I event. The insulation support structures for the reactor vessel and nozzles limit the amount of insulation displaced by blowdown during a LOCA condition below the amount assumed for the reactor cavity pressurization analysis. Inside the containment, the containment cooling system design credits insulation on components with high operating temperatures.

Thermal insulation outside containment has no safety design basis; however, insulation in areas with safety-related equipment is designed to retain structural integrity during and after seismic events.

Insulation on piping at containment penetrations must keep local concrete temperatures below 200 °F. For certain HVAC systems, heat load calculations, that assure performance of safety-related functions credit insulation. The EDG building heat-up calculation credits EDG exhaust pipe insulation (including the silencers).

Outside area insulation with heat tracing protects small-bore piping and instrument lines for in-scope systems from freezing. Insulation supports heat tracing and shields certain lines in the battery rooms from spray.

The failure of nonsafety-related SCs in the thermal insulation could prevent the satisfactory accomplishment of a safety-related function. The thermal insulation also performs functions that support SBO.

LRA Table 2.3.3.31 identifies thermal insulation component types within the scope of license renewal and subject to an AMR:

- insulation - jacketing and supports
- thermal insulation

The intended functions of the thermal insulation component types within the scope of license renewal include:

- environmental control of plant areas within equipment limitations
- physical integrity maintenance to prevent generation of debris or loose parts which could interfere with a safety-related function
- shelter/protection for safety-related/nonsafety-related components
- structural/functional support for safety-related/nonsafety-related components with maintenance of physical integrity and flow path considerations

2.3.3.31.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.31 and UFSAR Sections 5.2.3.2.3 and 6.2.1.2.1.2 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.31.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the thermal insulation components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.32 Miscellaneous Leak Detection System

2.3.3.32.1 Summary of Technical Information in the Application

LRA Section 2.3.3.32 describes the miscellaneous leak detection system, which detects leaks in the containment bottom and side liners and in liners of the spent fuel pool, fuel transfer canal, and fuel cask loading pit. This system also has containment penetrations necessary to perform the periodically necessary containment integrated leak rate test.

The miscellaneous leak detection system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the miscellaneous leak detection system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3.32 identifies miscellaneous leak detection system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping components
- valve bodies

The intended function of the miscellaneous leak detection system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.32.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.32 and the UFSAR using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.32.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the miscellaneous leak detection system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4 Steam and Power Conversion Systems

LRA Section 2.3.4 identifies the steam and power conversion systems SCs subject to an AMR for license renewal.

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

2.3.4.1	main steam system
2.3.4.2	condensate and feedwater
2.3.4.2	condensate chemical injection
2.3.4.2	feedwater heater and MSR drain
2.3.4.3	steam generator blowdown system
2.3.4.4	auxiliary feedwater systems
2.3.4.5	auxiliary steam system
2.3.4.6	electrohydraulic control system

All of these systems are Balance of Plant systems.

The staff identified the following BOP systems for Tier 1 reviews:

LRA Section	System
2.3.4.2	feedwater heater and moisture separator/reheater drain system
2.3.4.5	auxiliary steam system

2.3.4.1 Main Steam System

2.3.4.1.1 Summary of Technical Information in the Application

LRA Section 2.3.4.1 describes the main steam system (MSS), which is integral to the nuclear steam supply system heat removal systems and steam generator overpressure protection features. The main steam system conducts the steam generated in the four steam generators through the containment to the turbine-generator, moisture separator reheaters, steam jet air ejectors, turbine shaft gland seals, steam generator feedwater pump turbines, turbine-driven auxiliary feedwater pump, and the turbine bypass system.

Safety-related portions of the main steam system include heat removal, overpressure protection, and isolation features. Steam conducted from the steam generators to the atmospheric relief and main steam safety valves, which protect the steam generator and the main steam piping from over-pressurization, removes heat from the RCS. The outlet nozzle of each steam generator has a flow restrictor designed to limit flow rate and thrust loads in a main steam line rupture. The main steam system also supplies steam to the auxiliary feedwater pump turbine supplying feedwater to the steam generators for reactor heat removal during accident or transient conditions when normal feedwater is unavailable.

Each of the four main steam lines has two main steam isolation valves and two main steam bypass valves to isolate the secondary side of the steam generators in the event of leakage or malfunction to prevent uncontrolled blowdown of the steam generators and to isolate nonsafety-related portions of the system.

The main steam system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the MSS potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the main steam system performs functions that support fire protection, ATWS, SBO, and EQ.

LRA Table 2.3.4.1 identifies main steam system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- filter housings - ARV local (manual) actuators
- flexible connectors
- flow orifice/elements
- flow restrictors - ARV discharge paths
- oil reservoirs - ARV local (manual) actuators
- oil reservoirs filler/breather caps - ARV local (manual) actuators
- piping components
- piping components - forged sections for 5-way pipe restraints
- pump casings - ARV manual hand pumps
- pump casings - wet layup recirculation pumps

- valve bodies

The intended functions of the main steam system component types within the scope of license renewal include:

- protection from debris
- spray shield or curbs for flow direction
- restriction of process flow
- pressure-retaining boundary

2.3.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.1 and UFSAR Section 10.3 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.4.1.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the main steam system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.2 Feedwater System

2.3.4.2.1 Summary of Technical Information in the Application

LRA Section 2.3.4.2 describes the feedwater system, which includes the following:

- condensate and feedwater system
- condensate chemical injection system
- feedwater heater and moisture separator/reheater drain system

The condensate and feedwater system condenses high-pressure and low-pressure turbine extraction and exhaust steam and main feedwater pump turbine exhaust steam, collects the condensate in the condenser hotwell, and maintains steam generator water levels by supplying preheated feedwater through all power operation modes of the plant. The system also isolates feedwater as required to limit mass and energy in the containment in any feedwater break and prevents RCS over-cooling and steam generator overfilling with water in the steam lines. Feedwater flow to each steam generator is via a 16-inch main feedwater line to the steam generator main feedwater nozzle or the 6-inch feedwater bypass line to the auxiliary feedwater nozzle. The system shares the feedwater bypass line portion from upstream of the feedwater

bypass isolation valves to the steam generator bypass feedwater/auxiliary feedwater nozzle with the safety-related auxiliary feedwater (AFW) system.

The primary function of the condensate chemical injection system is to supply chemicals to the condensate and feedwater system for corrosion control. The condensate chemical injection system includes the piping and storage/transfer equipment conveying the chemicals and extending to the piping for the condensate and feedwater system, AFW system, and steam generators. System safety functions are containment isolation and integrity.

The feedwater heater and moisture separator/reheater drain system drains the liquid (condensed steam) from the feedwater heaters and moisture separator/reheaters and routes it to the condensate and feedwater system. This system performs no safety function but is within the 10 CFR 54.4(a)(2) scope of license renewal.

The feedwater system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the feedwater system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the feedwater system performs functions that support ATWS and EQ.

LRA Table 2.3.4.2 identifies feedwater system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow orifice/elements
- piping components
- piping components - forged sections for 5-way pipe restraints
- piping components - guard pipe
- valve bodies

The intended functions of the feedwater system component types within the scope of license renewal include:

- restriction of process flow
- pressure-retaining boundary

2.3.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.2 and UFSAR Sections 10.3.5 and 10.4.7 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review of the condensate and feedwater system and the condensate chemical injection system, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

During its review of the feedwater heater and moisture separator/reheater drain system, the staff evaluated the system functions described in the LRA and the UFSAR to verify that the

applicant has not omitted from the scope of license renewal any component types with intended functions delineated under 10 CFR 54.4(a).

2.3.4.2.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings associated with the condensate and feedwater system and the condensate chemical injection system to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the condensate and feedwater system and the condensate chemical injection system components within the scope of license renewal, as required by 10 CFR 54.4(a),. and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

The staff reviewed the LRA and UFSAR associated with the feedwater heater and moisture separator/reheater drain system to determine whether the applicant failed to identify component types that are typically found within the scope of license renewal and finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the feedwater heater and moisture separator/reheater drain system component types within the scope of license renewal, as required by 10 CFR 54.4(a).

2.3.4.3 Steam Generator Blowdown System

2.3.4.3.1 Summary of Technical Information in the Application

LRA Section 2.3.4.3 describes the steam generator blowdown system, which accepts secondary water from each steam generator blowdown line, processes the water as required, and delivers the processed water to either the condensate system or the waste water retention basin. Process steps include cooling with heat recovery, pressure reduction, filtration, and ion exchange. The purpose of the steam generator blowdown system is to maintain optimum secondary side water chemistry during normal operation and during anticipated operational occurrences by removing impurities from primary coolant or circulating water in-leakage concentrated in the steam generator by evaporation.

Safety-related instrumentation in the steam generator blowdown system helps detect and isolate high-energy lines in the auxiliary building. Interfaces between steam generator blowdown system nonsafety-related portions and other plant systems can affect safety-related portions of the plant adversely following a postulated pipe rupture in the nonsafety-related high-energy portion of the system outside of containment.

The steam generator blowdown system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the steam generator blowdown system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the steam generator blowdown system performs functions that support EQ.

LRA Table 2.3.4.3 identifies steam generator blowdown system component types within the scope of license renewal and subject to an AMR:

- closure bolting

- filter housings
- flow orifice/elements
- heat exchangers - SGBD HXs (channel heads)
- heat exchangers - SGBD HXs (shells)
- heat exchangers - SGBD trim HXs (channel heads)
- heat exchangers - SGBD trim HXs (shells)
- piping components
- piping components - pipe spools for startup strainers
- pump casings - steam generator drain pumps
- pump casings - steam generator blowdown spent resin sluice pumps
- strainer housings
- valve bodies

The intended functions of the steam generator blowdown system component types within the scope of license renewal include:

- restriction of process flow
- pressure-retaining boundary

2.3.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.3 and UFSAR Section 10.4.8 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.4.3.3 Conclusion

The staff reviewed the LRA, UFSAR and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the steam generator blowdown system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.4 Auxiliary Feedwater System (1302)

2.3.4.4.1 Summary of Technical Information in the Application

LRA Section 2.3.4.4 describes the AFW system, which supplies feedwater to the steam generators during startup, cooldown, and emergency conditions resulting in a loss of main feedwater. The two motor-driven and one turbine-driven AFW pumps are available to ensure the required feedwater flow to the steam generators. During normal operations, the system is in a standby mode with controls selected for automatic operation.

System capacity is sufficient to remove decay heat and to supply adequate feedwater for RCS cooldown within specified limits. The AFW system is relied upon for feedwater supply to the steam generators to maintain a secondary heat sink for DBE mitigation; therefore, this system is safety-related.

The AFW feedwater source for both normal conditions and DBE mitigation is the condensate storage tank. Such tanks are constructed of concrete lined with stainless steel. This section evaluated the tank liner as a mechanical component. LRA Section 2.4.7, "Concrete Tank and Valve House Structures," evaluated the concrete shell, roof, and base slab. The condensate storage tanks have floating diaphragms to minimize oxygen absorption.

The AFW system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the AFW system potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the AFW system performs functions that support fire protection, ATWS, SBO, and EQ.

LRA Table 2.3.4.4 identifies AFW system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- filter housings
- flow orifice/elements
- oil coolers - TDAFWP turbine (channel heads)
- oil coolers - TDAFWP turbine (shells)
- oil coolers - TDAFWP turbine (tubes)
- oil coolers - TDAFWP turbine (tubesheets)
- oil reservoirs - TDAFWP turbine lube oil
- piping components
- piping components - pipe spools for startup strainers
- pump casings - AFW pumps
- pump casings - CST vacuum degasifier pumps
- pump casings - TDAFWP lube oil pumps
- spargers - TDAFWP steam exhaust condensate
- tank - CST degasifier tank
- tank diaphragms - CSTs
- tank liners (and internals) - CST liners
- turbine casings (AFW pump drive turbine)
- valve bodies

The intended functions of the AFW system component types within the scope of license renewal include:

- heat exchange between fluid media
- flow pattern or distribution provision
- restriction of process flow
- physical integrity maintenance to prevent generation of debris or loose parts which could interfere with a safety-related function
- pressure-retaining boundary

2.3.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.4 and UFSAR Section 10.4.9 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components 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 in which additional information was necessary to complete the review 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 January 28, 2008, the staff noted drawings 1X4LD161-1 and 2X4LD161-1 (E-7) downstream of valve HV5089 is shown as within the scope of license renewal based on criterion 10 CFR 54.4(a)(2), up to an equivalent anchor A1/A4, whereas, there is no annotation if there is an equivalent anchor for the 153-10" line at HV5103. The applicant was asked to provide additional information justifying the boundary locations with respect to the applicable requirements of 10 CFR 54.4(a).

In its response, dated February 27, 2008, the applicant stated:

> Downstream of HV5103 on 1X4LD161-1 and 2X4LD161-1 is a spool piece identified as line 1302-104-10." This spool piece is shown as not in scope (colored gray) and in phantom on these boundary drawings because it is a removable spool piece that is only installed for hydrostatic testing of the main condenser. The lines on either side of the spool piece (1302-153-10" and 1302-010-10"") terminate at the blind flanges. The end point of line 1302-153-10" is therefore defined in accordance with the guidance provided in NEI 95-10, Appendix F, as the free end of the non-safety related piping. An equivalent anchor is not required.

By telecom dated April 17, 2008, the applicant corrected an error in line reference numbers from 1302-153-10" and 1302-010-10" to 1305-153-10" and 1305-010-10", respectively.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.4-1 acceptable, because the applicant explained that the lines on either side of the spool piece (1305-153-10" and 1305-010-10") terminate at the blind flanges. The end point of line 1305-153-10" is therefore defined in accordance with the guidance provided in NEI 95-10, Appendix F, as the free end of the non-safety related piping. 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, UFSAR, RAI response, and drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff's review determined whether the applicant failed to identify any components subject to an

AMR. The staff finds no such omissions. On the basis of its review, the staff concludes the applicant has adequately identified the auxiliary feedwater system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.5 Auxiliary Steam System

2.3.4.5.1 Summary of Technical Information in the Application

LRA Section 2.3.4.5 describes the auxiliary steam system, which conveys auxiliary steam to the balance-of-plant systems during startup, shutdown, and normal operation. The supply of steam for this system is the main steam system. By a cross-connect an operating unit can supply steam to a unit shut down. The auxiliary steam system performs the following functions:

- heating of the condensate during condensate and feedwater system preoperational cleanup
- assisting in attaining and holding the required vacuum in the main condensers
- sealing the glands of the main turbine and feedwater pump drive turbines prior to the availability of main steam
- preoperational testing of the AFW pump turbine and steam generator feedwater pump turbines
- heating the cleaning solutions for preoperational piping and equipment cleaning
- steam blanketing of moisture separator reheaters during plant shutdown
- assisting in deaeration of the main condensate during cold cleanup operations
- as an alternative, main steam line and main turbine shell preheating following extended main steam isolation and prior to entry of steam from steam generators

The failure of nonsafety-related SCs in the auxiliary steam system could potentially prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.4.5 identifies auxiliary steam system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow orifice/elements
- piping components
- steam/fluid trap bodies
- valve bodies

The intended functions of the auxiliary steam system component types within the scope of license renewal include:

- restriction of process flow
- pressure-retaining boundary

2.3.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.5 and UFSAR Section 9.5.9 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has not omitted from the scope of license renewal any component types with intended functions delineated under 10 CFR 54.4(a).

2.3.4.5.3 Conclusion

The staff reviewed the LRA and UFSAR to determine whether the applicant failed to identify any component types that are typically found within the scope of license renewal and finds no such omissions. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the auxiliary steam system component types within the scope of license renewal, as required by 10 CFR 54.4(a).

2.3.4.6 Electrohydraulic Control System

2.3.4.6.1 Summary of Technical Information in the Application

LRA Section 2.3.4.6 describes the electrohydraulic control system. The steam turbine converts the thermal energy of the steam from the main steam system into mechanical energy to drive the main generator and produce the plant electrical output. Integral to operation of the turbine is the turbine control system, which includes the digital electrohydraulic control system.

The turbine control system positions the steam valves controlling steam flow to the high-pressure and low-pressure turbines (*i.e.*, high-pressure control valves and stop valves and low-pressure intermediate stop valves and intercept valves). The electrohydraulic control system meets the fluid pressure demands for positioning of these steam valves. The turbine lube oil system supplies pressurized oil to the auto-stop oil header and lubricates the turbine. Loss of the auto-stop oil header pressure or the electrohydraulic control fluid pressure to the actuators will close the steam valves (tripping the turbine).

Electrohydraulic control system nonsafety-related components required to trip the turbine in response to ATWS are within the 10 CFR 54.4(a)(3) regulated event scoping criteria for license renewal. The applicant conservatively includes nonsafety-related components which trip the turbine in response to overspeed within the scope of license renewal under 10 CFR 54.4(a)(2).

The failure of nonsafety-related SCs in the electrohydraulic control system could potentially prevent the satisfactory accomplishment of a safety-related function. The electrohydraulic control system also performs functions that support ATWS.

There are no electrohydraulic control system mechanical components subject to an AMR. The screening process concluded that active components accomplish system mechanical component functions and that any component pressure boundary failure would not prevent performance of system intended functions, a conclusion consistent with the SRP-LR Table 2.1-5 as to turbine controls for actuator and overspeed trip. The screening concluded that the

electrohydraulic control system components perform no intended functions for license renewal; therefore, none of the electrohydraulic control system components are subject to an AMR.

2.3.4.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.6 and UFSAR Sections 7.7.1.11, 10.1, 10.2, and 10.2.2.3.1.5 using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3.

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.4.6.3 Conclusion

The staff reviewed the LRA, UFSAR, and drawings to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the electrohydraulic control system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4 Scoping and Screening Results – Structures

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

- containment structures
- auxiliary, control, fuel handling, and equipment buildings
- EDG structures
- turbine building
- tunnels and duct banks
- nuclear service cooling water structures
- concrete tank and valve house structures
- switchyard structures
- fire protection structures
- radwaste structures
- auxiliary feedwater pumphouse structures
- component supports and bulk commodities

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

The staff's evaluation of the information in the LRA was performed in the same manner for all structures. The objective was to determine whether the applicant has identified, in accordance with 10 CFR 54.4, components and supporting structures for those structures that appear to meet the license renewal scoping criteria. Similarly, the staff evaluated the applicant's screening results to verify that all passive, long-lived SCs were subject to an AMR in accordance with 10 CFR 54.21(a)(1).

In its scoping evaluation, the staff reviewed the applicable LRA sections, focusing on components that have not been identified as within the scope of license renewal. The staff reviewed the UFSAR, for each structure to determine whether the applicant has omitted from the scope of license renewal components with intended functions delineated under 10 CFR 54.4(a). The staff also reviewed the UFSAR to determine whether the LRA specified all intended functions delineated under 10 CFR 54.4(a). The staff requested additional information to resolve any omissions or discrepancies identified.

After its review of the scoping results, the staff evaluated the applicant's screening results. For those SCs with intended functions, the staff sought to determine whether (1) the functions are performed with moving parts or a change in configuration or properties or (2) the SCs are subject to replacement after a qualified life or specified time period, as described in 10 CFR 54.21(a)(1). For those meeting neither of these criteria, the staff sought to confirm that these SCs were subject to an AMR, as required by 10 CFR 54.21(a)(1). By letter dated, January 28, 2008, the staff requested additional information to resolve any omissions or discrepancies identified.

2.4.1 Containment Structures

2.4.1.1 Summary of Technical Information in the Application

In LRA Section 2.4.1, the applicant described the containment structures, including containment buildings and containment internal structures. The containment building is a seismic Category I structure that completely encloses the reactor, the Reactor Coolant System (RCS), the steam generators, and portions of the auxiliary and engineered safety features systems. The containment building also houses components required for reactor refueling, including the polar crane, refueling cavity, and portions of the fuel handling system. The containment structure protects these features from external events (*e.g.*, tornado, flooding, et cetera) and functions as a fission product barrier following an accident. The containment structure also provides biological shielding during normal operation and following a LOCA.

The major elements of the containment building structure are the main structure and foundation, the steel containment liner, and the containment penetrations.

The containment internal structures are comprised of concrete and steel components. The major concrete internal components are the reactor cavity and primary shield wall, secondary shield wall, refueling cavity (and transfer canal), and floor slabs. Major steel internal components are the refueling canal liner and structural steel framing. Miscellaneous items unique to the containment internal structures include the emergency sump screens and the trisodium phosphate baskets on the containment base slab. Common structural commodities include supports for piping, cable trays, conduits, ventilation ducting, and other components, whip restraints, cable trays and conduits, platforms, racks and frames, and grating.

The containment structures contain safety-related components relied upon to remain functional

during and following DBEs. The failure of nonsafety-related SCs in the containment structure potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the containment structures perform functions that support fire protection, ATWS, and SBO.

LRA Table 2.4.1 identifies containment structures component types within the scope of license renewal and subject to an AMR.

2.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4, "Scoping and Screening Results: Structures."

During its review of the LRA Section 2.4.1, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for containment structures. Therefore, the staff issued requests for additional information (RAIs) by letter dated January 28, 2008 to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following discussion describes the staff's RAIs related to the LRA Section 2.4.1, the corresponding applicant responses, and the staff evaluation.

In Section 2.4.1 of the LRA the applicant stated that a tendon access gallery is located beneath the perimeter of the base slab for the installation and inspection of the U-shaped tendons. In RAI 2.4.1-1, dated January 28, 2008, the staff asked whether the applicant considered the tendon access gallery and its associated vertical access shafts in the scope of license renewal and subject to an AMR.

By letter dated February 27, 2008, the applicant provided the response to RAI 2.4.1-1 and confirmed that the tendon access gallery and its associated vertical access shafts are included in the scope of license renewal for VEGP and subject to an AMR. Therefore, the staff finds the applicant's scoping of the tendon access gallery acceptable.

From review of LRA Table 2.4.1, the staff could not determine if the following components of the Containment Structures have been screened-in as components subject to an AMR.

(i) Control rod drive missile shield
(ii) Polar crane support brackets
(iii) Reactor cavity manipulator crane

In RAI 2.4.1-2, dated January 28, 2008, the staff asked the applicant to clarify the inclusion of these components in the scope of license renewal.

By letter dated February 27, 2008, the applicant provided the following response to RAI 2.4.1-2.

(i) Control rod drive missile shield has been screened-in as a component subject to an AMR. This item is included in Table 2.4.1 ID 13 'Steel Components: Integrated Reactor Head Steel Assemblies.'

(ii) Polar crane support brackets have been screened-in as a component subject to

an AMR. This item is included in Table 2.4.1 ID 11 'Steel Components: All Structural Steel.'

(iii) Reactor cavity manipulator crane is part of 'Refueling Machine' at VEGP and it has been screened-in as a component subject to an AMR. This item is included in Section 2.3.3.3 under 'Fuel Handling and RV Servicing Equipment.'

In its response, the applicant provided clarification that the control rod drive missile shield, polar crane support brackets and reactor cavity manipulator crane are included in the scope of license renewal for VEGP and subject to an AMR. Therefore, the staff finds the applicant's response to RAI 2.4.1-2 acceptable.

Under the title "Steel Containment Liner" in Section 2.4.1, the LRA states that "The floor liner plate is installed on top of the foundation slab and is then covered with concrete." The staff issued RAI 2.4.1-3 on January 28, 2008, to request the applicant to confirm that the inaccessible floor liner plate of the base mat, including the leak chase system and the concrete fill slab above this liner are included in the components listed in Table 2.4.1 and are subject to an AMR.

By letter dated February 27, 2008, the applicant provided the response to RAI 2.4.1-3 and confirmed that the inaccessible floor liner plate (including the leak chase system) on the top of the base mat is included in Table 2.4.1 ID 14 'Steel Components: Liner (Containment); Liner Anchors; Integral Attachments' and the concrete fill slab above this liner is included in Table 2.4.1 ID 4 'Concrete: Internal Structures.' Considering that these items are included in the scope of license renewal for VEGP and subject to an AMR, the staff finds the applicant's response to RAI 2.4.1-3 acceptable.

By letter dated January 28, 2008, the staff issued RAI 2.4.1-4 to request the applicant to clarify that the component identified as "Steel Components: All Structural Steel" in various tables in Section 2.4 of the LRA includes the connection components (gusset plates, welds, bolts, etc.) of structural steel.

By letter dated February 27, 2008, the applicant confirmed that the connection components (gusset plates, welds, bolts, etc.) are included in the scope of license renewal for VEGP and subject to an AMR. Therefore, the staff finds the applicant's response to RAI 2.4.1-4 acceptable.

By letter dated January 28, 2008, the staff issued RAI 2.4.1-5 to request clarification on the intended function of containment internal structure relative to radiation shielding as described in Section 3.8.3 of the VEGP UFSAR.

By letter dated February 27, 2008, the applicant confirmed that radiation shielding is an intended function of concrete internal structures and was inadvertently omitted from Table 2.4.1. By letter dated March 20, 2008, the applicant amended the LRA to add radiation shielding to Table 2.4.1 and Table 3.5.2-1. Therefore, the staff finds the applicant's response related to the intended function of the internal structures acceptable.

LRA Table 2.4.1 lists the Equipment Hatch and Personnel Airlocks as Containment components subject to an AMR. By letter dated January 28, 2008, the staff issued RAI 2.4.1-6 to request the applicant to confirm that the hatch locks, hinges and closure mechanisms, that help prevent loss of sealing/leak-tightness for these listed hatches, are included in the scope of license renewal and subject to an AMR.

By letter dated February 27, 2008, the applicant responded to RAI 2.4.1-6, stating that the locks, hinges and closure mechanisms for the containment hatches and locks are active components and are not subject to an AMR. In a subsequent telephone conference, as summarized in a letter from D. J. Ashley (NRC) to Southern Nuclear Operating Company dated March 26, 2008, the applicant agreed to update the LRA Table 3.5.1 to delete "active component" discussion of Item 3.5.1-17. By letter dated March 20, 2008, the applicant amended the LRA stating that the locks, hinges and closure mechanisms are subject to an AMR under VEGP 10 CFR 50 Appendix J program along with the host components. Considering the above, the staff finds the applicant's response to RAI 2.4.1-6 acceptable.

By letter dated January 28, 2008, the staff issued RAI 2.4.1-7 to request the applicant to confirm that the channel/angle shrouds that have been used at the liner welded joints (including those at penetrations) are considered in-scope components and subject to an AMR.

By letter dated February 27, 2008, the applicant confirmed that all items welded to the concrete side of the liner or welded to the interior face of the liner are included in the scope of license renewal for VEGP and subject to an AMR. Therefore, the staff finds the applicant's response to RAI 2.4.1-7 acceptable.

Section 3.8.2.1.4 of the VEGP UFSAR discusses the isolation valve encapsulation vessel assemblies. These vessels and their respective supports/anchorages were not specifically listed in Table 2.4.1 as in-scope components and subject to an AMR. By letter dated January 28, 2008, the staff issued RAI 2.4.1-8 to request the applicant to confirm that the isolation valve encapsulation vessel assemblies and their supports/anchorages are screened-in and subject to an AMR.

By letter dated February 27, 2008, the applicant provided clarification and confirmed that the isolation valve encapsulation vessel assemblies are in scope and are included in Table 2.3.2.1 and their supports/anchorages are also in scope and are included in Table 2.4.2. Considering that the encapsulation vessel assemblies and their supports are considered in the scope of license renewal for VEGP and subject to an AMR, the staff finds the applicant's response to RAI 2.4.1-8 acceptable.

The insulation and cooling system provided to limit the inside face temperature of primary shield wall and reactor cavity to 150°F are described in Section 3.8.3.4.4 of the VEGP UFSAR. By letter dated January 28, 2008, the staff issued RAI 2.4.1-9 to request the applicant to confirm that the insulation and cooling system described in Section 3.8.3.4.4 of the VEGP UFSAR have been considered in the scope of license renewal and subject to an AMR.

By letter dated February 27, 2008, the applicant provided clarification and confirmed that the insulation installed on the reactor vessel, reactor coolant system piping, and other components inside the containment building with high operating temperatures is credited for reducing the thermal loading inside the containment building, including thermal loading of the primary shield wall and reactor cavity. The applicant also stated that the cooling systems provided to limit the inside face temperature of primary shield wall and reactor
cavity consist of the Containment Building Cavity Cooling System and the Containment Building Reactor Support Cooling System.

By letter dated March 20, 2008, the applicant amended the LRA to update Sections 2.3.3.13 and 2.3.3.31 of the LRA to include clarification relative to the criterion 10 CFR 54.4(a)(2)

in-scope function of insulation and cooling system provided to limit the inside face temperature of the primary shield wall and reactor cavity to 150°F.

Considering the applicant's clarifications and the LRA updates, the staff finds the applicant's response to RAI 2.4.1-9 acceptable.

By letter dated January 28, 2008, the staff issued RAI 2.4.1-10 to determine whether the equipment hatch concrete external shield door is considered in the scope of license renewal and subject to an AMR.

By letter dated February 27, 2008, the applicant provided the response to RAI 2.4.1-10 and stated that the equipment hatch concrete external shield door is in-scope and subject to an AMR. By letter dated March 20, 2008, the applicant amended the LRA to update Table 2.4.1 and Table 3.5.2-1 to add the equipment hatch concrete external shield door as a component subject to an AMR. Therefore, the staff finds the applicant's response to RAI 2.4.1-10 acceptable.

According to VEGP UFSAR Section 2.4.12.1.3.1, ground water is the primary source of supply for reactor cooling water makeup, normal makeup to the nuclear service cooling towers, and fire protection. By letter dated January 28, 2008, the staff issued RAI 2.4.1-11 to request the applicant to provide justification for the exclusion of makeup water wells from the scope of license renewal.

By letter dated February 27, 2008, the applicant provided its response to RAI 2.4.1-11 and stated that the Plant Makeup Well Water System is a non-safety related system that does not perform any safety related functions, nor can failure of this system prevent any safety related system from performing its functions. In addition, the applicant stated that the non-safety related Plant Makeup Well Water System is not in scope for supporting the Fire Protection System because the 10 CFR 54.4(a)(2) criteria do not apply to non-safety related systems or components which support other non-safety related systems or components. Based on the above, the applicant concluded that the Plant Makeup Well Water System does not perform any functions that meet the criteria of 10 CFR 54.4(a)(1), 10 CFR 54.4(a)(2) or 10 CFR 54.4(a)(3) and is not in the scope of license renewal.

In a subsequent telephone conference, as summarized in a letter from D. J. Ashley (NRC) to Southern Nuclear Operating Company, Inc., dated March 26, 2008, further discussion with the applicant provided clarification that although the VEGP UFSAR Section 2.4.12.1.3.1 states that the Plant Makeup Well Water System is the primary source of supply for fire protection, the fire water storage tanks are credited as the sources of water for the fire protection system. As discussed in NUREG 1800, Table 2.1-2, for 10 CFR 54.4(a)(3), a second level support system (i.e., Plant Makeup Well Water System) need not be considered in the scope of license renewal. Considering the above, the staff finds the applicant's response to RAI 2.4.1-11 acceptable.

Section 2.4.1 of the LRA discusses Jib cranes inside the containment structures. By letter dated January 28, 2008, the staff issued RAI 2.4.1-12 to request the applicant to confirm that the support anchorages and mechanical components of Jib cranes are in-scope and subject to an AMR.

By letter dated February 27, 2008, the applicant responded to RAI 2.4.1-12 and confirmed that the Jib cranes and associated passive components are included in Table 2.4.12 ID 21 'Miscellaneous Cranes including Monorails' and support anchorages are included in Table

2.4.12 ID 35 'Supports for EDGs, HVAC Components, and Misc. Mechanical Equipment: Support Members, Welds, Bolted Connections, Support Anchorages to Building Structure.'

Considering that the Jib cranes, support anchorages and other passive components of Jib cranes inside the containment structures are included in the scope of the LRA and subject to an AMR, the staff finds the applicant's response to RAI 2.4.1-12 acceptable.

2.4.1.3 Conclusion

The staff reviewed the LRA, UFSAR, and RAI responses to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the containment structures SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2 Auxiliary, Control, Fuel Handling, and Equipment Buildings

2.4.2.1 Summary of Technical Information in the Application

LRA Section 2.4.2 describes the auxiliary, control, fuel-handling, and equipment buildings, which include the following structures:

- auxiliary building
- control building
- fuel-handling building
- equipment buildings

These adjacent structures form a common complex that adjoins the containment buildings.

The auxiliary building is a seven-story reinforced concrete seismic Category I structure common to both plant units located south of the fuel-handling building and containment structures. Three stories are above grade, four subterranean. There are two penetration areas, one, on the south side of each containment. All auxiliary building columns, slabs, and structural walls are of reinforced concrete. The roof is a reinforced concrete slab with a minimum thickness of two feet. The auxiliary building structure is founded on a mat continuous over the plan of the building. The auxiliary building houses major safety-related and nonsafety-related plant facilities (e.g., CVCS, ECCS, RHR system, HVAC facilities) and other equipment.

A number of access openings are sealed with removable concrete block wall units of short height for radiation shielding and maintenance purposes held in place by structural elements (e.g., steel angle or steel beams).

The control building is a six-story, deeply-embedded, reinforced concrete structure common to both plant units situated north of and adjacent to the fuel-handling and the two containment buildings. It is supported on a mat foundation 40 feet below grade. The boxlike center section has three upper levels extending to 60 feet above grade. A partial fourth level extends an additional 20 feet. Penetration areas east and west of the center section for access to the two containment buildings are the primary areas for routing of electrical and control system cables into the containment. Directly north of each containment building is a main steam isolation valve

room which extends 40 feet above grade. The control room and technical support center principally occupy the level at grade. The levels, immediately above and below grade, house the cable spreading rooms. The lowest level houses the switchgear and HVAC equipment. The third and fourth floors mainly contain HVAC equipment, while the fourth floor is primarily occupied by nonsafety-related components.

The fuel-handling building is a five-story, boxlike, reinforced concrete structure, common to both plant units, completely surrounded by other Category I buildings and located between the two containment structures. The fuel storage facility part of the fuel-handling building consists of the new fuel storage area, spent fuel pool (including the structure, liner, and fuel storage racks), fuel transfer canal, cask storage area, cask washdown area, and rooms for supporting equipment.

Each nuclear unit has a separate but connected spent fuel pool approximately 41 feet deep, constructed of reinforced concrete, and lined with a stainless steel plate. The spent fuel pool is for underwater storage of spent fuel assemblies after their removal from the reactor. New fuel may be moved from the new fuel racks to the spent fuel racks in preparation for a refueling outage.

The fuel transfer canal is an intermediate handling area, connected to the refueling canal inside containment by the fuel transfer tube, which is evaluated as part of the containment structures. The fuel transfer canal may be drained for fuel handling equipment service or flooded for fuel handling. The cask storage area is a location for shipping casks to be loaded. The isolated cask wash area is for cleaning and decontamination of shipping casks. Adjacent rooms house the spent fuel cooling and cleanup system equipment that cools and purifies the spent fuel pool water. The fuel-handling building's overhead and refueling load handling cranes are evaluated in Section 2.3.3.3.

The equipment building is not a distinct structure but composed of portions of the control and fuel-handling buildings. The equipment building partially surrounding (approximately three quadrants) the containment building is a seismic Category II structure, designed, however, to seismic Category I requirements to preclude any safety impact on the safety-related equipment in the control and fuel-handling buildings. The primary function of the equipment building is to support nonsafety-related HVAC equipment.

The auxiliary, control, fuel-handling, and equipment buildings contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the auxiliary, control, fuel-handling, and equipment buildings potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the auxiliary, control, fuel-handling, and equipment buildings perform functions that support fire protection, ATWS, and SBO.

LRA Table 2.4.2 identifies auxiliary, control, fuel-handling, and equipment buildings component types within the scope of license renewal and subject to an AMR.

2.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of the LRA Section 2.4.2, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening

results for auxiliary, control, fuel-handling and equipment buildings. Therefore, the staff issued an RAI by letter dated January 28, 2008, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following discussion describes the staff's RAI related to the LRA Section 2.4.2 and the corresponding applicant response.

By letter dated January 28, 2008, the staff issued RAI 2.4.2-1 to confirm that the leak chase system for the spent fuel pool liner is in-scope and subject to an AMR.

By letter dated February 27, 2008, the applicant provided its response to RAI 2.4.2-1 and confirmed that the leak chase system for the spent fuel pool liner is in the scope of license renewal for VEGP and subject to an AMR. Therefore, the staff finds the applicant's response to RAI 2.4.2-1 acceptable.

2.4.2.3 Conclusion

The staff reviewed the LRA, UFSAR and RAI response to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the auxiliary, control, fuel handling, and equipment buildings SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.3 Emergency Diesel Generator Structures

2.4.3.1 Summary of Technical Information in the Application

LRA Section 2.4.3 describes the EDG structures, which include the diesel generator buildings and diesel fuel storage tank pump houses. Each diesel generator building and its proximate diesel fuel storage tank pump houses support EDG operation.

The diesel generator buildings (one for each unit) are rectangular, reinforced concrete, seismic Category I structures designed to withstand various combinations of loads defined in the UFSAR. Each bay houses a diesel generator and air-handling, exhaust, and silencing equipment. The building's primary function is to house the diesel generators needed to supply emergency onsite power in a loss of offsite power.

The diesel fuel storage tank pump houses (two for each unit) are seismic Category I structures that shelter the pumps and valves for the buried diesel fuel oil storage tanks supplying the EDGs and house the nozzles, gages, drains, and pump mount systems. The reinforced concrete pump houses straddle the tanks and extend three feet above grade except for a common entry between each pair of pump houses extending 14 feet above grade. Each pump house foundation consists of wall strip footings. The pump houses are boxlike with work space levels above the top of the tanks.

The EDG structures contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the EDG structures potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the EDG structures perform functions that support fire protection and SBO.

LRA Table 2.4.3 identifies EDG structures component types within the scope of license renewal and subject to an AMR.

2.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.3 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review, the staff evaluated the structural component functions described in the LRA and UFSAR to verify that the applicant has not omitted, from the scope of license renewal, any SCs with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those SCs that the applicant has identified, as within the scope of license renewal, to verify that the applicant has not omitted any passive and long-lived SCs 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 UFSAR to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the EDG structures SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.4 Turbine Building

2.4.4.1 Summary of Technical Information in the Application

LRA Section 2.4.4 describes the turbine building, a nonsafety-related, seismic Category II structure that houses all main turbine-generator equipment including the main condenser and other power-generation and auxiliary equipment.

Steel-framed and enclosed with a reinforced concrete roof and metal siding, the turbine building is a trussed rigid-frame structure above the turbine deck level; below, the frames are braced to reduce side sway. The building has three floors of reinforced concrete or steel grating and a basement. The building mat foundation also supports the turbine pedestal.

The turbine-generator pedestal supports the turbine-generator unit. The pedestal, designed to withstand operating and emergency loading forces including seismic disturbances and machine imbalance, consists of a reinforced concrete deck on columns attached to a basemat. Also part of the turbine building is the elevated electrical bridge structure between the main structure and the control building.

The turbine building and the electrical bridge structure are in close proximity to safety-related structures. In addition, the failure of nonsafety-related SCs in the turbine building could potentially prevent the satisfactory accomplishment of a safety-related function. The turbine building also performs functions that support ATWS and SBO.

LRA Table 2.4.4 identifies the turbine building component types within the scope of license renewal and subject to an AMR.

2.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.4 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.4, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the turbine building. Therefore, the staff issued its RAIs by letter dated January 28, 2008, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following discussion describes the staff's RAIs related to the LRA Section 2.4.4 and the corresponding applicant responses.

By letter dated January 28, 2008, the staff issued RAI 2.4.4-1 to request the applicant to provide justification for excluding the turbine pedestal from the scope of license renewal. In addition, considering the plant's current licensing basis, the applicant was requested to discuss the ATWS and SBO systems/components identified in Section 2.4.4 and their spatial interaction with the turbine pedestal.

By letter dated February 27, 2008, the applicant provided the following response to RAI 2.4.4-1.

An integral foundation system is provided for both turbine building and the turbine pedestal. The turbine generator pedestal is isolated from the turbine building structure above the foundation. The turbine building is in scope because of its proximity to Class I structures. Cascading effects of the turbine pedestal on the main turbine building is not required to be considered. Therefore, the turbine pedestal is not in the scope of license renewal. However, the turbine pedestal is in scope under maintenance rule and inspected under the Structural Monitoring Program.

Some of the raceways and supports for the turbine impulse input signal to the AMSAC system and the output signal to the turbine trip solenoids that are mounted to the turbine pedestal are within the scope of license renewal. As per NUREG-1800 for 10 CFR 54.4(a)(3), an applicant need not consider second level support systems. This condition does not need the turbine pedestal to be included in scope of license renewal because as per NUREG-1800 for 10 CFR 54.4(a)(3), an applicant need not consider second level support systems.

Considering that, under the current VEGP licensing basis, the interaction between the turbine pedestal and turbine building is not required to be evaluated. The turbine pedestal is currently inspected under the Structural Monitoring Program, and as discussed in NUREG-1800, Table 2.1-2, for 10 CFR 54.4(a)(3); a second level support system (i.e., turbine pedestal) need not be considered in the scope of license renewal, and as such, the staff finds the applicant's response to RAI 2.4.4-1 acceptable.

In RAI 2.4.4-2, dated January 28, 2008, the staff requested the applicant to provide justification for excluding the turbine building bridge crane from the scope of license renewal.

By letter dated February 27, 2008, the applicant provided the response to RAI 2.4.4-2 and stated that the turbine building bridge crane is in a seismic Category II structure and does not have a license renewal intended function. The applicant also referred to the response to RAI 2.1-2. In RAI 2.1-2, the staff requested that the applicant provide the rational and basis for not including nonsafety-related SCs in the vicinity of safety-related SCs in the turbine building within the scope of license renewal. In response to RAI 2.1-2, the applicant provided justification that

while VEGP conservatively classified a number of components in the turbine building as safety-related, these components are either strictly anticipatory, perform no safety function, or are not credited in the accident analysis. As such, the provisions of 10 CFR 54.4(a)(2) do not apply and no other components in the turbine building are considered in the scope of license renewal.

Since the components in the turbine building are either anticipatory, perform no safety function and are not credited in the accident analysis, the staff finds the exclusion of the turbine building bridge crane from the scope of license renewal acceptable.

2.4.4.3 Conclusion

The staff reviewed the LRA, UFSAR, and RAI responses to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the turbine building SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.5 Tunnels and Duct Banks

2.4.5.1 Summary of Technical Information in the Application

LRA Section 2.4.5 describes the tunnels and duct banks, which include mechanical piping tunnels, electrical cable tunnels, duct banks, and valve and pull boxes. The radwaste transfer tunnel is not evaluated in this structures grouping but as part of the radwaste structures grouping in Section 2.4.10 of the LRA.

The Category I tunnels within the scope of license renewal consist of main steam, NSCW, diesel generator piping, diesel generator electric, AFW, turbine electric, and electric steam boiler tunnels. The main steam and electric steam boiler tunnels are designed to seismic Category I criteria and for pipe break loads due to their proximity to, and required interface with other seismic Category I structures; however, the design did not have to consider the effects of tornado missiles.

The Category I box-like, reinforced concrete tunnels are buried either completely or with roofs exposed at or near grade level and house piping and electrical trays. The main steam tunnel roof is mainly grating instead of concrete for venting in the event of postulated pipe breaks. The auxiliary feedwater tunnels are covered with removable concrete slabs that are bolted down to prevent them from becoming missiles in a postulated AFW line break. The underground electrical duct banks for safety-related electrical cables to and from safety-related buildings and equipment are rectangular reinforced concrete structures poured in place around PVC conduit. Also included are nonsafety-related duct runs for SBO (e.g., for the high-voltage switchyard).

Rectangular reinforced concrete valve boxes and pull boxes with steel or aluminum covers for safety-related boxes and aluminum covers for nonsafety-related boxes are located strategically for above-ground access to isolation valves and to cables in buried piping and cable runs routed through the pull boxes to appropriate duct banks.

The tunnels and duct banks contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the tunnels and duct banks

potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the tunnels and duct banks perform functions that support fire protection, ATWS, and SBO.

LRA Table 2.4.5 identifies tunnels and duct banks component types within the scope of license renewal and subject to an AMR.

2.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.5 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

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

2.4.5.3 Conclusion

The staff reviewed the LRA and UFSAR to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the tunnels and duct banks SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.6 Nuclear Service Cooling Water Structures

2.4.6.1 Summary of Technical Information in the Application

LRA Section 2.4.6 describes the NSCW structures, which include the NSCW cooling towers and NSCW valve houses and consist of four NSCW cooling towers (two per reactor unit) and their valve houses. The NSCW structures are seismic Category I safety-related structures designed to withstand the load combinations defined in the UFSAR. The NSCW towers and valve houses support and protect the appropriate NSCW system components during normal plant operation and shutdown conditions as well as during earthquakes, extreme wind, tornadoes, and other abnormal conditions of postulated accidents. The NSCW towers are relied upon as the ultimate heat sink to support normal operation, safe shutdown, and post-accident heat loads.

Each NSCW cooling tower, comprised of a cooling tower superstructure and a below-grade storage basin, is a reinforced concrete cylindrical shell with a concrete basemat, flat roof deck and supported on a 9-foot thick circular mat foundation.

The NSCW valve house next to each NSCW tower is a transition structure which protects the piping, valves, and electrical supply running from the NSCW tunnels into the tower. The valve houses are irregularly-shaped reinforced concrete structures with roofs approximately 14 feet above and basemat tops approximately 14 feet below grade to match the NSCW tunnels. The NSCW valve house is supported on a 6-foot thick mat foundation.

The NSCW structures contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the NSCW structures could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the NSCW structures perform functions that support fire protection.

LRA Table 2.4.6 identifies NSCW structures component types within the scope of license renewal and subject to an AMR.

2.4.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.6 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

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

2.4.6.3 Conclusion

The staff reviewed the LRA and UFSAR to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the NSCW structures SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.7 Concrete Tank And Valve House Structures

2.4.7.1 Summary of Technical Information in the Application

LRA Section 2.4.7 describes the concrete tank and valve house structures, which include the condensate storage tanks and valve houses, reactor makeup water storage tanks, and RWST. Each unit has two dedicated condensate storage tanks, one reactor makeup water storage tank, and one RWST.

The condensate storage tank is a seismic Category I, safety-related, 480,000-gallon capacity, cylindrical, reinforced concrete shell. Each pair of condensate water storage tanks has a common reinforced concrete valve house protecting piping and equipment from missiles and supported by a combined foundation mat. Perimeter dikes for retention of spilled water are constructed of reinforced concrete integral to the basemat. The condensate storage tank supplies condensate water for the AFW system and for normal make-up and supply to the condenser hot well.

The reactor make-up water storage tank is a seismic Category I, safety-related, 165,000-gallon capacity, cylindrical, reinforced concrete shell supported by a basemat foundation at grade. Tank perimeter dikes for retention of spilled water are constructed of reinforced concrete

integral to the basemat. The reactor make-up water storage tank supplies the RCS makeup water.

The RWST is a seismic Category I, safety-related, 715,500-gallon capacity, cylindrical, reinforced concrete shell supported by a basemat foundation at grade. Perimeter dikes for the retention of spilled water, constructed of reinforced concrete, are integral portions of the basemat.

The RWST is designed to hold enough dilute boric acid solution to fill the refueling canal prior to refueling operations and to provide injection water to support emergency core cooling and containment spray functions.

The concrete tank and valve house structures contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the concrete tank and valve house structures could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the concrete tank and valve house structures perform functions that support fire protection, ATWS, and SBO.

LRA Table 2.4.7 identifies concrete tanks and valve house structures component types within the scope of license renewal and subject to an AMR.

2.4.7.2 Staff Evaluation

The staff reviewed LRA Section 2.4.7 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review, the staff evaluated the structural component functions described in the LRA and UFSAR to verify that the applicant has not omitted, from the scope of license renewal, any SCs with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those SCs, that the applicant has identified as within the scope of license renewal, to verify that the applicant has not omitted any passive and long-lived SCs 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 UFSAR to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the concrete tank and valve house structures SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.8 Switchyard Structures

2.4.8.1 Summary of Technical Information in the Application

LRA Section 2.4.8 describes the switchyard structures, which include the high-voltage and the low-voltage switchyards. The high-voltage switchyard is the connection point for the off-site transmission and generator output lines and for the feeds to the unit startup transformers. The high-voltage switchyard electrical installation connects two preferred power sources from the

offsite transmission lines to the transformer yards as required per 10 CFR Part 50 Appendix A General Design Criterion 17. The high-voltage switchyard structures include a switch house with the primary functions of relieving space congestion in the main control room and locating the switchyard relay panels close to their equipment. The switch house also stores other switchyard equipment.

The low-voltage switchyard adjacent to the turbine building is where the main power, unit startup, and unit auxiliary transformers are located. The low-voltage switchyard electrical installation connects the high-voltage switchyard to the plant. The high- and low-voltage switchyards are connected by both overhead and underground cables.

The switchyard structures perform functions that support SBO.

LRA Table 2.4.8 identifies switchyard structures component types within the scope of license renewal and subject to an AMR.

2.4.8.2 Staff Evaluation

The staff reviewed LRA Section 2.4.8 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review, the staff evaluated the structural component functions described in the LRA and UFSAR to verify that the applicant has not omitted, from the scope of license renewal, any SCs with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those SCs that the applicant has identified as, within the scope of license renewal, to verify that the applicant has not omitted any passive and long-lived SCs 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 UFSAR to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the switchyard structures SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.9 Fire Protection Structures

2.4.9.1 Summary of Technical Information in the Application

LRA Section 2.4.9 describes the fire protection structures, which include the fire water pumphouse and the structural support feature of the fire water storage tanks.

The primary function of the fire pumphouse is to house conventional fire protection water pumps for extinguishing fires. The fire water pumphouse provide structural support, fire barrier separation, and environmental protection for the fire pumps and their auxiliary components. Only the fire protection features, including fire-rated block walls, equipment pedestals, and the concrete building foundation are within the scope of license renewal.

There are two fire water pumphouses, No. 1 with one electric motor-driven fire pump and one electric motor-driven jockey pump and No. 2 with two diesel-driven fire pumps and one electric motor-driven jockey pump. The floor slab, perimeter footing, and equipment block pads consist of a reinforced concrete mat slab. The one-story concrete masonry buildings have steel-framed concrete roofs supported by steel decking.

The fire water storage tank foundations support two separate fire water storage tanks. The boundary includes a reinforced concrete ring beam and a mat of oiled sand inside the ring beam and underneath the bottom of the tanks. Two 300,000-gallon fire water storage tanks are adjacent to the fire water pumphouses. The fire protection tanks are vertically cylindrical, flat-bottom tanks made of steel plate.

The failure of nonsafety-related SCs in the fire protection structures could potentially prevent the satisfactory accomplishment of a safety-related function. The fire protection structures also perform functions that support fire protection.

LRA Table 2.4.9 identifies fire protection structures component types within the scope of license renewal and subject to an AMR.

2.4.9.2 Staff Evaluation

The staff reviewed LRA Section 2.4.9 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of the LRA Section 2.4.9, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the fire protection structures. Therefore, the staff issued its RAI by letter dated January 28, 2008 to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1).

The following discussion describes the staff's RAI related to the LRA Section 2.4.9 and the corresponding applicant response.

By letter dated January 28, 2008 the staff issued RAI 2.4.9-1 to request the applicant to provide information relative to proximity (spatial interaction) of the demineralized water storage tank and the electrical fire pump house No. 1 considering the current VEGP licensing basis.

By letter dated February 27, 2008, the applicant provided its response to RAI 2.4.9-1 and stated that the Fire Protection System components contained in electrical fire pump house No. 1, including the pump house structure, are non-safety related components that are in scope for license renewal for 10 CFR 54.4(a)(3) criteria. The non-safety related Demineralized Water Storage Tank is not in scope for 10 CFR 54.4(a)(2) spatial interaction criteria relative to electrical fire pump house No. 1 because those criteria do not apply to non-safety related systems or components which could affect other nonsafety-related systems or components.

In its response, the applicant provided clarification and confirmed that within the current VEGP licensing basis the spatial interaction between nonsafety-related SCs which could affect other nonsafety-related SCs need not be considered. Therefore, the staff finds the applicant's response to RAI 2.4.9-1 acceptable.

2.4.9.3 Conclusion

The staff reviewed the LRA, UFSAR, and RAI response to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the fire protection structures SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.10 Radwaste Structures

2.4.10.1 Summary of Technical Information in the Application

LRA Section 2.4.10 describes the radwaste structures, which house equipment and provide space for processing, packaging, and storage of radioactive wastes generated in normal plant operation. The radwaste structures in the scope of license renewal include the following:

- radwaste transfer tunnel
- radwaste transfer building
- dry active waste warehouse
- dry active waste processing facility
- radwaste processing facility
- alternate radwaste building

The DAW buildings consist of processing and storage buildings located in the southwest portion of the owner-controlled area. These metal-siding buildings, supported on base slabs, have precast concrete panels and concrete masonry walls for shielding. The roofs are metal panels supported by steel beams. The processing building houses equipment for processing dry waste and the storage building stores it for offsite shipment. The grade elevation is above that required for natural flood protection. Curbs and ramps in radioactive areas are provided to contain water from fire sprinkler actuation.

The radwaste processing facility, located between the solidification and the field support buildings, is a concrete building supported on a slab to house process equipment for handling radioactive liquids, resins, and filters. The facility has a subterranean demineralizer vault, subterranean high-integrity container storage vaults, a rollup door for a truck bay, and a 40-ton bridge crane to service equipment. The slab and shield walls inside the building are designed to retain radioactive liquids.

The alternate radwaste building and its systems and equipment were designed to process liquid and solid waste without utilizing the solidification systems and evaporators of the original plant design. This metal-siding building, which formerly housed the liquid radwaste systems, is supported on a base slab. The building basemat has curbing to retain radioactive liquid. It contains a demineralizer vault, high-integrity container system storage vault, laydown area, and a truck-trailer loading bay. Allotted areas are for staging process shields and process skids.

The radwaste transfer building has two-stories with the basemat located at grade. This building and the radwaste transfer tunnel are no longer in service and abandoned in place; however, the radwaste transfer building has a fire damper on the fire-rated west wall credited with preventing

smoke and fire from entering the auxiliary building through the radwaste transfer tunnel, and other fire protection equipment with its supports is also in this building.

The reinforced-concrete radwaste transfer tunnel connects the auxiliary, radwaste transfer, and radwaste solidification buildings and houses pipes for transferring liquid and slurry wastes to the radwaste solidification building (which is abandoned in place), pipes for related services, and a walkway for access. Though the radwaste transfer tunnel is abandoned in place, a portion of it is within the scope of license renewal because of the fire protection and electrical components for fire protection that pass through it. Conservatively, the tunnel from the auxiliary building to the entrance of the radwaste transfer building (concrete structure and fire protection supports) and south end of the tunnel (support for in-scope electrical commodities only) are within the scope of license renewal.

The radwaste structures perform functions that support fire protection.

LRA Table 2.4.10 identifies radwaste structures component types within the scope of license renewal and subject to an AMR.

2.4.10.2 Staff Evaluation

The staff reviewed LRA Section 2.4.10 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review, the staff evaluated the structural component functions, described in the LRA and UFSAR, to verify that the applicant has not omitted from the scope of license renewal any SCs with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those SCs that the applicant has identified, as within the scope of license renewal, to verify that the applicant has not omitted any passive and long-lived SCs 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 UFSAR to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the radwaste structures SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.11 Auxiliary Feedwater Pumphouse Structures

2.4.11.1 Summary of Technical Information in the Application

LRA Section 2.4.11 describes the AFW pumphouse structures, including the AFW pumps and auxiliary support systems. The AFW pumphouse is a seismic Category I, safety-related structure.

The one-story, rectangular, reinforced concrete AFW pumphouses (one for each unit) extend 22 feet above grade and are supported on basemat foundations four feet below grade. Four interior walls separate the steam- and electric-driven pumps. Roof hatches allow pump access.

Separation walls between pumps and tanks guard against fire, flooding, and heat.

The AFW pumphouse structures contain safety-related components that are relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the AFW pumphouse structures could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the AFW pumphouse structures perform functions that support fire protection, ATWS, and SBO.

LRA Table 2.4.11 identifies AFW pumphouse structures component types within the scope of license renewal and subject to an AMR.

2.4.11.2 Staff Evaluation

The staff reviewed LRA Section 2.4.11 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review, the staff evaluated the structural component functions described in the LRA and UFSAR to verify that the applicant has not omitted, from the scope of license renewal, any SCs with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those SCs, that the applicant has identified as within the scope of license renewal, to verify that the applicant has not omitted any passive and long-lived SCs 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 UFSAR to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the auxiliary feedwater pumphouse structures SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.12 Component Supports and Bulk Commodities

2.4.12.1 Summary of Technical Information in the Application

LRA Section 2.4.12 describes the component supports and bulk commodities, which include the following:

- electrical raceway supports
- HVAC duct supports
- pipe supports
- pipe whip restraints
- raceway system
- miscellaneous cranes and hoists

There are physical interfaces with the structure, system, or component supported and with the building structural element anchoring the support. A primary function of a support is to provide anchorage for DBEs so the supported element can perform its intended function. Items within the scope of license renewal include support members, welds, bolted connections, anchorage

(including base plate and grout) to the building structure, spring hangers, guides, and building concrete at bolt/anchorage locations.

The major RCS component group includes the supports and support anchorage for ASME Code class piping and components like pumps and heat exchangers. Components evaluated in this group include support structural members (e.g., welds, bolting) that comprise the interface between the structure and the mechanical component. The reactor pressure vessel is supported by four seats under two hot leg and two cold leg nozzles spaced approximately 90 ° apart in the primary shield wall. The support seats carry the vertical loads to the embedded steel welds under each support, while the embedded steel welds in the primary shield wall carry the radial and tangential loads.

Four steel columns vertically support the steam generator. Bearing blocks and a steel beam spanning the inside of the walls supply a lower lateral component support. The upper lateral component support consists of a bearing ring located near the steam generator center of gravity.

Each reactor coolant pump support consists of three structural steel columns and lateral tie rods. A steel ring bearing plate bolted to the flange of the pressurizer support skirt supports the pressurizer. This ring rests in turn on a structural steel frame attached to steel embeds in the pressurizer compartment walls. Four stops projecting from embeds within the pressurizer compartment walls also support the pressurizer laterally at an upper level.

For supports and support anchorage for cable trays, conduits, HVAC ducts, tube track, and instrument tubing components evaluated include cable trays, conduits, HVAC ducts, and their structural support members, welds, bolting, etc., comprising the interface between the structure and the mechanical, electrical, or instrument component.

For supports and support anchorage for enclosures of various types that contain and support electrical equipment components evaluated include support structural members, welds, bolting, etc., comprising the interface between the structure and the electrical or instrument component.

For supports and support anchorage for equipment not addressed in previous groups (e.g., diesel generators, HVAC fans), components evaluated include support structural members, welds, bolting, etc., comprising the interface between the structure and the component.

For structure and anchorage for miscellaneous support structures (e.g., platforms, pipe whip restraints, and high energy line break barriers) not included in the other support categories, component types include support structural members, welds, bolting, etc., comprising the support structure and its anchorage.

The component supports and bulk commodities contain safety-related components that are relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the component supports and bulk commodities could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the component supports and bulk commodities perform functions that support fire protection, SBO, and EQ.

LRA Table 2.4.12 identifies component supports and bulk commodities within the scope of license renewal and subject to an AMR.

2.4.12.2 Staff Evaluation

The staff reviewed LRA Section 2.4.12 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of the Section 2.4.12, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for component supports and bulk commodities. Therefore, the staff issued its RAI by letter dated January 28, 2008, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following discussion describes the staff's RAI related to LRA Section 2.4.12 and the corresponding applicant response.

By letter dated January 28, 2008, RAI 2.4.12-1 was issued to request the applicant to confirm whether the following items are considered in the scope of license renewal:

- Grout pads for building structural column base plates
- Vibration isolators
- Floor and wall embedded plates/anchorages for RCS primary equipment
- Fluid containment curbs/walls/dikes
- Waterproofing membrane in general
- Any other hoists or lifting devices (e.g. Reactor Vessel Head Lifting Device, Reactor Internals Lifting Device)
- Relevant subcomponents of crane (bridge, trolley, rails/hardware, girders)
- All cranes within in-scope structures

By letter dated February 27, 2008, the applicant responded to RAI 2.4.12-1 and stated that grout pads for building structural column base plates, floor and wall embedded plates/anchorages for RCS primary equipment, fluid containment curbs/walls/dikes, waterproofing membrane, relevant crane sub-components (including bridge and trolley, crane rail, fasteners and rail hardware, girders, etc.), and all the cranes within in-scope structures, unless otherwise stated as not in scope (e.g., Turbine Building Overhead crane) are included in the scope of license renewal. The applicant also stated that lifting devices are considered as tools and rigging components and are not in the scope of license renewal. Furthermore, the applicant stated that vibration isolators are not applicable to VEGP and in a subsequent telephone conference, as summarized in a letter from D. J. Ashley (NRC) to Southern Nuclear Operating Company, Inc. dated March 26, 2008, the applicant agreed to update LRA Section 2.4.12 to remove "vibration isolators" and to clarify that VEGP does not utilize vibration isolators. The applicant, in the same telephone conference, also agreed to update the LRA Table 2.4.12 and Table 3.5.2-12 to change "roof membrane" to "waterproofing membrane." By letter dated March 20, 2008, the applicant amended the LRA to include the above changes.

Considering the above, the staff finds the applicant's response to RAI 2.4.12-1 acceptable.

2.4.12.3 Conclusion

The staff reviewed the LRA, UFSAR, and RAI response to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the component supports and bulk commodities SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5 Scoping and Screening Results - Electrical and Instrumentation and Controls Systems

This section documents the staff's review of the applicant's scoping and screening results for electrical and instrumentation and controls (I&C) systems. Specifically, this section discusses:

- scoping - plant-wide electrical

In accordance with the requirements of 10 CFR 54.21(a)(1), the applicant must list passive, long-lived SCs within the scope of license renewal and subject to an AMR. To verify that the applicant properly implemented its methodology, the staff's review focused on the implementation results. This focus 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.

The staff's evaluation of the information in the LRA was the same for all electrical and I&C systems. The objective was to determine whether the applicant has identified, in accordance with 10 CFR 54.4, components and supporting structures for electrical and I&C systems that appear to meet the license renewal scoping criteria. Similarly, the staff evaluated the applicant's screening results to verify that all passive, long-lived components were subject to an AMR in accordance with 10 CFR 54.21(a)(1).

In its scoping evaluation, the staff reviewed the applicable LRA sections, focusing on components that have not been identified as within the scope of license renewal. The staff reviewed relevant licensing basis documents, including the UFSAR, for each electrical and I&C system to determine whether the applicant has omitted from the scope of license renewal components with intended functions delineated under 10 CFR 54.4(a). The staff also reviewed the licensing basis documents to determine whether the LRA specified all intended functions delineated under 10 CFR 54.4(a). The staff requested additional information to resolve any omissions or discrepancies identified.

After its review of the scoping results, the staff evaluated the applicant's screening results. For those SCs with intended functions, the staff sought to determine whether (1) the functions are performed with moving parts or a change in configuration or properties or (2) the SCs are subject to replacement after a qualified life or specified time period, as described in 10 CFR 54.21(a)(1). For those meeting neither of these criteria, the staff sought to confirm that these SCs were subject to an AMR, as required by 10 CFR 54.21(a)(1). The staff requested additional information to resolve any omissions or discrepancies identified.

2.5.1 Summary of Technical Information in the Application

LRA Section 2.5 describes the scoping - plant-wide electrical, the LRA designation grouping electrical components into one system for scoping, screening, and AMR. This designation is not a VEGP system, not found in the UFSAR, and strictly for convenience in presenting the results of electrical AMRs. LRA Section 2.1.3.3 describes the methodology for identifying electrical and I&C components requiring an AMR. Identification of component types of electrical and I&C systems, mechanical systems, and civil structures within the scope of license renewal was generic. In limited cases (*e.g.*, restoration of offsite power following SBO) component type identification and evaluation was not generic but limited to only the system portion within the scope of license renewal. LRA Section 2.1.2.3.5 describes the evaluation boundaries of the offsite power system for SBO.

During the scoping phase, the applicant determined that the following component types do not meet 10 CFR 54.4(a) criteria:

Metal Enclosed Bus: A metal enclosed bus evaluation determined that VEGP has no metal enclosed bus that supports any license renewal intended function.

Uninsulated Ground Conductors: Nonsafety-related uninsulated ground conductors bond metal raceways, building structural steel, and plant equipment to earth ground through an installed grounding grid and protect personnel and equipment. In the event of a fault in an electrical circuit or component, the ground conductors provide a direct path to ground for fault currents to minimize equipment damage. They do not prevent faults and are not required for equipment operation. Failure of a ground conductor cannot affect any safety functions; therefore, uninsulated ground conductors perform no intended function that meets 10 CFR 54.4(a) criteria and are not within the scope of license renewal.

The in-scope electrical and I&C component types associated with the in-scope electrical and I&C systems contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SCs in the scoping - plant-wide electrical potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the electrical component types perform functions that support fire protection, ATWS, SBO, and EQ.

LRA Table 2.5.1 identifies electrical component types within the scope of license renewal and subject to an AMR:

- cable connections (metallic parts) not subject to 10 CFR 50.49 EQ requirements
- conductor insulation for electrical cables and connections not subject to 10 CFR 50.49 EQ requirements
- conductor insulation for inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements
- connector contacts for electrical connectors exposed to borated water leakage not subject to 10 CFR 50.49 EQ requirements
- fuse holders (not parts of any larger assembly): insulation not subject to 10 CFR 50.49 EQ requirements

- fuse holders (not parts of any larger assembly): metallic clamps
- high-voltage insulators
- switchyard bus and connections
- transmission conductors and connections

The intended functions of the electrical component types within the scope of license renewal include:

- insulation resistance to preclude shorts/grounds and unacceptable current leakage
- electrical conductor insulation from ground and support from the mounting structure
- electrical connections for delivery of voltage, current, or signals to specific electric circuit sections

2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.5 using the evaluation methodology described in the guidance in SRP-LR Section 2.5, "Scoping and Screening Results: Electrical and Instrumentation and Controls Systems."

During its review, the staff evaluated the system functions described in the LRA and UFSAR to verify that the applicant has 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 has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Interim Staff Guidance (ISG)-2, dated April 1, 2002, "Staff Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3))," and later incorporated in SRP-LR Section 2.5.2.1.1 states:

"For purposes of the license renewal rule, the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. This path typically includes switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer and transformer and onsite electrical system, and the associated control circuits and structures. Ensuring that the appropriate offsite power system long-lived passive structures and components that are part of this circuit path are subject to an AMR will assure that the bases underlying the SBO requirements are maintained over the period of extended license."

Section 2.1.2.3.5 of the LRA indicates that the preferred path of offsite power when recovering from a Station Blackout is through the Reserve Auxiliary Transformers (RATs) from the power grid via the 230 kV switchyard, and the 230 kV power circuit breakers represent the scoping boundary. Figure 2.1.2.3.5-1, "Plant Vogtle License Renewal Offsite Power for SBO," shows

that 230 kV circuit breakers 161860 and 161960 for Offsite Power Source 1 and 230 kV circuit breakers 161820 and 161920 for Offsite Power Source 2 represent the scoping boundary. Hence, the scoping boundary is in accordance with SRP-LR Section 2.5.2.1.1, and the staff finds this acceptable.

2.5.3 Conclusion

The staff reviewed the LRA and UFSAR to determine whether the applicant failed to identify any SCs within the scope of license renewal. The staff finds no such omissions. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the electrical component types within the scope of license renewal, as required by 10 CFR 54.4(a), and those 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, "Structures and Components Subject to AMR." The staff concludes that the applicant's scoping and screening methodology is consistent with 10 CFR 54.21(a)(1) requirements and the staff's position on the treatment of safety-related and nonsafety-related SCs within the scope of license renewal and that the SCs requiring an AMR is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

On the basis of its review, the staff concludes that the applicant has adequately identified systems and components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

The staff concludes that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB, and any changes made to the CLB, in order to comply with 10 CFR 54.29(a), with the Atomic Energy Act of 1954, as amended, and with NRC regulations.