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NUREG-1916, Vol. 1

Safety Evaluation Report

Related to the License Renewal of Shearon Harris Nuclear Power Plant, Unit 1

Docket No. 50-400

Carolina Power & Light Company

Office of Nuclear Reactor Regulation

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Prepared by
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Office of Nuclear Reactor Regulation

ABSTRACT

This safety evaluation report (SER) documents the technical review of the Shearon Harris Nuclear Power Plant (HNP), Unit 1, license renewal application (LRA) by the United States (US) Nuclear Regulatory Commission (NRC) staff (the staff). By letter dated November 14, 2006, Carolina Power & Light (CP&L) Company, doing business as Progress Energy Carolinas, Inc., 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." CP&L requests renewal of the Unit 1 operating license (Facility Operating License Number NPF-63) for a period of 20 years beyond the current expiration at midnight October 24, 2026, for Unit 1.

HNP is located approximately 16 miles southwest of Raleigh, NC., and 15 miles northeast of Sanford, NC. The NRC issued the construction permit for Unit 1 on January 27, 1978, and operating license on January 12, 1987. Unit 1 is of a dry ambient pressurized water reactor design. Westinghouse supplied the nuclear steam supply system and Daniel International originally designed and constructed the balance of the plant with the assistance of its agent, Ebasco. The Unit 1 licensed power output is 2900 megawatt thermal with a gross electrical output of approximately 900 megawatt electric.

This SER presents the status of the staff's review of information submitted through July 21, 2008, the cutoff date for consideration in the SER. The staff identified an open item and two confirmatory items that were resolved before the staff made a final determination on the application. SER Sections 1.5 and 1.6 summarizes these items and their resolution. Section 6.0 provides the staff's final conclusion on the review of the HNP LRA.

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ABBREVIATIONS

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
AMP	aging management program
AMR	aging management review
AMSAC	ATWS mitigating system actuation circuitry
ANSI	American National Standards Institute
ART	adjusted reference temperature
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATWS	anticipated transient without scram
BMV	bare metal visual
BOP	balance of plant
BTP	Branch Technical Position
BTRS	boron thermal regeneration system
BWR	boiling water reactor
CASS	cast austenitic stainless steel
CCW	component cooling water
CFR	*Code of Federal Regulations*
CI	confirmatory item
CIV	containment isolation valve
CLB	current licensing basis
CMAA	Crane Manufacturers Association of America
CP&L	Carolina Power & Light Company, a Progress Energy Company
CRDM	control rod drive mechanism
CSI	charging and safety injection
CSIP	charging and safety injection pump
CSS	containment spray system
CST	condensate storage tank
CTMU	cooling tower makeup
CUF	cumulative usage factor
CVCS	chemical and volume control system
C_VUSE	upper shelf energy determined by charpy v-notch test results
CWS	circulating water system
DBA	design basis accident
DBD	design basis document
DBE	design basis event
DEH	digital-electric hydraulic

ECCS	emergency core cooling system
EDB	(PassPort) equipment database
EDG	emergency diesel generator
EFPY	effective full-power year
EOL	end of life
EPRI	Electric Power Research Institute
EQ	environmental qualification
EQML	environmental qualification master list
ESF	engineered safety feature
ESW	emergency service water
FAC	flow-accelerated corrosion
FERC	Federal Energy Regulatory Commission
FHB	fuel handling building
FR	*Federal Register*
FSAR	final safety analysis report
ft.	foot, feet
GALL	Generic Aging Lessons Learned Report
GDC	general design criteria or general design criterion
GEIS	Generic Environmental Impact Statement
GL	generic letter
GSI	generic safety issue
HEPA	high efficiency particulate air
HHSI	high head safety injection
HNP	Shearon Harris Nuclear Power Plant
HVAC	heating, ventilation, and air conditioning
I&C	instrumentation and controls
IASCC	irradiation assisted stress corrosion cracking
IEEE	Institute of Electrical and Electronics Engineers
IGSCC	intergranular stress corrosion cracking
IN	Information Notice
INPO	Institute of Nuclear Power Operations
IPA	integrated plant assessment
ISG	interim staff guidance
ISI	inservice inspection
KV	kilovolt
LBB	leak-before-break
LHSI	low head safety injection
LOCA	loss of coolant accident
LRA	license renewal application
LRBD	license renewal boundary drawing
LTOP	low-temperature over-pressure protection

MEB	metal enclosed bus
MeV	million electron volts
MFIV	main feedwater isolation valve
MIC	microbiologically influenced corrosion
MSLB	main steam line break
MSR	moisture separator reheater
N/A	not applicable
NCR	nuclear condition reports
NDE	nondestructive examination
NEI	Nuclear Energy Institute
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NPS	nominal pipe size
NRC	Nuclear Regulatory Commission
NSSS	nuclear steam supply system
NSW	normal service water
NUREG	designation of publications prepared by the NRC staff
OI	open item
OM	operation and maintenance
OPB	outside the power block
PASS	post-accident sampling system
pH	concentration of hydrogen ions
PMID	preventive maintenance identification number
PORV	power-operated relief valve
PRT	pressurizer relief tank
PSI	passive safety injection
PSS	primary sampling system
P-T	pressure-temperature
PTS	pressurized thermal shock
PVC	polyvinyl chloride
PWR	pressurized water reactor
PWSCC	primary water stress corrosion cracking
QA	quality assurance
RAB	reactor auxiliary building
RAI	request for additional information
RCCA	rod cluster control assembly
RCDT	reactor coolant drain tank
RCP	reactor coolant pump
RCPB	reactor coolant pressure boundary
RCS	reactor coolant system
RFO	refueling outage
RG	Regulatory Guide
RHR	residual heat removal

RPV	reactor pressure vessel
RPVH	reactor pressure vessel head
RT_{NDT}	reference temperature nil ductility transition
RT_{PTS}	reference temperature for pressurized thermal shock
RVI	reactor vessel internals
RVLIS	reactor vessel level indicating system
RWST	refueling water storage tank
SBO	station blackout
SC	structure and component
SCC	stress-corrosion cracking
SER	safety evaluation report
SRP-LR	Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants
SSC	system, structure, and component
SSE	safe-shutdown earthquake
SUT	startup transformer
TAC	technical assignment control (internal NRC work management tool)
TLAA	time-limited aging analysis
TS	technical specification
UHS	ultimate heat sink
US	United States
USE	upper-shelf energy
UT	ultrasonic testing
VCT	volume control tank
VHP	vessel head penetration
WCAP	Westinghouse Commercial Atomic Power
WOG	Westinghouse Owners Group
WPB	waste processing building
WPS	waste processing system

SECTION 1

INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

This document is a safety evaluation report (SER) on the license renewal application (LRA) for Shearon Harris Nuclear Power Plant (HNP), Unit 1, as filed by the Carolina Power & Light Company (CP&L or the applicant). By letter dated November 14, 2006, CP&L submitted its application to the US Nuclear Regulatory Commission (NRC) for renewal of the HNP operating license 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 Maurice Heath. Mr. Heath may be contacted by telephone at 301-415-3137 or by electronic mail at MLH5@nrc.gov. Alternatively, written correspondence may be sent to the following address:

Division of License Renewal
US Nuclear Regulatory Commission
Washington, DC 20555-0001
Attention: Maurice Heath, Mail Stop 011-F1

In its November 14, 2006, submission letter, the applicant requested renewal of the operating license issued under Section 103 (Operating License No. NPF-63) of the Atomic Energy Act of 1954, as amended, for Unit 1 for a period of 20 years beyond the current expiration at midnight October 24, 2026, for Unit 1. HNP is located approximately 16 miles southwest of Raleigh, NC., and 15 miles northeast of Sanford, NC. The NRC issued the construction permit for Unit 1 on January 27, 1978, and operating license on January 12, 1987. Unit 1 is of a dry ambient pressurized water reactor three-loop design. Westinghouse supplied the nuclear steam supply system and Daniel International originally designed and constructed the balance of the plant with the assistance of its agent, Ebasco. The Unit 1 licensed power output is 2900 megawatt thermal with a gross electrical output of approximately 900 megawatt electric. The final safety analysis report (FSAR) 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 HNP license renewal is based on the applicant's LRA and on its responses to the staff's requests for additional information. The applicant supplemented the LRA and provided clarifications through its responses to the staff's requests for additional information (RAIs) in audits, meetings, and docketed correspondence. Unless otherwise noted, the staff reviewed and considered information submitted through July 21, 2008. The staff reviewed information received after that date depending on the stage of the safety review and the volume and complexity of the information. The public may view the LRA and all pertinent information and materials, including the FSAR, 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), at Eva. H. Perry Library, 2100 Shepherd's Vineyard Drive, Apex, NC 27502, and at West Regional Library, 4000 Louis Stephens Rd, Cary, NC 27519. 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 unit's proposed operation for an additional 20 years beyond the term of the current operating license. The staff reviewed the LRA in accordance with NRC regulations and the guidance in the US NRC 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 license. 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 renewal for Unit 1. The staff issued plant-specific GEIS Supplement 33, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 3 Regarding Shearon Harris Nuclear Power Plant, Unit 1," on August 13, 2008.

1.2 License Renewal 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 periods of 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 found 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 staff 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 staff made these rule changes to ensure that important systems, structures, and components (SSCs) will continue to perform their intended functions during the period of extended operation. In addition, the 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 staff 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.

1.2.1 Safety Review

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

(1) The regulatory process is adequate to ensure that the licensing bases of all currently operating plants 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 FSAR 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.

1.2.2 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 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 April 18, 2007, in Apex, NC, to identify plant-specific environmental issues. The draft, plant-specific GEIS Supplement 33 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 January 30, 2008, in Apex, NC, to discuss draft, plant-specific GEIS Supplement 33. After considering comments on the draft, the staff published a final plant-specific supplement separately from this report.

1.3 Principal Review Matters

Part 54 of 10 CFR 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, "Standards for Issuance of a Renewed License," of 10 CFR 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 agreement shall terminate at the time of expiration of that license specified in Item 3 of the Attachment to the agreement. Item 3 of the Attachment to the indemnity agreement, as amended, lists operating license NPF-63. The Company requests that conforming changes be made to the indemnity agreement, and/or the Attachment to the agreement, as required, to specify the extension of the agreement until the expiration date of the renewed HNP operating license as sought in this application.

The staff intends to maintain the original license number upon issuance of the renewed license, 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 FSAR 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 FSAR supplement. By letter dated May 20, 2007, the applicant submitted an LRA update which summarizes the CLB changes that have occurred during the staff's review of the LRA. This submission satisfies 10 CFR 54.21(b).

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 HNP operating license. 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," 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.	3.0.3.2.3
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.	N/A

1.5 Summary of Open Items

On March 18, 2008, at the time the SER with Open Item was published the staff identified the following open item (OI). An item is considered open if, in the staff's judgement, it has not been demonstrated to meet all applicable regulatory requirements at the time of the issuance of the SER with Open Item. The staff has assigned a unique identifying number to each OI. Additional information submitted through May 30, 2008 addressed OI-2.2.

OI-2.2: (Section 2.2 Plant Level Scoping Results)

In LRA Section 2.3.4.6, Feedwater System, the applicant did not identify the feedwater isolation function in scope for license renewal under 10 CFR 54.4(a)(1). In Section 15.1.5 of the applicant's FSAR, it states that the feedwater isolation valves and regulating valves provide a safety-related function; isolation of feedwater in the event of a main steam line break. The staff's position was that the FSAR description of the feedwater isolation and regulating valves met the criteria defined by 10 CFR 54.4(a)(1). In response to RAI 2.1.1.2-1, the applicant stated that based on their evaluation of the feedwater regulating and bypass valves, these valves did not meet the license renewal definition of 10 CFR 54.4(a)(1) because they are not safety-related components. However, the components were included within the scope of license renewal for 10 CFR 54.4(a)(2). The staff initially found the applicant's answer to RAI response 2.1.1.2-1 inconsistent with 10 CFR 54.4(a)(1).

In RAI 2.3.4.6-2 the staff asked the applicant to further evaluate the classification of this equipment and justify their position. The applicant's response, dated January 22, 2008, maintains that, though these valves perform a function identified in 10 CFR 54.4(a)(1) and thus these valves are important to safety, they are not safety-related and therefore, these valves only meet the criteria of 10 CFR 54.4(a)(2). The technical staff's position remained that the main feedwater regulating and bypass valves perform a 10 CFR 54.4(a)(1) function, even though they are nonsafety-related components; and therefore, they should be included in scope under 10 CFR 54.4(a)(1), consistent with Section 3.1.1 of NEI 95-10, which the applicant referenced as the basis for their scoping methodology. In addition, the function to provide main feedwater isolation should be included in scope under 10 CFR 54.4(a)(1).

By letter dated May 30, 2008, the applicant provided a discussion of the proposed resolution to Open Item 2.2 and LRA Amendment 8. The applicant reviewed the functions and qualifications of the feedwater system with respect to the HNP CLB. The LRA amendment revises LRA Section 2.3.4.6 to add a description of the feedwater system safety function to terminate feedwater flow following certain main steam line break accidents, and adds the following 10 CFR 54.4(a)(1) function to the table of intended functions: supports isolation of feedwater flow following certain main steam line breaks. This inclusion resolves the staff's concern that the feedwater isolation function was not identified as an intended function of the feedwater system in LRA Section 2.3.4.6.

With respect to the staff's comment to include the feedwater regulating and bypass valves into scope under 10 CF 54.4(a)(1), the applicant proposed to take exception to the scoping methodology described in Section 3.1.1 of NEI 95-10, and rely solely upon the HNP CLB to make a determination of the scoping designation for the feedwater regulating and bypass valves. Based upon the functions and qualification of these valves described in the HNP CLB, the applicant concluded that the feedwater regulating and bypass valves are properly classified as nonsafety-related components that function to provide redundant feedwater isolation, as described in the FSAR. The applicant noted that credit for nonsafety-related components as a backup to safety-related components in mitigating breaks in seismically qualified steam line piping is consistent with regulatory guidance provided in the acceptance criteria of Section 15.1.5, "Steam System Piping Failures Inside and Outside of Containment (PWR)," of the Standard Review Plan (NUREG-0800) and is also consistent with the specific Commission allowance for feedwater regulating and bypass valves to be nonsafety-related, as discussed in NUREG-0138, "Staff Discussion of Fifteen Technical Issues Listed in Attachment to November 3, 1976 Memorandum from Director, NRR to NRR Staff." The applicant concluded that, consistent with the HNP CLB, regulatory guidance, and NUREG-0138, the feedwater regulating and bypass valves are properly classified as nonsafety-related. As such, the applicant determined that these valves meet the criteria to be included in scope under 10 CFR 54.4(a)(2).

The staff has reviewed the applicant's responses to the open item. A review of the HNP CLB verifies that the feedwater regulating and bypass valves are properly classified as nonsafety-related. Further, a failure of these valves could prevent the accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, these valves should be in scope for license renewal under 10 CFR 54.4(a)(2).

In the statement of considerations (SOC) to the revision of 10 CFR 54 (Federal Register, Volume 60, Number 88, dated May 8, 1995) the Commission reaffirmed its position that hypothetical failures that could result from system interdependencies that are not part of the CLB and had not been previously experienced did not have to be considered in identifying SSCs that are in scope for license renewal under 10 CFR 54.4(a)(2). The CLB for the feedwater regulating and bypass valves does not include protection of these components from hazards such as missiles and high energy line break effects. Thus, consistent with the HNP CLB and the 10 CFR Part 54 SOC, age-related degradation of nearby components that could impact the ability of the valves to perform their intended function (isolation) through missile generation or high energy line break effects does not have to be considered. In addition, as described in Section 2.3.4.6 of the LRA, the feedwater regulating and bypass valves will close (achieving the isolation function) in response to a main feedwater isolation signal (MFIS), loss of power signal from the reactor protection system (RPS), and loss of control air or loss of DC power to the solenoid valves. The staff has not identified any component failures that are postulated within the HNP CLB or have been experienced at the plant that could impact the ability of the feedwater regulating and bypass valves from achieving their intended function (isolation).

Based on the staff review of the cited documents, the staff finds that the feedwater regulating and bypass valves are properly classified as nonsafety-related and thus, should be in scope for license renewal under 10 CFR 54.4(a)(2). Further, the staff finds that there are no additional components that should be included within scope of license renewal for having the potential to impact the achievement of the isolation function of these valves because there are no components failures postulated within the HNP CLB or have been experienced at the plant that impact the ability of the feedwater regulating and bypass valves from achieving their intended function (isolation).

Consistent with the requirements of 10 CFR 54.4, the applicant has correctly identified the intended functions of the feedwater system and the amended LRA contains sufficient information to identify feedwater system components within the scope of license renewal. The amendment to the LRA does not bring additional components within the scope of license renewal and the staff has identified no omissions. Therefore, Open Item 2.2 is closed.

1.6 Summary of Confirmatory Items

On March 18, 2008, at the time the SER with Open Item was published the staff identified the following confirmatory items (CIs). An item is considered confirmatory if the staff and the applicant have reached a satisfactory resolution but the applicant has not yet formally submitted the resolution. The staff has assigned a unique identifying number to each CI. Additional information submitted through May 30, 2008 addressed CI-3.4-1 and CI 4.3.

CI-3.4-1: (SER Section3.4 - Steam and Power Conversion Systems)

In LRA Section 3.4, the applicant has credited its External Surfaces Monitoring Program, in conjunction with the program enhancement in LRA Commitment No. 18, to manage changes in materials and cracking for elastomeric piping, piping components and piping elements, as well as thermoplastic piping, piping components and piping elements.

The staff determined that Commitment No. 18: (1) did not specifically reference elastomeric or thermoplastic materials, (2) was made on a matter that is not specifically addressed within the scope of GALL AMP XI.M36, "External Surfaces Monitoring," and (3) did not provide any provision that the specific inspection method and acceptance criteria for future inspections of elastomeric and thermoplastic components under the External Surfaces Monitoring Program would be submitted for NRC review and approval. The staff raised these issues in a RAI letter dated January 7, 2008.

The staff reviewed the applicant's responses dated January 17, 2008 and found that the responses did not address all elastomeric and thermoplastic components. The staff was not satisfied with the applicant's response. The staff discussed the issue with the applicant on a conference call and it was agreed that the elastomeric and thermoplastic (with the exception of the condensate storage tank diaphram) components will be placed in a Preventive Maintenance Program with periodic replacement. The condensate storage tank diaphram will be added to the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program. The applicant agreed to provide this in a docketed correspondence.

The applicant responded to Confirmatory Item (CI) 3.4-1 in CP&L Letter No. HNP-08-029, dated April 23, 2008. The applicant stated that, with the exception of the thermoplastic diaphragm used in the design of the condensate storage tank (CST), the elastomeric and polymetric components identified in RAIs 3.4-2, 3.4-3, 3.4-4, 3.4-5, 3.4-7 and 3.4-8 will be treated as consumables that are evaluated and periodically replaced under the applicant's preventative maintenance program. The applicant stated that the frequency for replacement would be based on either preventative maintenance program basis documents, Technical Specification requirements, the FSAR, vendor recommendations, equipment history, site and industry operating experience or requirements developed under other site-specific programs or documents. The applicant stated, that as a result of this change in LRA position these elastomeric or thermoplastic component will not be required to remain screened in as being within the scope of an aging management review because the components would no longer be categorized as passive, long-lived components.

The applicant stated that an amendment would be needed to implement this change in the LRA. In addition, the applicant provided LRA Commitment No. 36 which says:

> HNP will replace the subject elastomeric and thermoplastic components referenced in RAIs 3.4-2, 3.4-3, 3.4-4, 3.4-5, and 3.4-7 and add them to the Preventive Maintenance Program. HNP will perform an evaluation to determine the frequency of periodic replacement of the components during the period of extended operation based on the guidance in the HNP Preventive Maintenance Program.

The staff verified that the applicant has incorporated LRA Commitment No. 36 on LRA FSAR Supplement Section A.1.1, and that the applicant made the appropriate amendments of the LRA resulting from this change in LRA position in Enclosure 2 of CP&L Letter No HNP-08-029, dated April 23, 2008.

10 CFR 54.21(a)(1) states that structures and components subject to an aging management review (AMR) are only those structures or components within the scope of license renewal that "perform an intended function, . . . without moving parts or a change in configuration or properties . . .," and that "are not subject to replacement based on a qualified life or specified time period." Since the applicant has committed, in LRA Commitment No. 36, to incorporate these components in the preventative maintenance program and replacing them based on a specified time period that is based on program programs or requirements, or vendor recommendations, the staff finds that, for these components, the applicant has provided a valid basis for removing these elastomeric or thermoplastic components from the scope of an AMR because the change in LRA position is consistent with the requirements of 10 CFR 54.21(a)(1).

To address aging management of cracking and changes in material properties of the elastomeric CST diaphragm, the applicant stated that the component was replaced in 1994 component and periodic inspections are performed every fifth refueling outage under the applicant's Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program. The applicant stated that CST elastomeric diaphragm was last inspected under this existing program in 2006 and that the component was found to be in good condition. The applicant stated that it would continue to use this program to manage cracking and changes in material properties of the CST elastomeric diaphragm during the period of extended operation. The staff finds that this provides an acceptable approach to managing cracking and potential changes on material properties of this diaphragm because the applicant does change the component when necessary and because the applicant is monitoring the component to look for evidence of cracking or parameters that may be indicative of a change in material property (such as chaffing, flaking, etc.).

Based on this review, the staff finds that the applicant has appropriately resolved aging of the elastomeric and thermoplastic components in the steam and power conversion systems. Confirmatory Item 3.4-1 is closed.

<u>CI-4.3:</u> (SER Section 4.3 - Metal Fatigue)

The staff requested the applicant to clarify the apparent discrepancy with two different CUF values for the pressurizer lower head. The staff reviewed the applicant's response dated January 17, 2008, and found that the applicant clarified how the design basis transients for the HNP surge line, charging nozzle, and pressurizer lower head and surge nozzle were redefined based on changes that were made to the plant design. The applicant also stated that, although the plant operational transients had been redefined, the design specification had not been updated. The staff position was that an ASME design report should follow the design specification and that if design conditions change, an updated design specification should reflect the change.

Also, the staff requested that FSAR supplement Section A.1.2.2.10 be updated to reflect that the applicant was crediting its Reactor Coolant Pressure Boundary Metal Fatigue Program as the basis for accepting its TLAA on environmentally-assisted metal fatigue. The HNP surge line, charging nozzle, and pressurizer lower head and surge nozzle, are managed in accordance with 10 CFR 54.21(c)(1)(iii), in that the effects of aging will be managed for the period of extended operation.

The staff discussed the issue with the applicant on a teleconference and the applicant stated that it will add a new commitment to update, prior to the period of extended operation, the piping design specifications to reflect design basis transients and provide an FSAR supplement to address the HNP surge line, charging nozzle, and pressurizer lower head and surge nozzle, in accordance with 10 CFR 54.21(c)(1)(iii).

The applicant responded to Confirmatory Item (CI) 4.3 in CP&L Letter No. HNP-08-029, dated April 23, 2008 (ML081200755). In this letter, the applicant stated that CI 4.3 falls into two issues needing resolution:

1. The need for a commitment on the LRA to address the need to updating the design specification for the charging nozzle, surge line, and lower pressurizer head and surge nozzle to reflect the design basis transients used in the CUF analyses of the components.

2. A need to an amendment of LRA FSAR Section A.1.2.2.10 to reflect that for acceptance of the TLAA on metal fatigue of the charging nozzle, surge line, and lower pressurizer head and surge nozzle will be in accordance with the acceptance criterion in 10 CFR 54.21(c)(1)(iii), in that the Reactor Coolant Pressure Boundary Metal Fatigue Program will be used to manage the effects of metal fatigue on these components for the period of extended operation.

To address issue 1, the applicant provided Commitment No. 37 which said:

> HNP will update the piping design specification to reflect the current design basis operational transients used in the Time-Limited Aging Analyses for the reactor coolant pressure boundary.

The staff verified that LRA Commitment No. 37 was incorporated within the scope of LRA FSAR Supplement Section A.1.1, which provided the applicant's FSAR Supplement summary description for new FSAR Supplement summary descriptions and activities that are needed to ensure adequate aging management during the period of extended operation. The staff finds the applicant's response to CI 4.3 on this matter to be acceptable because the applicant has committed to updating the design specification to address the operational transients that are used on the CUF analyses for the charging nozzle, surge line, and lower pressurizer head and surge nozzle and because the applicant has amended the LRA to place Commitment No. 37 onto the FSAR Supplement for the LRA. CI 4.3 is closed with respect to issue No.1.

To address issue 2, the applicant stated that the following paragraph will be added to the end of FSAR Supplement summary description A.1.2.2.2.10, which was incorporated as an amendment of the LRA in CP&L Letter No. HNP-07-119, dated August 31, 2007.

> The Reactor Vessel Shell and Lower Head and Reactor Vessel Inlet and Outlet Nozzles are addressed in A. 1.2.2.1 and their analyses has been projected through the period of extended operation using 10 CFR 54.21 (c)(1) method (ii). Reactor Coolant Pressure Boundary Piping (ASME Class 1) components are addressed in A.1.2.2.7. For these components, the effects of fatigue will be managed for the period of extended operation in accordance with 10 CFR 54.21 (c)(1)(iii). The pressurizer lower head and surge nozzle are addressed in A. 1.2.2.6 and the effects of fatigue will be managed for the period of extended operation in accordance with 10 CFR 54.21 (c)(1)(iii)."

The staff verified that the applicant has amended the LRA in Enclosure 2 of CP&L Letter No. HNP-08-029, dated April 23, 2008. Based on this review, the staff finds that the applicant provided an acceptable basis for resolving CI 4.3 because the applicant has amended LRA FSAR Supplement Section A.1.2.2.2.10 to indicate that the TLAA on metal fatigue of the charging nozzle, surge line, and pressurizer lower head and surge nozzle will be managed in accordance with the 10 CFR 54.21(c)(1)(iii), and because this is consistent with the applicant's TLAA on metal fatigue of the Class 1 piping components (as provided in LRA Section 4.3.5), which indicates that the Fatigue Monitoring Program will be used to manage the effects of aging for these components in accordance with the TLAA acceptance criterion requirement in 10 CFR 54.21(c)(1)(iii).

Based on this review, the staff finds that the applicant has appropriately addressed the staff's confirmatory item on the TLAA on metal fatigue of the reactor coolant pressure boundary. Confirmatory Item 4.3 is closed.

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 FSAR supplement required by 10 CFR 54.21(d) in the next FSAR update required by 10 CFR 50.71(e) following the issuance of the renewed license.

The second license condition requires future activities described in the FSAR supplement to be completed prior to the period of extended operation.

The third 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.

SECTION 2

STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW

2.1 Scoping and Screening Methodology

2.1.1 Introduction

Title 10, Section 54.21, "Contents of Application Technical Information," of the Code of Federal Regulations (10 CFR Part 54.21) requires for each license renewal application (LRA) an integrated plant assessment (IPA) listing those structures and components (SCs) subject to an aging management review (AMR) from all of the systems, structures, and components (SSCs) within the scope of license renewal.

LRA Section 2.1, "Scoping and Screening Methodology," describes the methodology for identifying SSCs at the Shearon Harris Nuclear Power Plant (HNP) Unit 1 within the scope of license renewal and SCs subject to an AMR. The staff reviewed the Carolina Power & Light Company (CP&L or the applicant) scoping and screening methodology to determine whether it meets the scoping requirements of 10 CFR 54.4(a) and the screening requirements of 10 CFR 54.21.

In developing the scoping and screening methodology for the LRA, the applicant considered the requirements of 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants" (the Rule), statements of consideration on the Rule, and the guidance of Nuclear Energy Institute (NEI) 95-10, Revision 6, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," dated June 2005. The applicant also considered the correspondence between the staff and other applicants.

2.1.2 Summary of Technical Information in the Application

LRA Sections 2 and 3 state the technical information required by 10 CFR 54.4 and 54.21(a). LRA Section 2.1 describes the process for identifying SSCs meeting the license renewal scoping criteria of 10 CFR 54.4(a) and the process for identifying SCs subject to an AMR, as required by 10 CFR 54.21(a)(1). The applicant provided the results of the process for identifying such SCs in the following LRA sections:

- Section 2.2, "Plant Level Scoping Results"
- Section 2.3, "Scoping and Screening Results: Mechanical"
- Section 2.4, "Scoping and Screening Results: Structures"
- Section 2.5, "Scoping and Screening Results: Electrical Components"

LRA Section 3, "Aging Management Review Results," states the applicant's aging management results in the following LRA sections:

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

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

2.1.3 Scoping and Screening Program Review

The staff evaluated the LRA scoping and screening methodology in accordance with the guidance in Section 2.1, "Scoping and Screening Methodology," of United States (US) Nuclear Regulatory Commission (NRC) NUREG-1800, Revision 1, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR), dated September 2005. The following regulations form the basis for the acceptance criteria for the scoping and screening methodology review:

- 10 CFR 54.4(a) as to identification of plant SSCs within the scope of the Rule
- 10 CFR 54.4(b), as to identification of the intended functions of plant systems and structures within the scope of the Rule
- 10 CFR 54.21(a)(1) and 10 CFR 54.21(a)(2) as to the methods utilized by the applicant to identify plant SCs subject to an AMR

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

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

The staff conducted a scoping and screening methodology audit at HNP in North Carolina during the week of April 23-27, 2007. The audit focused on whether the applicant had developed and implemented adequate guidance for the scoping and screening of SSCs by the methodologies in the LRA and the requirements of the Rule. The staff reviewed implementation of the applicant's corporate level license renewal guidelines and procedures, and also HNP project level license renewal basis documents (calculations) describing the applicant's scoping and screening methodology. The staff discussed with the applicant details of the implementation and control of the license renewal program and reviewed administrative control documentation and selected design documentation used by the applicant during the scoping and screening process. The staff reviewed the applicant's processes for quality assurance (QA) for development of the LRA. The staff reviewed the quality attributes of the applicant's aging management program (AMP) activities described in LRA Appendix A, "Final Safety Analysis Report Supplement," and LRA Appendix B, "Aging Management Programs" and the training and qualification of the LRA development team. The staff reviewed scoping and screening results reports for the auxiliary feedwater (AFW) system, post-accident sampling system (PASS), emergency service water (ESW), cooling tower makeup (CTMU) intake structure for the applicant's appropriate implementation of methodology outlined in the administrative controls and for results consistent with the current licensing basis (CLB) documentation.

2.1.3.1 Implementation Procedures and Documentation Sources for Scoping and Screening

The staff reviewed the applicant's scoping and screening implementation procedures as documented in the Audit Report, dated July 17, 2007, to verify whether the process for identifying 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 applicant's process for appropriate consideration of CLB commitments and for adequate implementation of the procedural guidance during the scoping and screening process.

2.1.3.1.1 Summary of Technical Information in the Application

In LRA Section 2.1.1, the applicant addressed the following information sources for the license renewal scoping and screening process:

- CLB documents
- final safety analysis report (FSAR)
- design basis documents (DBDs)
- docketed correspondence
- PassPort equipment database (PassPort EDB)
- maintenance rule database
- plant operating procedures
- system descriptions
- walkdowns
- safety evaluation reports (SERs)
- technical specifications
- topical evaluation reports (calculations) for 10 CFR 54.4(a)(2) and 10 CFR 54.4(a)(3).
- plant piping & instrumentation diagrams (P&IDs)

The license renewal boundary drawings (LRBDs) show the systems within the scope of license renewal highlighted in color.

2.1.3.1.2 Staff Evaluation

Scoping and Screening Implementation Procedures. The staff reviewed the following scoping and screening methodology implementation procedures:

The staff reviewed the applicant's scoping and screening corporate level license renewal implementing guidelines and procedures, including the HNP license renewal project scoping and screening calculations, technical evaluation reports, AMR reports, LRBDs, and other reference documents as documented in the Audit Report, to ensure the guidance was consistent with the requirements of the license renewal rule, 10 CFR 54.4.

The staff found the overall process for implementing 10 CFR Part 54 requirements included in the applicant's license renewal implementing procedures and calculations. The staff found guidance for identifying plant SSCs within the scope of the Rule, including guidelines for identifying SC types within the scope of license renewal subject to an AMR, in the HNP project scoping and screening calculations. The review of these procedures focused on the consistency of the detailed procedural guidance with information in the LRA reflecting implementation of staff positions in the SRP-LR, interim staff guidance documents, and responses to requests for additional information (RAI) dated July 10, 2007.

After reviewing the LRA and supporting documentation, the staff finds LRA Section 2.1 consistent with the scoping and screening methodology instructions. The applicant's methodology has sufficiently detailed guidance for the scoping and screening implementation process followed in the LRA.

Sources of Current Licensing Basis Information.

For HNP, system safety functions are stated in the FSAR, system descriptions, DBDs, the maintenance rule, SSC basis documents for each system, and technical specifications. The staff considered the safety objectives in the FSAR system descriptions and identified objectives meeting the safety-related criteria of 10 CFR 54.4(a)(1) as system intended functions.

The staff reviewed the scope and depth of the applicant's CLB information to verify whether the applicant's methodology had identified all SSCs within the scope of license renewal as well as component types requiring AMRs. As defined in 10 CFR 54.3(a), the CLB is the set of NRC requirements, written applicant commitments for compliance with, and operation within, applicable NRC requirements, and plant-specific design bases docketed and in effect. The CLB includes NRC regulations, orders, license conditions, exemptions, technical specifications, design-basis information in the most recent FSAR update, and applicant commitments made in docketed correspondence like applicant responses to NRC bulletins, generic letters, and enforcement actions as well as commitments in NRC safety evaluations or applicant event reports.

During the audit, the staff reviewed the applicant's information sources and samples of such information, including the FSAR, PassPort EDB, DBDs, technical evaluation reports, and LRBDs that were utilized when determining whether a system, structure or component falls within the scope of 10 CFR 54.4(a)(1), (a)(2), and (a)(3) criteria. The applicant's license renewal project procedures and calculations stipulate the use of the above referenced CLB documents for scoping determination. Other reference documents that were utilized in scoping determination included: the site technical specifications, safety evaluation reports, NRC orders, maintenance rule database, bases and calculations. The reference documents or databases which are not official CLB documents were used for scoping determination; however, their scoping information was confirmed by reference to CLB documents.

In addition, the staff reviewed the applicant's calculations utilized to support identification of SSCs relied upon to demonstrate compliance with the safety-related (a)(1) criterion, nonsafety-related (a)(2) criteria, and the five regulated events referenced in 10 CFR 54.4(a)(3) criteria. The intended functions for criterion (a)(1) referenced the appropriate FSAR sections. The bases documents identified the HNP systems and structures that comply with the (a)(2) and (a)(3) criteria. The applicant's license renewal program guidelines provided a comprehensive listing of documents used to support scoping and screening evaluations. The staff found these design documentation sources to be useful for ensuring that the scope of SSCs identified by the applicant was consistent with the plant's CLB. The staff determined that LRA Section 2.1 provided a description of the CLB and related documents used during the scoping and screening process that is consistent with the requirements of 10 CFR 54.4. The staff found the overall process for implementing 10 CFR Part 54 requirements described in the applicant's project level guidelines and procedures, calculations, and AMRs was consistent with the Rule and industry guidance (approved by the NRC).

2.1.3.1.3 Conclusion

Based on its review of LRA Section 2.1, the 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 considers CLB information consistently with SRP-LR and NEI 95-10 guidance (approved by the NRC) and, therefore, is acceptable.

2.1.3.2 Quality Controls Applied to LRA Development

2.1.3.2.1 Staff Evaluation

The staff reviewed the applicant's quality controls used to ensure adequate implementation of the scoping and screening methodology described in the LRA. Although the applicant did not develop its LRA under a 10 CFR Part 50, Appendix B, QA program, it did develop its license renewal scoping and screening guidance and implementing procedures under such a program. The staff reviewed the applicant's quality control measures which include the previous experience of the applicant's license renewal project personnel, evolution of the corporate level license renewal procedures, the applicant's self-assessments related to license renewal, an industry peer review of the LRA, and a review of the LRA by an internal plant safety sub-committee. While developing the LRA, the applicant's personnel actively participated in the NEI Task Force and on NEI License Renewal Working Groups in the civil, electrical, implementation, and mechanical areas. Other personnel experience included peer reviews of LRAs prepared by other applicants.

The applicant also evolved its corporate level license renewal procedures to enhance quality control. These procedures formed the bases for preparing the plant-specific implementing procedures used in developing the LRA. The applicant developed the procedures in 2000 and has subsequently revised them several times.

The applicant also performed several self-assessments on its license renewal efforts from 2000 though 2006. One such assessment dated April 4, 2006, evaluated the effectiveness of the scoping and screening process for systems and structures. The staff reviewed the executive summary for this report and found that the applicant considered the assessment to be comprehensive and critical of the assessed areas. In addition, the applicant identified numerous areas for improvement and determined an appropriate scope.

As another means of quality control, the applicant subjected its LRA to review by other utilities and organizations in the nuclear power industry. The results of this review yielded numerous comments and suggestions for improving the LRA. The applicant held group discussions with the reviewers to adequately understand the nature of the comments. The applicant then used the comments and subsequent discussions to improve the quality and content of the LRA. Additionally, the applicant subjected its LRA to an extensive review by its internal Plant Nuclear Safety Subcommittee. The members of the committee were plant personnel with expertise in the areas of engineering, maintenance, the environment, regulatory affairs, and plant operations. The staff reviewed the applicant's implementing procedures used in developing the license renewal drawings submitted with the LRA. The staff found that this procedure detailed a process and established conventions sufficient to ensure consistency and quality in preparing the drawings, and for appropriately identifying the components within the scope of license renewal.

2.1.3.2.2 Conclusion

Based on its review of pertinent LRA development guidance, discussion with the applicant's license renewal personnel, and review of the quality Audit Reports, the staff concludes that these QA activities add assurance that LRA development activities have been according to LRA descriptions.

2.1.3.3 Training

2.1.3.3.1 Staff Evaluation

The staff reviewed the applicant's training process for consistent and appropriate guidelines and methodology for the scoping and screening activities. The applicant required training for all personnel participating in the LRA development and used only sufficiently trained personnel to prepare the scoping and screening implementing procedures. Prior to participating in the scoping and screening activities, the applicant required that its personnel complete two qualification paths; one for license renewal engineering and the other for preparing and design-verifying license renewal implementing procedures.

Qualification as a license renewal engineer required completion of a corporate level program which the applicant documented in its License Renewal Engineering Training Guide. This training program requires each trainee to review and complete a number of self-study guides. Some of the topics covered by these study guides include corporate guides and procedures, plant-specific procedures and documents, engineering support personnel qualification guides, and a license renewal study list based on previous LRA developed by the applicant. After completing each self-study guide, the trainee discussed the topic with his supervisor. The supervisor then assessed the trainee's knowledge and approved of the trainee's competency in the particular area. The applicant documented the qualification of all its license renewal project personnel on qualification cards which required a supervisor's signature for final approval.

The applicant also required personnel to complete another area of training for preparing and design-verifying license renewal implementing procedures. The applicant formed its license renewal project team in 2000. The majority of this team fulfilled this training requirement by completing the Institute of Nuclear Power Operations (INPO) accredited engineering support personnel training program. The applicant documented this training process in its Program Training Guide master document. The INPO training covered topics such as engineering, nuclear information technology, licensing and regulatory programs, license renewal, and materials and contract services. After completing the INPO training, the trainee received engineering support personnel qualification in areas such as reactor engineering, materials engineering, or the maintenance rule. In 2003, the applicant replaced the required INPO training with consolidated training requirements established at the corporate level. During LRA development, the applicant's engineering support personnel also participated in ongoing training.

The staff reviewed completed qualification and training records of several of the applicant's license renewal personnel and also reviewed completed check lists. The staff made no adverse findings. Additionally, after discussions with the applicant's license renewal personnel during the audit, the staff confirmed that the applicant's personnel were knowledgeable about the license renewal process requirements and specific technical issues within their areas of responsibility.

2.1.3.3.2 Conclusion

Based on discussions with the applicant's license renewal personnel responsible for the scoping and screening process and review of selected documentation supporting the process, the staff concludes that the applicant's personnel understood the requirements and adequately implemented the scoping and screening methodology documented in the LRA. The staff concludes that the license renewal personnel were adequately trained and qualified for license renewal activities.

2.1.3.4 Conclusion of Scoping and Screening Program Review

Based on its review of LRA Section 2.1, review of the applicant's detailed scoping and screening implementation procedures, discussions with the applicant's LRA personnel, and review of the scoping and screening audit results, the staff concludes that the applicant's scoping and screening program is consistent with SRP-LR guidance and, therefore, acceptable.

2.1.4 Plant Systems, Structures, and Components Scoping Methodology

LRA Section 2.1.1, describes the methodology for scoping SSCs as required by 10 CFR 54.4(a) and the plant scoping process for systems and structures. The applicant identified SSCs within the scope of license renewal for HNP at the system and structure level, developed a list of plant systems and structures, and identified their intended functions. Intended functions are those that form the basis for including a system or structure within the scope of license renewal as required by 10 CFR 54.4(b) and are identified by comparing the system or structure function with the requirements of 10 CFR 54.4(a). An initial listing of all plant systems and structures was developed from the HNP PassPort EDB.

After developing the initial list of the plant systems and structures, the applicant reviewed the FSAR and other documents containing descriptive and functional information to determine which systems and structures are within the scope of license renewal. The information from the FSAR was used in conjunction with other CLB information and plant documents, such as DBDs, docketed correspondence, PassPort EDB, maintenance rule database, and site walk-down results, to identify system and structure intended functions. These intended functions were aligned with the requirements of 10 CFR 54.4(a)(1), (a)(2), and (a)(3) to determine if a particular system or structure is within the scope of license renewal. Those systems and structures whose intended functions support the above requirements are included within the scope of license renewal. In addition, the applicant used license renewal calculations for anticipated transient without scram (ATWS), fire protection, pressurized thermal shock (PTS), station blackout (SBO), and 10 CFR 54.4(a)(2) scoping requirements to identify additional systems within the scope of license renewal. Also, the applicant reconciled the PassPort EDB component-level information against the scoping criteria of the Rule and in addition, reviewed component-level intended functions derived from PassPort EDB classifications to ensure that a complete set of system and structure intended functions were captured. The results from these reviews were compiled and evaluated by the applicant to identify SSCs within the scope of license renewal at HNP.

Based on the results of the above scoping process, system and structure descriptions and intended functions were identified; and the systems and structures were aligned with one or more of the scoping requirements of 10 CFR 54.4(a). License renewal scoping drawings were developed to facilitate the staff's review by depicting the mechanical components that support system intended functions and; therefore, within 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 Summary of Technical Information in the Application

LRA Section 2.1.1.1 describes the scoping requirements for safety-related criteria in accordance with 10 CFR 54.4(a)(1). In reference to the safety-related criteria at HNP, the SSCs are identified by quality classifications which are documented in the PassPort EDB. The applicant stated that the administrative controls used to determine PassPort EDB quality classifications apply the Quality Class A designation to the SSCs that are necessary, either actively or passively, to assure the accomplishment of the safety-related functions required by 10 CFR 54.4(a)(1). In addition, the items that do not perform a safety-related function but whose failure could prevent the satisfactory accomplishment of a safety-related function during or following design basis accidents (DBAs) and transients were also classified as Quality Class A, unless a nonsafety-related classification had been justified. A comparison of HNP's definition of Quality Class A against the requirements of 10 CFR 54.4(a)(1) finds that these criteria are consistent, with the exception that the Rule includes references pursuant to 10 CFR 50.34(a)(1) and 10 CFR 100.11. At HNP, 10 CFR 50.67 requirements are applicable under the CLB; therefore, components credited with preventing and mitigating offsite exposure to less than are required by 10 CFR 50.67(b)(2) are designated Quality Class A. The applicant further stated that for the purpose of license renewal, any system (including support systems) or structure that contains one or more safety-related components was considered as a safety-related system or structure. Therefore, PassPort EDB Quality Class A is determined to be consistent for scoping of HNP SSCs pursuant to 10 CFR 54.4(a)(1).

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 (a) the integrity of the reactor coolant pressure boundary, (b) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (c) the capability to prevent or mitigate the consequences of accidents that could cause offsite exposures comparable to those of 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11.

As to identification of DBEs, SRP-LR Section 2.1.3 states:

> The set of DBEs as defined in the Rule is not limited to Chapter 15 (or equivalent) of the FSAR. 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 FSAR, 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 staff confirmed that HNP is a General Design Criteria (GDC) plant, and that DBEs were accordingly factored into the original design of the plant in compliance with the GDCs. Equipment required to comply with DBEs is safety-related and included in the PassPort EDB as Qualification Class A in compliance with the safety-related definition. FSAR Section 3 contains sufficiently detailed information relating to the DBEs. The applicant stated that the DBEs considered are those addressed in the FSAR. The DBEs addressed in FSAR Section 3 include: earth quake, wind and tornado, flooding, missiles, pipe ruptures, design transients, seismic and dynamic qualification of mechanical and electrical equipment, and environmental design of mechanical and electrical equipment.

During the audit, through discussions with the HNP license renewal project personnel, the staff verified that the FSAR was reviewed to identify SSCs that are relied upon to remain functional during and following the DBEs pursuant to10 CFR 50.49(b)(1) to ensure the functions as required by 10 CFR 54.4(a)(1) are successfully accomplished. Also during the audit, the staff verified that in addition to the FSAR, other CLB sources such as DBDs, system descriptions, HNP license renewal calculations, NRC regulations, SERs, plant operating manuals and calculations, P&IDs and plant layout drawings, and documents referenced by the FSAR were considered and reviewed for license renewal scoping in accordance with 10 CFR 54.4(a)(1).

The applicant performed scoping of SSCs pursuant to 10 CFR 54.4(a)(1) in accordance with the HNP license renewal project scoping calculation, which provided guidance for the preparation, review, verification, and approval of the scoping evaluations to assure the results of the scoping process were adequate. The staff reviewed these guidance 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, during the audit, the staff discussed the methodology and the scoping results with the applicant's license renewal personnel responsible for these evaluations. The methodology described in the LRA is consistent with the methodology in license renewal procedure.

In addition, the staff reviewed a sample of the license renewal scoping results for the AFW system, the PASS, and the auxiliary building structure to provide additional assurance that the applicant adequately implemented their scoping methodology as required by 10 CFR 54.4(a)(1). The staff confirmed that the scoping results for each of the sampled systems and the structure 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 also verified that the applicant used pertinent engineering and licensing information to identify the SSCs within the scope of license renewal in accordance with 10 CFR 54.4(a)(1) criteria. Specifically, during the audit, the staff reviewed HNP license renewal project scoping calculations and compared the applicant's definition of Quality Class A to the definition contained in the license renewal rule and found that the HNP definition of safety-related complies with 10 CFR 54.4(a)(1).

2.1.4.1.3 Conclusion

Based on this sample review, discussion with the applicant, and review of the applicant's scoping process, the staff determines that the applicant's methodology for identifying systems and structures meets 10 CFR 54.4(a)(1) scoping criteria and, therefore, is acceptable.

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

2.1.4.2.1 Summary of Technical Information in the Application

LRA Section 2.1.1.2 describes the scoping methodology as it relates to the nonsafety-related criterion in accordance with 10 CFR 54.4(a)(2).

The applicant evaluated the SSCs that complied with 10 CFR 54.4(a)(2) using several categories. A summary description of these categories is provided below.

Scoping Based on Quality Classification. The applicant stated that the extensive use of quality classifications was made by HNP to identify SSCs that have functional or physical interactions with safety-related SSCs. These quality classifications have been assigned to nonsafety-related components and documented in the PassPort EDB. The PassPort EDB quality classification designations have been reconciled with license renewal scoping criteria to provide a means for scoping of license renewal components and associated systems and structures.

Scoping Based on CLB. The applicant stated that it performed a review to identify additional candidates for inclusion based on the CLB and operating experience. Three categories of SSCs were eliminated from the scope of license renewal pursuant to 10 CFR 54.4(a)(2), consistent with regulatory guidance, including: (1) consideration of hypothetical failures that could result from system interdependencies that are not part of the plant CLB or that have not been previously experienced, (2) the function of nonsafety-related equipment to establish initial conditions for equipment operation or accident assumptions, and (3) malfunctions of nonsafety-related equipment that result in an actuation of safety-related equipment.

After eliminating the above categories of SSCs, the HNP design and licensing basis information was reviewed to identify nonsafety-related systems that function in direct support of a safety-related system and whose failure could prevent the performance of a required intended function. The specific function and/or interaction required of the nonsafety-related system was also identified. The HNP design and licensing basis information was also reviewed to identify nonsafety-related SSC interactions with safety-related SSCs that could prevent the performance of a required intended function. Specific interactions that may affect the function of safety-related SSCs were identified. The HNP scoping review also considered the relevant requirements of 10 CFR 54.4(a)(2) from other LRAs as well as HNP-specific plant documentation, including docketed correspondence and licensee event reports. Review of industry and HNP operating experience did not identify additional systems that fall within the scope of license renewal as required by 10 CFR 54.4(a)(2).

Scoping Based on NRC Scoping Guidance for Spatial Interactions. The applicant stated that HNP took an expansive approach for determining where spatial relationships might exist between nonsafety-related and safety-related SSCs. HNP used the preventive option, which requires that non-connected, nonsafety-related systems be brought within the scope of license renewal to protect safety-related SSCs from the consequences of failures of the nonsafety-related systems. The mitigative option of protecting safety-related systems was not used. Except for air/gas-filled systems, piping and heating ventilation and air conditioning (HVAC) systems with nonsafety-related components located within a safety-related structure were included within the scope of license renewal, unless a specific evaluation was performed and concluded a spatial interaction was not credible. HNP performed a site-specific review to verify that there are no credible aging mechanisms for air/gas systems with dry internal environments.

Based on this review, leakage and spray are not a consideration for compliance with 10 CFR 54.4(a)(2) scoping for air/gas systems. However, structural supports for air and gas systems located in Seismic Category I structures have been included within the scope of license renewal to prevent physical impacts on safety-related equipment during a seismic event. For the purposes of identifying potential spatial interactions, if a structure houses safety-related SSCs only in a limited area, then nonsafety-related spatial interactions may be limited to only that area. Area-specific analyses were performed to eliminate plant buildings or areas from consideration in the evaluation of spatial interactions. These analyses are summarized in the following paragraphs.

Scoping Based on NRC Scoping Guidance for Seismic-Connected Piping. Nonsafety-related systems relied upon to provide seismic support for safety-related SSCs were evaluated using the following rationale:

- Safety-related piping is within the scope of license renewal as required by 10 CFR 54.4(a)(1)
- Safety-related piping is located in Seismic Category I structures at HNP

- The nonsafety-related/safety-related boundary is located in a Seismic Category I structure
- All piping systems in Seismic Category I structures are within the scope of license renewal as discussed with respect to spatial interactions above.

Thus, it follows that nonsafety-related, seismically-connected piping is within the scope of license renewal and enveloped by the HNP scoping methodology.

Certain air/gas piping systems have nonsafety-related piping connected to safety-related piping. These air/gas piping systems with seismically-connected piping include the instrument air system, service air system, bulk nitrogen storage system, hydrogen gas system, and penetration pressurization system. These systems were evaluated by reviewing stress calculations, the PassPort EDB quality class designation, the FSAR, and system drawings. This ensured that nonsafety-related piping connected to safety-related piping in these air/gas systems was included within the scope of license renewal up to the first seismic anchor or equivalent anchor, beyond the safety/nonsafety interface.

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 of which could prevent satisfactory performance of safety-related SSCs relied upon to remain functional during and following a DBE to ensure (a) the integrity of the reactor coolant pressure boundary, (b) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (c) the capability to prevent or mitigate the consequences of accidents that could cause offsite exposures comparable to those of 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11.

NRC Regulatory Guide (RG) 1.188, Revision 1, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," Revision 1, dated September 2005, endorses the use of NEI 95-10, Revision 6, for methods the staff considers acceptable for compliance with 10 CFR Part 54 in preparing license renewal applications. NEI 95-10, Revision 6, addresses the staff positions on 10 CFR 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 preventive options related to nonsafety-related and safety-related SSCs interactions.

The staff states that applicants should not consider hypothetical failures, but rather base their evaluation on the plant's CLB, engineering judgement and analyses, and relevant operating experience, describing operating experience as all documented plant-specific and industry-wide experience useful in determining the plausibility of a failure. Documentation would include NRC generic communications and event reports, plant-specific condition reports, such industry reports as safety operational event reports, and engineering evaluations.

The staff reviewed LRA Section 2.1.1.2. In the LRA, the applicant describes the scoping methodology as it relates to the nonsafety-related criteria pursuant to 10 CFR 54.4(a)(2). The applicant evaluated the SSCs that met 10 CFR 54.4(a)(2) requirements using four categories: (1) CLB, (2) nonsafety-related SSCs required to support or that could prevent performance of safety-related SSCs, (3) nonsafety-related SSCs with the potential for spatial interaction with safety-related SSCs, and (4) nonsafety-related SSCs directly connected to safety-related SSCs. In addition, the staff reviewed the applicant's license renewal scoping calculation as required by 10 CFR 54.4(a)(2), which describes the scoping process used by the applicant to review nonsafety-related systems and structures considered to satisfy the requirements of 10 CFR 54.4(a)(2). The applicant's evaluation was performed in accordance with the guidance contained in NEI 95-10, Revision 6, for the identification and treatment of SSCs which meet 10 CFR 54.4(a)(2) requirements.

The applicant evaluated 10 CFR 54.4(a)(2) SSCs with the four categories from the NRC guidance to the industry on identification and treatment of such SSCs:

(1) Nonsafety-Related SSCs Required for Functions that Support Safety-Related SSCs. The applicant began the nonsafety-related scoping evaluation by reviewing the PassPort EDB quality classifications to identify SSCs that have functional or physical interactions with safety-related SSCs. PassPort EDB quality classification designations were reconciled with license renewal scoping criteria to provide a means for scoping of components and associated systems and/or structures. Components with quality classifications that correspond to 10 CFR 54.4(a)(2) scoping requirements include: (1) components that are nonsafety-related but are essential to the functioning of a safety-related system, (2) components that are seismically designed in accordance with RG 1.29, Position C.2, to prevent adverse interactions with safety-related equipment during an earthquake, and (3) components in those portions of systems whose failure may have an adverse effect on a nearby safety-related component and are; therefore, seismically supported and seismically designed.

The applicant also reviewed design and licensing basis information, including DBDs, plant drawings, and the FSAR, to identify nonsafety-related systems that function to directly support a safety-related system and whose failure could prevent the performance of a required intended function. The specific function and/or interaction required of the nonsafety-related system was also identified. The HNP design and licensing basis information was also reviewed to identify nonsafety-related SSC interactions with safety-related SSCs that could prevent the performance of a required intended function. Specific interactions that may affect the function of safety-related SSCs were identified. These evaluation criteria were discussed in the applicant's license renewal scoping calculation pursuant to 10 CFR 54.4(a)(2). The staff found that the applicant implemented an acceptable method for scoping of nonsafety-related systems that perform a function that supports a safety-related intended function.

(2) Nonsafety-Related Systems Connected to and Structurally Supporting Safety-Related SSCs. The staff reviewed the applicant's license renewal scoping calculation pursuant to 10 CFR 54.4(a)(2) for the evaluation of nonsafety-related systems directly connected and structurally supporting safety-related SSCs. Additionally, the staff reviewed the LRA and the FSAR. The interaction of other piping with Seismic Category I piping is discussed in FSAR Section 3.7.3.13. The applicant cites the following quotes from that LRA discussion:

> In the case of non-Seismic Category I piping systems attached to Seismic Category I piping systems, the dynamic effects were

> included in the modeling of the Seismic Category I piping up to the first anchor or system of restraints which decouples the piping.
>
> It should be noted that all seismic/non-seismic interface restraints are located in seismically analyzed structures thereby assuring that collapse of the restraint structure will not occur.

The staff determined that the latter of the statements above presumed that a seismically qualified anchor or equivalent is located in a seismically analyzed structure. The applicant was unable to state with certainty that there is no case where a seismic anchor was not within a seismically analyzed structure.

In RAI 2.1-1 dated June 11, 2007, the staff asked the applicant to provide the basis and further discussion to support the determination that all nonsafety-related piping systems attached to safety-related SSCs contain a seismic anchor at a location beyond the nonsafety to safety interface and prior to nonsafety-related piping exiting the structure and, that by extending the in-scope portion of the nonsafety-related piping system to the room boundary, there is assurance that an acceptable license renewal bounding point has been encompassed in accordance with 10 CFR 54.4(a)(2). Additionally, the staff asked the applicant to discuss the methods used to identify the specific seismic anchors for the attached nonsafety-related piping systems and the methods used to ensure that there are no exceptions to this determination.

In its response dated July 10, 2007, the applicant provided the history of its methodology to account for the seismic motion of non-Category I piping systems in the design of Category I piping (excluding the main steam and feedwater interface restraints). This issue was first identified when the plant was initially licensed as Draft SER Open Item 275. The applicant provided additional information related to Draft SER Open Item 275. Subsequently, the NRC identified the ongoing issue as a confirmatory item in an SER dated November 1983.

In response to the confirmatory item, the applicant stated that it had completed its review of seismic and/or non-seismic interface anchors. This process included a review of 1141 piping stress isometrics that identified 220 anchors. Of the anchors identified, 104 were found to be acceptable as is. The remaining anchors were reviewed in accordance with the previously agreed criteria in NUREG-1038. The issued was closed in NRC Inspection Report 50-400/85-28 dated August 21, 1985.

The applicant also stated that NEI 95-10, Revision 6 (Appendix F, Section 4.4 on page F-8) states that there may be isolated cases where an equivalent anchor point for a particular piping segment is not clearly described within the existing CLB information or original design basis. In those instances, the applicant may use a combination of restraints or supports such that the nonsafety-related piping and associated SCs attached to safety-related piping is included within the scope of license renewal up to a boundary point that encompasses at least two supports in each of the three orthogonal directions.

Since HNP has specific criteria in its CLB regarding the evaluation of nonsafety-related piping connected to safety-related piping and associated support requirements, the definition of an equivalent anchor in NEI 95-10 need not be used. HNP's methodology described in the LRA is based on logic provided by the previously agreed upon criteria in NUREG-1038.

Based on its review, the staff finds the applicant's response to RAI 2.1-1 acceptable because the applicant had a documented review which indicated that all nonsafety-related piping systems attached to safety-related SSCs contain a seismic anchor at a location beyond the nonsafety to safety interface, and prior to nonsafety-related piping exiting the structure that the applicant had included the portion of the nonsafety-related piping, attached to safety-related piping, up to and including a seismic anchor.

(3) Nonsafety-Related SSCs Not Directly Connected to Safety-Related SSCs. The staff reviewed the applicant's license renewal scoping calculation pursuant to 10 CFR 54.4(a)(2) for the evaluation of nonsafety-related systems not directly connected to safety-related SSCs. Additionally, the staff reviewed the LRA and the FSAR.

LRA Section 2.1.1.2 states, for purposes of identifying potential spatial interactions, if a structure houses safety-related SSCs only in a limited area, then nonsafety-related spatial interactions may be limited to only that area. Area-specific analyses were performed to eliminate plant buildings or areas from consideration in the evaluation of spatial interactions.

The specific structures and/or areas evaluated for the purpose above included:

- A portion of the fuel handling building designated as outside the power block (OPB) structures
- Diesel generator service water pipe tunnel, and attached Class I electrical cable area located above the pipe tunnel which is located in the turbine building
- Room W262 in the waste processing building
- Yard structures containing components not specifically located in a defined building, such as, safety-related manholes, duct banks, and protective concrete mats containing or protecting buried safety-related cable
- ESW and CTMU intake structure
- Areas within the reactor auxiliary building including the kitchen associated with the main control room, the hot machine shop, three PASS rooms, and elevator areas

The staff reviewed the applicant's license renewal calculation which documents the results of the evaluations and held discussions with cognizant license renewal team members. The applicant's evaluations included a review of the classifications in the PassPort EDB, information in the CLB, and walkdowns. The staff reviewed the relevant information contained in the calculation and reviewed associated drawings.

The staff found that the applicant performed a site-specific review to verify that there are no credible aging mechanisms for air/gas systems with dry internal environments. Based on this review, leakage and spray are not a consideration for compliance with 10 CFR 54.4(a)(2) scoping for air/gas systems. This approach is consistent with the guidance in NEI 95-10, Revision 6, Appendix F. The staff found that the applicant implemented an acceptable method for scoping of nonsafety-related systems not directly connected to safety-related SSCs.

(4) Certain Nonsafety-Related Mitigative Plant Design Features in the CLB. The staff reviewed the applicant's license renewal scoping calculation pursuant to 10 CFR 54.4(a)(2) for the evaluation of nonsafety-related SSCs that are typically identified in the CLB. The staff also reviewed applicable portions of the FSAR.

For high energy line breaks, the applicant used FSAR Section 3.6.1.2.1 which defines high energy as a system which during normal operating conditions operates greater than 200 °F and/or greater than 275 psig. The applicant included all nonsafety-related high energy piping located within a safety-related structure within the scope of license renewal as required by 10 CFR 54.4(a)(2), unless specific evaluations were performed. This approach is consistent with the guidance in NEI 95-10, Revision 6, Appendix F.

With regard to flooding, the applicant used the definition of Seismic Category I SSCs as given in FSAR Section 3.4.1. Seismic Category I SSCs are protected from the effects of the design basis flood levels or flood conditions. The FSAR also describes evaluations of flooding resulting from a postulated failure of piping components and states that flooding breaks will not prevent safety-related equipment from performing their intended design functions. As stated in the LRA, all piping and HVAC systems with nonsafety-related components located within a Seismic Category I structure have been included within the scope of license renewal, unless a specific evaluation was performed that concludes a spatial interaction is not credible.

The applicant evaluated the potential interactions of cranes and/or overhead handling equipment. The applicant included those structures which house or support overhead handling systems from which a load drop could be hypothesized to result in damage to any system that in turn could prevent the accomplishment of a safety-related function within the scope of license renewal, as required by 10 CFR 54.4(a)(2). Nonsafety-related overhead handling devices are commodities considered part of the structure and are evaluated in LRA Section 2.4.

Based on its review, the staff found that the applicant implemented an acceptable method for scoping of nonsafety-related mitigative plant design features in the CLB.

2.1.4.2.3 Conclusion

Based on its review, the staff determines that the applicant's methodology for identifying systems and structures meets 10 CFR 54.4(a)(2) scoping criteria and, therefore, is acceptable. This determination is based on a review of sample systems, discussions with the applicant, and review of the applicant's scoping process.

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

The LRA, in accordance with 10 CFR 54.4(a)(3), states that SSCs relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRC's regulations for fire protection (10 CFR 50.48), environmental qualification (EQ (10 CFR 50.49)), PTS (10 CFR 50.61), ATWS (10 CFR 50.62), and SBO (10 CFR 50.63) are within the scope of license renewal. CLB evaluations were performed to identify and document the SSCs credited for compliance with each of these regulations. Systems or structures that have one or more components credited for demonstrating compliance with one of the regulated events are within the scope of license renewal in accordance with 10 CFR 54.4(a)(3). Scoping based on each of the regulated events is described in the following paragraphs.

Fire Protection. The SSCs at HNP that support compliance with 10 CFR 50.48 are within the scope of license renewal. Any system with components classified as supporting fire protection in the PassPort EDB was considered within the scope of license renewal. Also, any systems with components credited in plant documents required to support safe shutdown following a fire were considered within the scope of license renewal. Additionally, the structures that house systems within the scope of fire protection are themselves within the scope of fire protection. The steps to identify SSCs relied on for fire protection to meet the requirements of 10 CFR 54.4(a)(3) are:

(1) PassPort EDB classification criteria identifying systems required to detect and mitigate fires and to achieve post-fire safe shutdown were reviewed to identify systems credited for compliance with 10 CFR 50.48. In addition, structures that house the components of these systems were identified.

(2) PassPort EDB information was supplemented by a review of the FSAR and docketed information pertaining to compliance with 10 CFR 50.48, including: (a) HNP responses to Branch Technical Position (BTP) CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," criteria; (b) the staff's SER for HNP; (c) the Fire Protection Program manual; (d) the safe shutdown analysis in case of fire, including the fire hazards analysis; (e) the safe shutdown separation analysis; (f) the fire protection equipment q-list; (g) safe shutdown flow diagrams; (h) DBDs; and (i) related plant procedures.

(3) Based on the above, license renewal intended functions for fire protection as required by 10 CFR 54.4(a)(3) were identified for each system and structure and were determined to meet those requirements. The scoping process to identify SSCs relied upon and/or specifically committed to for fire protection for HNP is consistent with and satisfies the requirements of 10 CFR 54.4(a)(3).

Environmental Qualification. Section 50.49(b) of 10 CFR requires that electric equipment *important to safety be environmentally qualified to mitigate certain accidents that result in harsh* environmental conditions in the plant. The steps to identify SSCs relied on for EQ to comply with 10 CFR 54.4(a)(3) are:

(1) The PassPort EDB identifies components that are on the HNP EQML in accordance with 10 CFR 50.49. The PassPort EDB was used as an input document for scoping of SSCs. Any system that contained one or more components designated as EQ-related in the EDB was considered within the scope of license renewal due to EQ. Also, structures that house the components of the EQML were identified.

(2) Based on the above, a license renewal intended function was identified for each system and structure determined to meet the EQ requirements of 10 CFR 54.4(a)(3). The HNP scoping process to identify systems and structures relied upon and/or specifically committed to for EQ is consistent with and satisfies the requirements of 10 CFR 54.4(a)(3). Note that qualified life analysis of EQ components may meet the requirements for time-limited aging analyses (TLAAs). EQ-related TLAAs are discussed in Section 4.4.

Pressurized Thermal Shock. Section 50.61 of 10 CFR, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," requires that licensees evaluate the reactor vessel beltline materials against specific criteria to ensure protection against brittle fracture. Since the analysis relies only on reactor vessel beltline materials, there are no SSCs, other than the reactor vessel, that are within the scope of license renewal pursuant to 10 CFR 50.61. Therefore, the reactor vessel is within the scope of license renewal based on compliance with 10 CFR 50.61.

Based on the above, a license renewal intended function for postulated PTS was identified for the reactor vessel in accordance with 10 CFR 54.4(a)(3). Note that PTS is related to reactor pressure vessel embrittlement, which is a TLAA. The TLAA analysis associated with PTS is discussed in Section 4.2.

Anticipated Transient Without Scram. Design features at HNP related to ATWS are within the scope of license renewal because they are relied on to meet the requirements of 10 CFR 50.62. Section 50.62 of 10 CFR requires each Pressurized Water Reactor (PWR) to have equipment from the sensor output to final actuation device, that is diverse from the reactor trip system, to automatically initiate the AFW system and initiate a turbine trip under conditions indicative of an ATWS. The steps to identify SSCs at HNP relied upon for ATWS mitigation to meet the requirements of 10 CFR 54.4(a)(3) are outlined below:

(1) A review was performed to identify the SSCs credited with mitigating a postulated ATWS event. The systems that interface with and the structures that house these SSCs were the focus of the review.

(2) Based on the above, a license renewal intended function was identified for each system and structure determined to meet the ATWS events requirements of 10 CFR 54.4(a)(3). The scoping process to identify SSCs relied upon and/or specifically committed to for a postulated ATWS event for HNP is consistent with and satisfies the requirements of 10 CFR 54.4(a)(3).

Station Blackout. PassPort EDB quality classifications that have been assigned to components credited with compliance with SBO requirements were used to identify the applicable equipment. The steps to identify systems and structures at HNP relied upon for SBO to meet the requirements of 10 CFR 54.4(a)(3) are outlined below:

(1) The PassPort EDB, FSAR, SBO Coping Analysis Report, safe shutdown flow diagrams, plant procedures, and scoping guidance regarding additional equipment required to recover from an SBO were reviewed to determine the scope of systems and structures required for SBO.

(2) Based on the above, a license renewal intended function was identified for each system and structure determined to meet the postulated SBO requirements of 10 CFR 54.4(a)(3).

2.1.4.3.2 Staff Evaluation

Fire Protection. The applicant developed a calculation which summarized and documented the results of a detailed review performed on the Fire Protection Program documents for HNP, demonstrating compliance with the requirements of 10 CFR 50.48. The applicant reviewed the applicable CLB sources such as the FSAR and used the CLB source information to develop a list of the required equipment for the event and any applicable recovery path. The position paper provided a list of systems and structures credited in the Fire Protection Program documents and the applicable CLB sources. The PassPort EDB contained information which assigned a specific quality classification to those SSCs required to meet 10 CFR 50.48. All SSCs determined to meet the fire protection requirements of 10 CFR 54.4(a)(3) were identified as within the scope of license renewal. The staff reviewed FSAR Section 9.5.1, the HNP fire protection calculation, and selected results and concluded that the method for identifying SSCs within the scope of license renewal that satisfy the fire protection requirement of 10 CFR 54.4(a)(3) was adequate.

Environmental Qualification. The HNP EQML was used as the basis to create a list of SSCs within the scope of license renewal. The information in the EQML is contained in the PassPort EDB and those components were used to identify the parent systems which were included within the scope of license renewal pursuant to 10 CFR 54.4 (a)(3). In addition, structures housing EQ components were also included within the scope of license renewal in accordance with 10 CFR 54.4 (a)(3).

The staff reviewed the applicable portion of the FSAR, the HNP bases calculations documenting the scoping activities, the EQML and corresponding PassPort EDB entries, and selected results. The staff concluded that the method for identifying SSCs within the scope of license renewal that satisfy the EQ requirement of 10 CFR 54.4(a)(3) was adequate.

Anticipated Transient Without Scram. The applicant determined that SSCs in numerous systems were required to address ATWS pursuant to 10 CFR 50.62. The applicant reviewed the original plant modification, plant drawings and wiring diagrams. The applicant reviewed the applicable portions of the FSAR and system DBDs and identified 60 components residing in 20 systems resulting in the inclusion of 17 systems within the scope of license renewal for ATWS support. The applicant also included three structures which house the 17 systems within the scope of license renewal for ATWS. The applicant documented the ATWS scoping activities in a HNP calculation. The staff reviewed the applicable portions of the FSAR, DBDs, drawings and the HNP calculation and concluded that the method for identifying SSCs within the scope of license renewal that satisfy the ATWS requirement of 10 CFR 54.4(a)(3) was adequate.

Station Blackout. The applicant reviewed the FSAR, DBDs, site coping analysis, and the safe shut down flow diagram to identify the SSCs required to address SBO pursuant to 10 CFR 50.62. The PassPort EDB contained information which assigned a specific quality classification to those SSCs required to meet 10 CFR 50.62. The applicant documented the review activities and results in a HNP calculation. The applicant also included three structures which house the 17 systems within the scope of license renewal for SBO. The staff reviewed the selected portions of the FSAR, DBDs, drawings, the SBO coping analysis, the safe shutdown flow diagrams and the HNP calculation and concluded that the method for identifying SSCs within the scope of license renewal that satisfy the SBO requirement of 10 CFR 54.4(a)(3) was adequate.

Pressurized Thermal Shock. The applicant reviewed the CLB information related to PTS, including the regulations and guidance, the FSAR and correspondence with the NRC, and documented the review in a HNP calculation. The staff reviewed the CLB information and selected results and concluded that the method for identifying SSCs within the scope of license renewal that satisfy the PTS requirement of 10 CFR 54.4(a)(3) was adequate.

2.1.4.3.3 Conclusion

On the basis of the sample review, discussions with the applicant, and review of the applicant's scoping process, the staff determined that the applicant's methodology for identifying systems and structures meets the scoping requirements of 10 CFR 54.4(a)(3), and is therefore acceptable.

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. At HNP, identification of SSCs that are within the scope of license renewal is performed at the system or structure level. In LRA Section 2.1.1, the applicant described the scoping methodology for systems and structures that are safety-related, nonsafety-related, and equipment relied upon to perform a function for applicable regulated events pursuant to 10 CFR 54.4(a)(3). The scoping methodology is consistent with the requirements of 10 CFR 54.4 and the industry guidance in NEI 95-10. In LRA Section 2.2, the applicant evaluated systems and structures to determine whether they were within the scope of license renewal, using the methodology described in LRA Section 2.1.1. The results of plant level scoping are provided in LRA Tables 2.2-1, 2.2-2 and 2.2-3 for mechanical systems, structures, and electrical and instrumentation and control (I&C) systems, respectively. If a system or structure, in whole or in part, meets one or more of the license renewal scoping criteria, the system or structure is considered to be within the scope of license renewal. Also, included in the tables are references to the sections in the LRA that discuss screening results for systems and structures within the scope of license renewal. Additionally, these scoping result tables also provide the systems and structures that do not meet the requirements of 10 CFR 54.4(a), and therefore indicated as not within the scope of license renewal.

Component Level Scoping. LRA Section 2.1.1, "Scoping," describes the component scoping as part of the system and structure level scoping. Initially in the license renewal review, PassPort EDB component-level information was reconciled against the scoping criteria of the Rule.

Components with the appropriate classification were correlated to corresponding scoping criteria from the Rule, based on which component scoping results were derived. Further, the component-level scoping results derived from the use of the PassPort EDB are augmented or modified by the review of the FSAR, other plant documentation that constitute the CLB, and the topical evaluations. The result is a comprehensive scoping process that bounds the requirements of 10 CFR 54.4 and is consistent with industry and regulatory guidance.

The PassPort EDB functions as the component-level Q-list for HNP and identifies the items to which the Quality Assurance program applies. The EDB contains component-level quality classifications that were derived from system and structure design and functional data required to meet CLB commitments. Component quality classification determinations typically involve a functional evaluation of the parent system by reviewing the system-level Q-list, FSAR, other CLB documents, and operating procedures. Control and revision of component quality classification information within the PassPort EDB is governed by procedure. Therefore, it was concluded that the component-level information could be used to identify SSCs within the scope of license renewal.

The HNP civil/structural scoping process included additional scoping activities. Any structure or component that houses or provides physical or functional support for components within the scope of license renewal is itself within the scope of license renewal. Component location information in the PassPort EDB was used to identify structures which house or support license renewal components. Structure intended functions were then associated with the intended functions of the components located in the structure.

Consumables. LRA Section 2.1.2.1 discusses consumables. Consumable parts of a component may be passive, long-lived, and necessary to fulfill an intended function. In accordance with NRC screening guidance of SRP-LR Table 2.1-3, consumables may be divided into four basic categories for the purpose of license renewal. Screening of consumables was either done as part of the component AMR or the item was excluded based on NRC screening guidance.

Group (a) subcomponents are not relied upon to form a pressure-retaining function and, therefore, not subject to an AMR. Group (b) subcomponents are structural sealants for structures within the scope of license renewal that require an AMR. Group (c) subcomponents are periodically replaced according to plant procedures and, therefore, not subject to an AMR. Group (d) consumables are subject to replacement based on National Fire Protection Association standards according to plant procedures and, therefore, not subject to an AMR.

2.1.4.4.2 Staff Evaluation

System and Structure Level Scoping. The staff reviewed the applicant's methodology for performing the scoping of plant systems and structures to ensure it was consistent with the requirements of 10 CFR 54.4(a). The methodology used to determine the systems and structures within the scope of license renewal was documented in HNP license renewal project scoping calculations referenced in the Audit Report. The applicant's approach to system and structure scoping is provided in these documents, and is consistent with the methodology described in LRA Section 2.1.1. The process of determining which systems and structures are within the scope of license renewal involved a review of the FSAR, DBDs, technical evaluation reports, the PassPort EDB, the maintenance rule database, and other documents containing descriptive and functional information. This information was used to determine if a particular system or structure aligns with the requirements of 10 CFR 54.4(a), (a)(1), (a)(2), and (a)(3).

During the scoping methodology audit, the staff conducted detailed discussions with the applicant's license renewal project personnel and reviewed documentation pertinent to the scoping process and scoping results. The applicant documented the results of the plant level scoping in the systems and structures scoping calculations, on an individual system and structure basis. The scoping calculations contained information including a description of the system or structure, function summary, identification of major components and their description, identification of safety-related intended functions, CLB documents, FSAR, DBDs, and license renewal boundary diagrams. The staff performed a sampling of scoping results and concluded that the applicant's scoping reports contained an appropriate level of detail to document the scoping process.

The staff assessed whether the applicant had appropriately applied the scoping methodology outlined in the LRA and implementation procedures, and also evaluated whether the scoping results were consistent with the CLB requirements. Additionally, the staff performed a sampling of scoping evaluation results for AFW and PASS systems to verify proper implementation of the scoping process.

On the basis of a review of the LRA, the scoping and screening implementation procedures, and a sampling review of system and structure scoping results during the methodology audit, the staff concludes that the applicant's scoping methodology for systems and structures was consistent with the description provided in LRA Section 2.1 and the requirements of 10 CFR 54.4, and was adequately implemented.

<u>Component Level Scoping</u>. Following the identification of systems and structures within the scope of license renewal, a review of mechanical systems and structures was performed to determine the intended functions of the components within the scope of each system and structure. The structural and mechanical components supporting intended functions were considered within the scope of license renewal and screened to determine if an AMR was required. All electrical and I&C components found within the evaluation boundary of mechanical systems within the scope of license renewal were included within the scope of license renewal.

The applicant performed component level scoping by using the LRBDs in conjunction with the PassPort EDB. The EDB was utilized to search for the components shown on the LRBDs and to determine their intended functions. All mechanical, structural, and electrical and I&C components that perform or support an intended function, as required by 10 CFR 54.4, for all the systems and structures within the scope of license renewal were included within the scope of license renewal. The components within the scope of license renewal were further evaluated during the screening process to determine whether they were subject to an AMR. The results of the applicant's scoping review were documented in license renewal scoping and screening reports.

During its audit, the staff confirmed that mechanical and structural drawings were evaluated to create license renewal boundaries for each system or structure within the scope of license renewal and also to show the corresponding components within the scope of license renewal. Each LRBD was evaluated to identify the components that perform safety-related intended functions or a regulated event and were further evaluated during the screening process to determine if the component should be subject to an AMR. Nonsafety-related components that are connected to safety-related components and provide structural support at the safety/nonsafety interface, or components whose failure could prevent satisfactory accomplishment of a safety-related function due to spatial interaction with safety-related SSCs are included within the scope of license renewal and individually identified in the AMR pursuant to 10 CFR 54.4(a)(2).

On the basis of a review of LRA Sections 2.1.1 and 2.1.2, the scoping and screening implementation procedures, and a sampling review of systems and structure scoping results during the methodology audit, the staff concludes that the applicant's scoping methodology for SSCs was consistent with the description provided in LRA Section 2.1 and the requirements of 10 CFR 54.4 and was adequately implemented.

Insulation. The staff reviewed the applicant's evaluation of plant insulation as documented in the applicant's license renewal calculation for mechanical system screening methodology. Thermal insulation is considered part of the parent system. The determination as to whether an insulation commodity group is required to support a system intended function was made during the screening process.

The applicant reviewed all plant insulation specifications to identify all types of insulation installed at HNP. Then the applicant reviewed the operating experience database to identify if there were any instances of insulation falling down, or degradation or failures that led to physical interactions (10 CFR 54.4(a)(2)). The applicant reviewed the FSAR for insight into the various uses of insulation, such as insulation used to mitigate heat loads. The applicant also reviewed DBDs including calculations to determine if any insulation was credited. The above sources were also reviewed to determine if any insulation was required to support any system intended functions pursuant to 10 CFR 54.4(a)(3). Based on the applicant's review, insulation was identified as being credited for room cooler evaluations, environmental control (minimize plateout, freeze protection), to preserve the qualification temperature of certain solenoid valves, and to maintain the temperature of concrete surrounding hot pipe penetrations.

As identified above, certain insulation was included within the scope of license renewal and subject to an AMR. The staff concludes that the applicant's methods and conclusions regarding insulation are acceptable.

Consumables. The staff reviewed the applicant's evaluation of consumables as documented in the LRA and the applicant's license renewal calculation for mechanical system screening methodology. Group (a) subcomponents are not credited with maintaining the integrity of the pressure boundary function of valve, pump and similar component housings and; therefore, are not subject to an AMR. Group (b) subcomponents are structural sealants associated with structures within the scope of license renewal that require an AMR. The structural sealants are within the scope of license renewal and are subject to an AMR. Group (c) subcomponents are short lived consumables that are periodically replaced, and; therefore, are not subject to an AMR. Group (d) consumables are typically replaced based on condition and may be excluded from an AMR, if justified. The applicant identified preventive maintenance identification numbers that governed the replacement of system filters. Preventative maintenance identification numbers associated with filters are identified in the PassPort EDB. The applicant's screening results calculation lists those components that are excluded from an AMR and provides a reference to the preventative maintenance identification number that replaces the filter. The staff reviewed the results and confirmed that a preventative maintenance identification number is listed. If a preventative maintenance identification number could not be identified, or it was determined that a procedure was not in place, the applicant entered the information into its Nuclear Management Tracking System indicating that a preventative maintenance identification number or equivalent needs to be developed. The applicant stated that all such Nuclear Management Tracking System entries will be resolved prior to entering the period of extended operation. Fire extinguishers, fire hoses and air packs are periodically inspected and tested per the requirements of applicable National Fire Protection Association (NFPA) guidelines and; therefore, are not subject to an AMR.

Based on its review, the staff finds that the applicant followed the process described in the SRP-LR, and appropriately identified and categorized the various consumables in accordance with the guidance.

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 scoping methodology for plant SSCs, commodity groups, insulation, and consumables is acceptable. In particular, the staff determines that the applicant's methodology reasonably identifies systems, structures, component types, and commodity groups within the scope of license renewal and their intended functions.

2.1.4.5 Conclusion for Scoping Methodology

Based on its review of the LRA and the scoping implementation procedures, the staff determines that the applicant's scoping methodology is consistent with SRP-LR guidance and has identified SSCs within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(1), (a)(2), (a)(3). Therefore, the staff concludes that the applicant's methodology meets 10 CFR 54.4(a) requirements.

2.1.5 Screening Methodology

2.1.5.1 General Screening Methodology

After identifying systems and structures within the scope of license renewal, the applicant implemented a process for identifying SCs subject to an AMR, in accordance with 10 CFR 54.21.

2.1.5.1.1 Summary of Technical Information in the Application

In LRA Section 2.1.2, the applicant described the method of identifying SCs from in-scope systems and structures that are subject to an AMR, and justifies the process with respect to requirements of an IPA pursuant to 10 CFR 54.21(a). In the HNP IPA, the process of identifying the SCs subject to an AMR is referred to as screening and; therefore, the applicant's screening process consisted of identifying and listing the SCs that are subject to an AMR. All SSCs listed in the HNP license renewal EDB database were scoped in accordance with 10 CFR 54.4(a). All SCs categorized as within the scope of the license renewal were screened against the requirements of 10 CFR 54.21(a)(1)(i) and (a)(1)(ii) to determine whether they are subject to an AMR. The applicant's SC screening was performed by mechanical, civil/structural, and electrical/I&C disciplines, following an initial screening based on generic equipment types. During the screening process, the applicant incorporated some SCs into commodity groups based on similarity of their design or material of construction. The use of commodity groups made it possible to address an entire group of SCs with a single evaluation.

2.1.5.1.2 Staff Evaluation

Pursuant to 10 CFR 54.21, the NRC requires that each LRA contain an 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 functions 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, electrical and structural component types 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 2.1.2, 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 these component types within the scope of license renewal to determine which ones were long-lived and passive and; therefore, subject to an AMR. Active components were screened out and; therefore, did not require AMR. The screening process also identified short-lived components and consumables. The short-lived components are not subject to an AMR. Also, in its screening process, the applicant incorporated the industry guidance provided in NEI 95-10, Appendix B, "Typical Structure, Component and Commodity Groupings and Active/Passive Determinations for the Integrated Plant Assessment." The screening of system SCs was performed using the HNP PassPort EDB. The staff reviewed LRA Sections 2.3, 2.4 and 2.5 that provided the results of the process used to identify component types subject to an AMR.

During the audit, the applicant provided the staff with detailed discussion and demonstrations of the screening processes used for each discipline and provided documentation that described the screening methodology and screening results. Also as part of the audit, the staff performed a sampling of the screening results reports for the AFW and PASS systems and auxiliary building structure. Specific methodology for mechanical, electrical, and structural component screening is discussed below.

2.1.5.1.3 Conclusion

Based on its review of the LRA, the screening implementation procedures, and a sampling of screening results, the staff determines that the applicant's screening methodology is consistent with SRP-LR guidance and capable of identifying passive, long-lived components within the scope of license renewal and subject to an AMR. The staff determines that the applicant's process for identifying component types and commodity groups subject to an AMR meets 10 CFR 54.21 requirements and, therefore, is acceptable.

2.1.5.2 Mechanical Component Screening

2.1.5.2.1 Summary of Technical Information in the Application

LRA Section 2.1.2.1 describes the screening methodology for identifying passive and long-lived mechanical components that are subject to an AMR. After the mechanical systems components were determined to be within the scope of license renewal, the applicant initiated the screening process for the mechanical SCs components. The process used at HNP to identify mechanical components subject to an AMR is as follows:

- Mechanical components and commodities within systems credited with intended functions were identified
- Components and commodities which perform mechanical component intended functions were identified
- Components determined to be not subject to an AMR were screened out. These include components that are: (a) active, short-lived or replaced on qualified life or specific time period, (b) not credited with performance of a mechanical intended function, and (c) excluded by NRC regulations for license renewal.

Each system identified during scoping as being within the scope of license renewal is reviewed to identify passive mechanical components that support the system intended function. The classification as an active or passive component was determined based on evaluation of the component description and type. In its determination of passive components subject to an AMR, the applicant used the guidance provided in NEI 95-10, Appendix B and the requirements of 10 CFR 54.21(a)(1)(i). At HNP, electrical and I&C components that are within the scope of license renewal solely because they perform a system pressure boundary function are treated as mechanical components and/or commodities for the purposes of mechanical screening.

The intended functions for a system are used as input to the screening process. The system intended functions, together with component information in the PassPort EDB, the scoping evaluation pursuant to 10 CFR 54.4(a)(2), the regulated event scoping evaluations pursuant to 10 CFR 54.4(a)(3), and applicable system drawings were used to identify the passive components requiring AMR.

Additionally, the applicant utilized a set of screening filters to determine which mechanical components are subject to an AMR and meet the requirements of 10 CFR 54.21(a)(1). The application of these filters and determination of the mechanical components subject to an AMR consisted of:

- component active or passive function
- components constituting a complex assembly
- components subject to periodic replacement

- Evaluation of consumable items based on the staff guidance provided in SRP-LR, Table 2.1-3, which included: (a) packing, gaskets, component seals and o-rings; (b) structural sealants; (c) oil, greases, and component filters; and (d) system filters, fire extinguishers, fire hoses, and air packs, and
- Component intended functions identification. Each component subject to an AMR was evaluated to determine component-level mechanical function performed without moving parts or change in configuration, in fulfilling and supporting system intended functions.

LRA Section 2.3 summarizes the screening results of the mechanical components. The mechanical component screening methodology and results are recorded in HNP screening calculations identified in the Audit Report. Components that were determined to be short-lived were eliminated from the AMR process and the basis for the classification as short-lived was recorded in the license renewal database.

2.1.5.2.2 Staff Evaluation

The staff evaluated the applicant's mechanical screening methodology described in LRA Section 2.1.2.1. In addition, during its audit, the staff reviewed the applicant's corporate-level implementing procedures and HNP license renewal mechanical screening calculations, which provide detailed implementation guidance on the applicant's process for identifying and screening mechanical components that are subject to an AMR. The screening calculations delineate all mechanical components that perform or support an intended function and are passive and long-lived, and are subject to an AMR. Also during the audit, the staff discussed, in detail, the HNP screening process and the AMR results with the applicant's license renewal team who performed these screening evaluations. Based on its review and evaluation of applicant's documentation and discussions with its license renewal personnel, the staff summarized the following screening process for mechanical components.

The mechanical component screening process began with the results from the scoping process. For each mechanical system within the scope of license renewal, the screening process was initiated with a review of the PassPort EDB, system license renewal boundary drawings, and bulk screening of the components. To identify system components required to perform a system intended function, the applicant initially generated a listing of mechanical system components based on information derived from the PassPort EDB equipment type and system CLB documents, the FSAR, DBDs, system description, vendor manuals, and walkdowns. By applying the screening filter criteria, the active and passive/long-lived components were identified. The active and short-lived components were screened-out, and those components that support the system intended functions and that are passive and long-lived were identified as items requiring an AMR. In addition, the screening results for each mechanical system within the scope of license renewal were formulated into tables, such as, items requiring an AMR and items eliminated by individual evaluation, and these tables were incorporated into license renewal mechanical screening calculations as attachments. The components that are within the scope of license renewal for 10 CFR 54.4(a)(1) and (a)(3) are highlighted in green on the boundary drawings. The components within the scope of license renewal for 10 CFR 54.4(a)(2) are not highlighted.

PassPort EDB uses an equipment type designation which corresponds to the component types presented in NEI 95-10, Appendix B. Items that are not subject to replacement based on a qualified life or specified time period per 10 CFR 54.21(a)(1)(i) are subject to an AMR. Also, the housings for active components (e.g., pump casings, valve bodies, fan and damper housings) that support the component intended function in a passive manner are subject to an AMR. Detailed screening is performed for major components within mechanical systems by dividing into subcomponents and screened to a higher level of detail.

The staff verified that the applicant performed the screening review in accordance with the implementing procedures and captured pertinent component information such as materials, environments, equipment/component type, intended function(s), and reason for an AMR requirement. The staff also verified that the applicant has implemented the guidance in the staff's SRP-LR and industry standard NEI 95-10 and had followed that guidance in performing the screening effort. In addition, during its audit, the staff confirmed that the applicant developed sufficiently detailed procedures for the screening of mechanical systems, implemented those procedures, and adequately documented the results in the associated AMR reports.

Additionally, during the audit, the staff reviewed the screening activities associated with the AFW and the PASS systems. The staff reviewed the system intended functions and associated source documents identified for these systems, the P&IDs, and the associated screening documented in the screening results and AMR reports. The staff did not identify any discrepancies with the evaluation, and determined that the applicant has adequately followed the process documented in the license renewal project instruction, and adequately documented the results in the screening and AMR reports of the above systems.

2.1.5.2.3 Conclusion

Based on its review of the LRA, the screening implementation procedures, and a sample of AFW and PASS system screening results, the staff determines 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 meets 10 CFR 54.21(a)(1) requirements.

2.1.5.3 Structural Component Screening

2.1.5.3.1 Summary of Technical Information in the Application

LRA Section 2.1.2 describes the process for identifying the in-scope SCs that require an AMR and justifies the process with respect to requirements of an IPA pursuant to 10 CFR 54.21(a).

The screening process was performed on each structure identified to be within the scope of license renewal. This method evaluated the individual SCs included within in-scope structures to identify specific SCs or SC commodity groups that require an AMR.

A bulk screening process was employed which consisted of grouping together typical components and screening them as a single commodity. Implementation of a bulk screening process requires components be grouped by similarity of both construction and function. An active or passive determination was performed on the commodity groups based on whether the commodity supports its intended function without moving parts or without a change in configuration or properties. A determination of commodity replacement based on a qualified life or specified time period was performed for each commodity type.

Civil/structural screening was performed for HNP structures on a structure basis; commodities located within the specific structure being screened were addressed as part of the structure. Civil/structural commodities associated with all systems were addressed as part of the structure in which they are located, whether or not they are part of a mechanical or electrical system. The identification of commodities for a specific structure was performed using the PassPort EDB location data, design drawings, general arrangement drawings, penetration drawings, plant modifications, the FSAR, DBDs, system descriptions, and plant walkdowns.

The commodity specific intended functions were developed based on comparison of the potential intended functions from the generic commodity groups to the specific intended functions of the structure and the PassPort EDB component quality classification. The screening process reviewed the PassPort EDB equipment types, design drawings, general arrangement drawings, plant modifications, the FSAR, DBDs, system descriptions, and plant walkdown results within each structure and developed a list of commodities within that structure requiring an AMR. Mechanical and electrical components located in the structure were considered in the assignment of intended functions to the structure. Those SCs that have a component or commodity intended function that supports a structure intended function are 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 to be within the scope of license renewal.

The applicant's license renewal civil screening calculations describe the applicant's process for identifying and screening structural components that are subject to an AMR. The calculations stated that structural components that perform an intended function and are passive and long-lived are subject to an AMR. The screening results for structures within the scope of license renewal were described in attachments to the calculation.

The applicant used a bulk screening approach which identified the grouping of civil/structural components by similarity of construction and function, and established a list of typical civil/structural commodity types along with the potential intended functions. The civil commodities were identified through a review of industry experience (e.g., NEI 95-10, Revision 6 and previous LRAs), NRC guidance (e.g., SRP-LR and GALL Report), as well as the plant's CLB documents. The applicant then performed an active or passive determination based on whether the commodity supports its intended function with or without moving parts or a change in configuration or properties. The long-lived determination was performed for each commodity type depending on whether the commodity was replaced based on qualified life or specified time.

The applicant performed the screening review in accordance with its license renewal calculations and included the structure description, intended functions, evaluation boundary, seismic interaction areas, the screening process, the screening results, the identification of systems in the structure, and references. The staff verified that the applicant used the lists of passive SCs embodied in the regulatory guidance and supplemented that list with additional items unique to the site for which a direct match to the generic lists did not exist (i.e., material/environment combinations). The applicant determined that components which support or interface with electrical components (e.g., cable trays, conduits, instrument racks, panels and enclosures) were assessed as structural components.

The staff verified that the boundary for a structure was the entire building including base slabs, foundations, walls, beams, slabs, and steel superstructure. The license renewal calculations identified each of the appropriate civil/structural commodities and indicated if the commodity is subject to an AMR. The applicant provided the staff with a detailed discussion that described the screening methodology, as well as the screening results.

The staff also examined the applicant's results from the implementation of this methodology by reviewing several of the plant structures identified as being within the scope of license renewal. As part of this review, the staff reviewed the license renewal calculations to verify that the applicant performed a comprehensive evaluation and identified the relevant structural components as part of the applicant's evaluation. The review included the evaluation of commodities within the scope of license renewal, the corresponding intended functions, and the resulting list of commodities subject to an AMR. The staff did not identify any discrepancies between the methodology documented and the implementation results.

2.1.5.3.3 Conclusion

Based on its review of the LRA, the applicant's detailed screening implementation procedures, and a sampling of structural screening results, the staff concludes that the applicant's methodology for identification of passive, long-lived structural component types within the scope of license renewal and subject to an AMR meets 10 CFR 54.21(a)(1) requirements.

2.1.5.4 Electrical Component Screening

2.1.5.4.1 Summary of Technical Information in the Application

The applicant's method used to determine which electrical and I&C components were subject to an AMR was based on the component commodity group approach, consistent with the guidance of NEI 95-10. The applicant used PassPort EDB information to develop a comprehensive list of electrical component types present in the systems and structures within the scope of license renewal. In addition, the applicant used the Electrical Power Research Institute (EPRI) License Renewal Electrical Handbook and plant design documentation to identify electrical equipment and component types within the electrical/I&C and mechanical systems and structures determined to be within the scope of license renewal. The applicant reviewed plant-specific documentation including drawings, technical manuals, and plant modification packages.

The component types associated with the electrical and I&C systems within the scope of license renewal were organized into commodity groupings using the guidance contained in NEI 95-10, Appendix B, regarding grouping of components based on similar design and functional characteristics. The electrical and I&C component commodity groups that perform an intended function without moving parts or without a change in configuration or properties, were identified. Commodity groups that have passive functions may be subject to an AMR and were identified by this step.

For the passive electrical and I&C component commodity groups, component commodity groups that are not subject to replacement based on a qualified life or specified time period, were identified as requiring an AMR. Commodity group components that are replaced based on qualified life or specified time period (i.e., short-lived components) are not subject to an AMR. The electrical screening process identified the intended functions of the electrical commodity groups subject to an AMR using information contained in the SRP-LR and industry experience. Electrical and I&C components that were determined to be within the scope of license renewal and passive and long-lived were subject to an AMR.

2.1.5.4.2 Staff Evaluation

The staff reviewed the applicant's methodology used for electrical screening in LRA Section 2.1.2.3 and the applicant's guidance, implementation procedures, and reports. The applicant assembled a table of commodities which were determined to meet the passive criteria and which were grouped in accordance with the guidance contained in NEI 95-10. The applicant evaluated the identified, passive commodities to determine 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 applicant's implementing procedures and reports.

The staff verified that the applicant performed an appropriate review of fuses and fuseholders which were not part of a panel or assembly and identified approximately ten fuseholders which met the criteria and were subsequently included within the scope of license renewal. The staff also verified that the applicant's determination that the fuses would not be removed from the fuseholder during operation or maintenance (not required for isolation) and were located in an environment such that the fuseholders were not subject to an AMR.

The staff also verified that the applicant performed a review of tie wraps and determined that tie wraps were not required for HNP seismic qualification, were not taken credit for any purpose in the CLB, and were determined to have no potential effect on the performance of safety-related intended functions. No tie wraps were determined to be within the scope of license renewal.

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 determines that the applicant's methodology was consistent with the description provided in the 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 subject to an AMR is consistent with the requirements of 10 CFR 54.21(a)(1), and is therefore acceptable.

2.1.5.5 Conclusion for Screening Methodology

Based on its review of the LRA and the screening implementation procedures, discussions with the applicant's staff, and a sample review of screening results, the staff determines that the applicant's screening methodology is consistent with the guidance of the SRP-LR and has identified passive, long-lived components within the scope of license renewal and 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, therefore, acceptable.

2.1.6 Summary of Evaluation Findings

The information in LRA Section 2.1, the supporting information in the scoping and screening implementation procedures and reports, and the information presented during the scoping and screening methodology audit formed the basis of the staff's determination that the applicant's scoping and screening methodology was consistent with the requirements of the Rule. Based on this determination, 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, therefore, acceptable.

2.2 Plant-Level Scoping Results

2.2.1 Introduction

In LRA Section 2.1, the applicant described the methodology for identifying SSCs within the scope of license renewal. In LRA Section 2.2, the applicant used the scoping methodology to determine which SSCs must be included within the scope of license renewal. The staff reviewed the plant-level scoping results to determine whether the applicant has properly identified all systems and structures relied upon to mitigate DBEs, as required by 10 CFR 54.4(a)(1), systems and structures the failure of which could prevent satisfactory accomplishment of any safety-related functions, as required by 10 CFR 54.4(a)(2), and systems and structures relied on in safety analyses or plant evaluations to perform functions required by regulations referenced in 10 CFR 54.4(a)(3).

2.2.2 Summary of Technical Information in the Application

In LRA Table 2.2-1, the applicant listed three aspects of each plant mechanical system: system name, whether it was within the scope of license renewal, and a screening result application subsection (if determined to be in-scope). Likewise, in LRA Table 2.2-2, the applicant provided a list of the plant structures that are within the scope of license renewal and their applicable subsection. Based on the DBE considered in: the plant's CLB, other CLB information relating to nonsafety-related systems and structures, and regulated events identified in 10 CFR 54.4 (a)(3), the applicant identified plant level systems and structures within the scope of license renewal.

In LRA Section 2.1.1.2, the applicant described the license renewal scoping methodology used in identifying applicable SSCs for spatial interactions. The applicant evaluated non-connected, nonsafety-related systems for their potential to adversely affect safety-related SSCs. The applicant then included nonsafety-related systems with the potential to adversely affect safety-related SSCs within the scope of license renewal to protect safety-related SSCs from the consequences of failures of the nonsafety-related systems.

2.2.3 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 provided its evaluation in SER Section 2.1. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results shown in LRA Tables 2.2-1, 2.2-2, and 2.2-3.

The staff determined whether the applicant properly identified the systems and structures within the scope of license renewal in accordance with 10 CFR 54.4. The staff reviewed selected systems and structures that the applicant did not identify as 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 reviewed LRA Section 2.1.1.2 Nonsafety-related Criteria Pursuant to 10 CFR 54.4(a)(2) and the FSAR using the evaluation methodology described in SER Section 2.1 and the guidance in SRP- LR Section 2.1. The staff reviewed sections of the FSAR, based on the systems and structures listed in LRA Tables 2.2-1, 2.2-2, and 2.2-3, to determine if there were any systems or structures that may have intended functions within the scope of license renewal, as defined by 10 CFR 54.4, but were omitted from the scope of license renewal. The staff did not identify any omissions.

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

In its review of LRA Section 2.1.1.2, the staff identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The staff noted that the LRA stated that the turbine building and the waste processing building contain components designated as safety-related according to the plant's EDB. In the LRA, the applicant concluded that no safety-related systems, in the turbine building and waste processing building, are brought into scope of license renewal based on their potential to adversely affect safety-related systems. In RAI 2.1.1.2-1, dated August 20, 2007, the staff asked the applicant to provide details of the evaluation performed that allowed the exclusion of the safety-related SSCs within the turbine building and within the waste processing building from the 10 CFR 54.4(a)(2) criterion for spatial interactions.

In their response, dated September 18, 2007, the applicant stated that system scoping relied heavily on reviews of the plant FSAR, CLB, and EDB for component quality classifications. The applicant further stated that these plant information sources contributed to a determination of whether a system met the license renewal definition of 10 CFR 54.4(a)(1). The applicant further explained that results of the evaluation indicated that occasionally the plant information sources are more conservative in assigning the quality classification than is intended in 10 CFR 54.4. The applicant described the diesel generator service water pipe tunnel and the attached Class 1 electrical cable area above the pipe tunnel. The applicant stated that the tunnel contains safety-related components and is part of the turbine building. This area was designed and constructed to seismic Category I requirements and is completely enclosed, with a door at each end. The applicant supported its exclusion of this equipment from 10 CFR 54.4(a)(2) for nonsafety-related system spatial interactions, based upon the premise that the safety-related components are completely enclosed within a robust structure, designed and constructed for that purpose as stated in the plant CLB. NRC staff inspected the diesel generator service water pipe tunnel and Class 1 electrical cable area above the pipe tunnel to verify that this area is completely enclosed, and there is no potential for nonsafety-related system interactions. The staff found that the subject area was completely enclosed with a door at each end and documented its finding in the NRC Inspection Report 05000400/2007007 dated September 10, 2007 (ML072530894). This structure containing the diesel generator service water piping and the attached Class 1 electrical cable area above it are part of the turbine building structure and are included in scope of license renewal.

The applicant performed an evaluation of other equipment in the turbine building identified as safety-related, (i.e., feedwater system flow transmitters, feedwater regulating valves, and associated bypass valves). Their evaluation determined that this equipment did not meet the license renewal definition of safety-related; therefore, the equipment was not included within the scope of 10 CFR 54.4(a)(1). Similarly, the applicant identified equipment in the waste processing building, (e.g., waste gas decay tanks, associated piping and valves and radiation monitor) did not meet the license renewal definition of safety-related; therefore, they did not include them in scope under 10 CFR 54.4(a)(1).

The applicant stated that the LRA will be revised to document that the feedwater system components in the turbine building and the waste processing system components in the waste processing building, described above are not safety-related in accordance with 10 CFR 54.4(a)(1). Further, the applicant will reflect in the LRA that since there are no safety-related components in the turbine building and waste processing building, 10 CFR 54.4(a)(2) for spatial interactions is not applicable and will not be discussed further.

However, based on its review, the NRC staff finds that the applicant did not properly implement the LRA scoping methodology described in LRA Section 2.1.1. In Section 15.1.5, the FSAR states that the feedwater regulating valves do provide a safety-related function, which is redundant isolation of feedwater in the event of a main steam line break, to mitigate the consequences of an accident in accordance with 10 CFR 54.4(a)(1)(iii). Furthermore, in Section 10.4.7, the FSAR states that the valves are designed to ASME Section III, Class 3, Seismic Category I. Therefore, the staff concludes that the feedwater regulating and bypass valves meet the definition and functional description for components classified as (a)(1); hence, they should be included in the scope of license renewal and subject to aging management based upon criterion 10 CFR 54.4(a)(1).

By letter dated January 14, 2008, the NRC staff sent RAIs to the applicant to further evaluate the disposition of this equipment and justify their position. The applicant's response, dated January 22, 2008, maintains that these valves are important to safety, but are not safety-related and therefore, they meet the criteria of 10 CFR 54.4(a)(2). The BOP staff position remains that the main feedwater regulating and bypass valves are not currently correctly categorized in the application. By definition, these valves fulfill a safety-related function; therefore, they should be included in scope under 10CFR54.4(a)(1). This issue was identified as open item 2.2.

By letter dated May 30, 2008, the applicant responded to OI-2.2. The discussion and resolution is discussed in Section 1.5 of this Safety Evaluation Report. Based on that discussion OI-2.2 is closed.

In its review of LRA Section 2.1.1.2, the staff noted the applicant describes their methodology in identifying seismic-connected piping when nonsafety-related portions of a system connect to safety-related portions the system. This section identifies the instrument air system, service air system, bulk nitrogen storage system, hydrogen gas system, and penetration pressurization system as those with nonsafety-related portions to seismically-connected piping. The staff also noted that in LRA Table 2.0-1, "Intended Function Abbreviations and Definitions," the applicant defines the intended functions assigned to systems within the scope of license renewal, and in LRA Table 2.0-1, the applicant identifies "M-4" as "Structural Support" which provides structural support/seismic integrity. The staff reviewed the intended functions for the identified systems and noted that "M-4" was not identified; however, "M-1" for "Pressure Boundary" was assigned. In RAI 2.1.1.2-2 dated August 20, 2007, the staff asked the applicant to explain why the Intended Function "M-4" was not assigned to these systems in accordance with the methodology in LRA Section 2.1.1.2.

In its response dated September 18, 2007, the applicant stated that under the methodology used to evaluate systems for scoping, the "M-1" pressure boundary function envelops the structural/seismic support function for nonsafety-related "connected" piping described above. In addition, the applicant identified this methodology is contained in license renewal project procedures and that "M-1" would be used for connected piping. Further, the applicant explained that the systems identified above all have the "M-1" intended function.

Based on its review, the staff finds the applicant's response to RAI 2.1.1.2-2 acceptable because it adequately explained that for the systems identified above, the "M-1" intended function was assigned and that the license renewal project procedures identified that nonsafety-related piping connected to safety-related systems are enveloped by this intended function. Therefore the staff's concern described in RAI 2.1.1.2-2 is resolved.

In its review of LRA Section 2.1.2.1, the staff identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. In RAI 2.1.2.1-1 dated August 20, 2007, the staff noted that in LRA Section 2.1.2.1, the applicant describes the process used to identify mechanical components subject to AMR. The applicant states in LRA Section 2.1.2.1, that in-scope mechanical components with no mechanical intended function are assigned a screening result of "no mechanical intended function," and are not subject to AMR. Further, the staff noted that the LRA states that in a limited number of cases, there are in-scope mechanical components that do not support a mechanical system intended function but are in the scope of license renewal because of their potential to damage safety-related components through direct impact during a seismic event. The staff asked the applicant to identify the in-scope mechanical components with "no mechanical intended function" that are not subject to an AMR and describe why they are not subject to an AMR.

In its response dated September 18, 2007, the applicant stated that under the methodology described in license renewal project procedures used to evaluate components for screening in accordance with 10 CFR 54.21(a), three general cases were identified where components were assigned "no mechanical function." The applicant stated that the three cases with example are:

1. Not Used/Temporary/Not Installed - this case accounts for tools and equipment that have unique EDB identifiers, but are no longer in the plant, are portable, or not used during normal plant operation (e.g., reactor head guide studs, service water booster pump suction startup strainer elements, containment integrated leak rate test equipment, and fuel transfer components).

2. No Impacts from Failure - the impacts of failure were evaluated and the failure of the component type or in some cases subcomponent type would have no adverse effect on system intended function, e.g., selected RCP oil spill protection system components inside the oil spill enclosure, solenoid operated valves that upon failure would have no impact on safety, such as those used for venting air from air operated containment isolation valve operators, auto stop trip solenoid valves that upon failure would result in closure of steam turbine valves.

3. Covered by Civil or Electrical Function - the component type that was typically mechanical was later found to have a civil or electrical function e.g., reactor head seismic tie rods, pressurizer electric heaters, HVAC electric heaters, lightning arrester straps.

Based on its review, the staff finds the applicant's response to RAI 2.1.2.1-1 acceptable because it adequately explains that for the components within the scope of license renewal as identified in cases above have been evaluated using methodology in license renewal project procedures. In the first case, components that are not permanently installed or are designated as tools can be excluded from an AMR if evaluated. In the second case, components that fail without impeding system intended functions can be excluded from an AMR if evaluated. In the third case, license renewal project procedures can evaluate a component's function and identify its correct classification, such as a heater performing no pressure boundary function in addition to its electrical active function. Therefore the staff's concern described in RAI 2.1.2.1-1 is resolved.

2.2.4 Conclusion

The staff reviewed LRA Section 2.2, the RAI response, and the FSAR supporting information to determine whether the applicant failed to properly identify any systems and structures within the scope of license renewal. With resolution of open item 2.2, regarding the feedwater regulating and bypass valves, the staff finds no omissions. On the basis of its review, the staff concludes that there is reasonable assurance that 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, internals, and reactor coolant system
- engineered safety features (ESF) systems
- auxiliary 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 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 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 FSAR, 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, 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.

Two-Tier Scoping Review Process for Balance of Plant Systems. In the LRA, the applicant identified 110 mechanical systems among which 72 are balance of plant (BOP) systems, excluding fire protection, HVAC, and containment systems. These BOP systems include most of the auxiliary systems in LRA Section 2.3.3 and all of the steam and power conversion systems in LRA Section 2.3.4. The staff performed a two-tier scoping review for the 72 BOP systems.

In the two-tier scoping review, the staff reviewed the LRA and FSAR descriptions focusing on the system intended function to screen all the BOP systems into two types of review, Tier-2 (detailed) and Tier-1 (other), based on the following screening criteria:

- safety importance/risk significance
  - high safety significant systems, or
  - systems susceptible to common cause failure of redundant trains
- operating experience indicating likely passive failures
- systems subject to omissions based on previous LRA reviews

Examples of the safety important and/or risk significant systems are the emergency diesel generator (EDG) and support systems, the AFW, and the essential service water system, based on the results of an individual plant examination for NHP. An example of a system whose failure could result in common cause failure of redundant trains is a drain system providing flood protection. Examples of systems with identified omissions in previous LRA reviews include the fuel pool cooling and fuel handling and storage system, and makeup water sources to safety systems.

From the 72 BOP systems, the staff selected 31 systems for a detailed, Tier-2, scoping review as described above. Tier-2 requires the review of detailed boundary drawings in accordance with SRP-LR NUREG-1800, Section 2.3. The staff performed a Tier-2 review of the following 31 systems:

- Circulating Water System
- Normal Service Water System
- Emergency Service Water System
- Component Cooling Water System
- Essential Services Chilled Water System
- Emergency Screen Wash System
- Emergency Diesel Generator System
- Diesel Generator Fuel Oil Storage and Transfer System
- Diesel Generator Lubrication System
- Diesel Generator Cooling Water System
- Diesel Generator Air Starting System
- Instrument Air System
- Service Air System
- Storm Drains System
- Radioactive Floor Drains System
- Radioactive Equipment Drains System
- Demineralized Water System
- Oily Waste Collection and Separation System
- Liquid Waste Processing System
- Radwaste Sampling System
- Refueling System
- Spent Fuel Pool Cooling System
- Spent Fuel Pool Cleanup System
- Containment Cooling System
- Steam Generator Blowdown System
- Main Steam Supply System

- Steam Dump System
- Feedwater System
- Auxiliary Feedwater System
- Condensate Storage System
- Secondary Sampling System

For the remaining 41 BOP systems, the staff performed a Tier-1 review of the LRA (does not require detailed review of system boundary drawings) and the FSAR to identify apparent missing components that are subject to an AMR. The staff performed a Tier-1 review of the following 41 systems:

- Cooling Tower System
- Cooling Tower Makeup System
- Screen Wash System
- Main Reservoir Auxiliary Equipment
- Auxiliary Reservoir Auxiliary Equipment
- Waste Processing Building Cooling Water System
- Non-essential Services Chilled Water System
- Generator Gas System
- Hydrogen Seal Oil System
- Security Power System
- Bulk Nitrogen Storage System
- Hydrogen Gas System
- Oily Drains System
- Secondary Waste System
- Laundry and Hot Shower System
- Upflow Filter System
- Potable and Sanitary Water System
- Filter Backwash System
- Secondary Waste Treatment System
- Gaseous Waste Processing System
- New Fuel Handling System
- Spent Fuel System
- Spent Fuel Cask Decontamination and Spray System
- Spent Resin Storage and Transfer System
- Bridge Crane Equipment
- Fuel Cask Handling Crane System
- Fuel Handling Building Auxiliary Equipment
- Turbine Building Health Physics Room Auxiliary Equipment
- Polar Crane Auxiliary Equipment
- Elevator System
- Mechanical Components in Electrical Systems (Classified as an Electrical System)
- Monorail Hoists Equipment
- Steam Generator Chemical Addition System
- Auxiliary Boiler/steam System
- Feedwater Heater Drains and Vents System
- Auxiliary Steam Condensate System
- Condensate System
- Steam Generator Wet Lay up System

- Turbine System
- Digital-electric Hydraulic System
- Turbine-generator Lube Oil System

The staff verified that there is no risk significant system in the above list by examining the results of the applicant's Environmental Report, Appendix E. None of the systems identified for a Tier-1 review are significant contributors to the risk reduction worth rankings to core damage frequency, nor are these systems involved in the significant initiating events.

Systems Identified for Inspection. The staff recommended that the inspection be used to verify scoping results pursuant to 10 CFR 54.4(a)(2). To implement this recommendation in reviewing the LRA, the staff identified four systems for the regional inspection team to include in its scoping and screening inspection.

These systems were included within the scope of license renewal by the applicant pursuant to the 10 CFR 54.4(a)(2) review. The staff requested that the inspection include a sampling review of the Engineering Report (if available), plant layout drawings, and other documentation, as well as walkdowns of the plant areas that contain these systems and associated components. The following are the list of systems, which the staff recommended for inspection:

- Screen Wash System
- Non-essential Services Chilled Water System
- Waste Processing Building Cooling Water System
- Turbine Generator Lube Oil System

In the HNP - NRC Inspection Report 05000400/2007007 dated September 10, 2007, the inspectors documented their review of the applicant's screening and scoping analysis for the above nonsafety-related systems to assess compliance with 10 CFR 54.4(a)(2). The review included the applicant's calculation that assessed the system and component applicability pursuant to 10 CFR 54.4(a)(2), applicable plant drawings, and a visual examination of the in-plant configuration to attempt to identify any nonsafety-related systems located in proximity to safety-related systems and to assess compliance with 10 CFR 54.4(a)(2). The inspectors concluded that the applicant had appropriately implemented the criteria in accordance with 10 CFR 54.4(a)(2) in the identification of in-scope SSCs for these systems.

The inspectors visually examined the service water intake structure and the adjacent CTMU strainer pit and identified no potential for spatial interaction between nonsafety-related and safety-related SSCs at this location. The inspectors reviewed the security power system diesel manual, system drawings, and the scoping calculation document and field inspected the system equipment. The inspectors did not identify any components that were incorrectly omitted from the AMR.

In RAI 2.3-1 dated August 20, 2007, the staff noted that, in several LRA sections for the scoping results of numerous systems, component types such as valves, piping, expansion joints, temperature elements, thermowells, flexible connections, filters, strainers, silencers, accumulators, closure bolting, drain traps, detectors, and pumps were not specifically identified in their associated LRA sections, although they were highlighted in license renewal boundary diagrams as components within the scope of license renewal pursuant to 10 CFR 54.4(a). The staff noted that instead of specific component types, the term "piping, piping components, and piping elements" is used. The staff asked the applicant to explain how each of these components is represented in the LRA and to explain what components the term "piping, piping components, and piping elements" includes for each of the following systems:

- Circulating Water System
- Emergency Screen Wash System
- Emergency Diesel Generator System
- Instrument Air System
- Service Air System
- Bulk Nitrogen Storage System
- Hydrogen Gas Storage System
- Laundry and Hot Shower System
- Spent Fuel Cask Decontamination and Spray System
- Mechanical Components in Electrical Systems
- Main Steam Dump System
- Turbine System

In its response dated September 18, 2007, the applicant stated that the GALL Report defines the term "piping, piping components, and piping elements" as a general category including various features of piping systems that are within the scope of license renewal (i.e., piping, tubing, flow elements, orifices, flex hoses, etc.). The applicant further stated that the GALL Report, Revision 1, which was used in the preparation of the LRA incorporates the term "piping, piping components, and piping elements" to replace various combinations of component types in previous LRAs. The applicant's response included a detailed table of components addressing each of the staff's questions about each LRA section identified above.

Based on its review, the staff finds the applicant's response to RAI 2.3-1 acceptable because it adequately explains how each of the component types were represented using the guidance in the GALL Report, Revision 1, for the term "piping, piping components, and piping elements" and that a detailed table identifying components generically represented by this term was reviewed by the staff. The staff notes that the use of "piping, piping components, and piping elements" was not specifically addressed in the LRA other than the reference to the use of the GALL Report in its preparation. Therefore, the staff's concern described in RAI 2.3-1 is resolved.

2.3.1 Reactor Vessel, Internals, and Reactor Coolant System

LRA Section 2.3.1 identifies the reactor vessel, internals, and reactor coolant system SCs subject to an AMR for license renewal.

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

- 2.3.1.1 reactor vessel and internals
- 2.3.1.2 incore instrumentation system
- 2.3.1.3 reactor coolant system
- 2.3.1.4 reactor coolant pump and motor

- 2.3.1.5 pressurizer
- 2.3.1.6 steam generator

2.3.1.1 Reactor Vessel and Internals

2.3.1.1.1 Summary of Technical Information in the Application

LRA Section 2.3.1.1 describes the reactor vessel and internals, which are reactor coolant system (RCS) parts capable of accommodating the temperatures and pressures of RCS operational transients. The reactor vessel contains and supports the reactor vessel internals which include the reactor core, core support structures, control rods, and other core parts. The reactor vessel is one of the major components within the reactor coolant pressure boundary (RCPB). The reactor vessel exterior has two types of insulation, mostly canned stainless steel reflective sheets at least three inches thick and contoured to match the vessel geometry and in the portion of the vessel with highest neutron leakage a high-efficiency, high-temperature insulation bonded to a layer of neutron attenuation material of varying thickness. All of the insulation and insulating/shielding modules are removable but access to the insulation/shielding is limited by the surrounding concrete.

The components of the reactor vessel internals include of the lower core support structure, the upper core support structure, and the incore instrumentation support structure. The reactor vessel internals support the core, maintain fuel alignment, limit fuel assembly movement, maintain alignment between fuel assemblies and control rod drive mechanisms (CRDMs), direct reactor coolant flow past the fuel elements, direct reactor coolant flow to the pressure vessel head, and provide gamma and neutron shielding and guides for the incore instrumentation. The reactor vessel and internals include components required for the reactor vessel level indicating system (RVLIS). RVLIS instrumentation has a RG 1.97, Category 1, post-accident function of monitoring reactor coolant inventory. The RVLIS has capillary tubing and other components to support the containment isolation pressure boundary function.

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

LRA Table 2.3.1-1 identifies reactor vessel and internals component types within the scope of license renewal and subject to an AMR:

- reactor vessel; closure head dome
- reactor vessel; closure head flange
- reactor vessel; closure head stud assembly
- reactor vessel; vessel flange leak detection line
- reactor vessel; CRDM head penetration nozzle
- reactor vessel; CRDM head penetration flange
- CRDM latch housings
- CRDM rod travel housings
- reactor vessel; CRDM head penetration thermal sleeves

- reactor vessel; head adapter plug
- reactor vessel; head lifting lugs
- reactor vessel; ventilation shroud support ring
- reactor vessel; seal assembly retaining clamps and closure bolting
- reactor vessel; seal assemblies (core exit thermocouples)
- reactor vessel; primary nozzles
- reactor vessel; primary nozzle support pads
- reactor vessel; primary nozzle safe ends
- reactor vessel; primary nozzle welds
- reactor vessel; upper shell
- reactor vessel; intermediate shell
- reactor vessel; lower shell
- reactor vessel; beltline welds
- reactor vessel; vessel flange and core support ledge
- reactor vessel; bottom head (dome and torus)
- reactor vessel; core support pads (clevis)
- reactor vessel; instrument tubes (bottom head)
- reactor vessel; head vent pipe (top head)
- upper internals; upper support plate
- upper internals; upper support column
- upper internals; upper support column bolts
- upper internals; upper support column spider
- upper internals; upper core plate
- upper internals; fuel alignment pins
- upper internals; hold-down spring
- upper internals; rod cluster control assembly (RCCA) guide tubes
- upper internals; RCCA guide tube bolts
- upper internals; RCCA guide tube support pins (split pins)
- upper internals; head and vessel alignment pins
- upper internals; head cooling spray nozzles
- upper internals; upper core plate alignment pins
- upper internals; upper instrumentation column, conduit, and supports
- lower internals; core barrel
- lower internals; core barrel flange
- lower internals; core barrel outlet nozzles
- lower internals; thermal shield
- lower internals; baffle and former plates
- lower internals; baffle and former bolts
- lower internals; lower core plate
- lower internals; fuel alignment pins
- lower internals; lower support forging
- lower internals; lower support plate columns
- lower internals; BMI columns
- lower internals; BMI column cruciform
- lower internals; lower support plate column bolts
- lower internals; radial support keys
- lower internals; radial support key bolts
- lower internals; clevis inserts
- lower internals; clevis insert bolts

- lower internals; tie plate (upper and lower)
- lower internals; diffuser plate
- lower internals; secondary core support
- lower internals; irradiation specimen guide
- lower internals; specimen plugs
- flux thimble guide tubes
- flux thimble seals
- closure bolting
- containment isolation piping and components
- piping, piping components, and piping elements
- solenoid valves

The intended functions of the reactor vessel and internals component types within the scope of license renewal include:

- control rod assembly support, orientation, guidance, and protection
- passageway for the distribution of reactor coolant flow to the reactor core
- reactor core support and orientation
- passageway for incore instrumentation support, guidance, protection
- pressure-retaining boundary
- reactor pressure vessel gamma and neutron shielding
- secondary support to limit core support structure downward displacement
- structural support and seismic integrity
- thermal insulation

2.3.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.1 and FSAR Sections 3.9.5, 4.5, 5.1, 5.2, 5.3, and 7.7.1.9 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 FSAR 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).

2.3.1.1.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the reactor vessel and 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).

2.3.1.2 Incore Instrumentation System

2.3.1.2.1 Summary of Technical Information in the Application

LRA Section 2.3.1.2 describes the incore instrumentation system, which is composed of thermocouples positioned to measure fuel assembly coolant outlet temperatures at preselected positions and fission chamber detectors that can be positioned in guide thimbles which run the length of selected fuel assemblies to measure the neutron flux distribution. The incore instrumentation obtains data from which fission power density distribution in the core, reactor coolant enthalpy distribution in the core, and fuel burn-up distribution may be determined. The incore instrumentation system has RVLIS I&C components. RVLIS and incore exit thermocouples give the operator an advance warning of and monitor recovery from inadequate core cooling. The RVLIS instrumentation is not required to prevent or mitigate the consequences of an accident; however, it has an important post-accident monitoring function. The incore instrumentation system has components needed for RG 1.97, Category 1, monitoring requirements (*i.e.*, core exit thermocouple temperature). The incore instrumentation system includes components such as flux thimbles and seal assemblies required to maintain the RCS pressure boundary.

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

LRA Table 2.3.1-2 identifies incore instrumentation system component types within the scope of license renewal and subject to an AMR:

- flux thimble tubes
- flux thimble isolation valves

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

2.3.1.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.2 and FSAR Sections 4.4.4 and 7.7.1.9.1 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the incore instrumentation 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).

2.3.1.3 Reactor Coolant System

2.3.1.3.1 Summary of Technical Information in the Application

LRA Section 2.3.1.3 describes the RCS, which includes piping and components not otherwise included in the reactor vessel and internals, incore instrumentation, reactor coolant pump (RCP), pressurizer, or steam generator systems. The RCS consists of three similar heat transfer loops connected in parallel to the reactor vessel. Each loop contains an RCP, steam generator, piping, and valves. In addition, the system includes interconnecting piping and components of the pressurizer, pressurizer relief and safety valves, and the pressurizer relief tank (PRT).

RCS piping includes the interfacing piping of the following systems:

- chemical and volume control
- residual heat removal (RHR)
- safety injection
- sampling
- pressurizer (*i.e.*, safety and relief valve discharge lines to the PRT)
- auxiliary support piping for the PRT
- RCS drain and instrument piping

The RCS includes selected PRT piping. The PRT spray header and nitrogen supply piping penetrates containment and is, therefore, required for containment isolation. This piping is in the RCS; however, its containment isolation valves (CIVs) are in the pressurizer system. RCS piping connects with the RVLIS and includes components for RG 1.97, Category 1, monitoring requirements for system operating parameters.

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

LRA Table 2.3.1-3 identifies reactor coolant system component types within the scope of license renewal and subject to an AMR:

- Class I piping, fittings, and branch connections less than nominal pipe size (NPS) 4
- closure bolting

- containment isolation piping and components
- piping, piping components, and piping elements

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

2.3.1.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.3 and FSAR Sections 5.1, 5.2, and 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the reactor coolant 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).

2.3.1.4 Reactor Coolant Pump and Motor

2.3.1.4.1 Summary of Technical Information in the Application

LRA Section 2.3.1.4 describes the RCP and motor. The RCP is a vertical, single-stage, controlled-leakage, centrifugal pump designed for large volumes of reactor coolant. The pump assembly has three major sections: the hydraulic suction, the seals, and the motor. Additional pump components are the shaft, pump radial bearing, thermal barrier heat exchanger assembly, coupling, spool piece, and motor stand. The RCP thermal barriers and RCP motor bearing oil coolers maintain the component cooling water (CCW) system pressure boundary. The RCPs supply coolant flow to remove heat from the reactor core and transfer it to the steam generators. The RCPs are an integral part of the RCPB.

The RCP and motor contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs in the reactor coolant pump and motor potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the RCP and motor perform functions that support fire protection.

LRA Table 2.3.1-4 identifies RCP and motor component types within the scope of license renewal and subject to an AMR:

- RCPs (casings)
- RCP closure bolting
- RCP oil cooler and heat exchanger components
- RCP thermal barrier heat exchanger components
- RCP lube oil collection tank
- RCP oil spill protection system piping

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

2.3.1.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.4 and FSAR Section 5.4.1 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the RCP and RCP motor 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 Pressurizer

2.3.1.5.1 Summary of Technical Information in the Application

LRA Section 2.3.1.5 describes the pressurizer, a vertical, cylindrical vessel with hemispherical top and bottom heads constructed of carbon steel and austenitic stainless steel cladding on all internal surfaces exposed to the reactor coolant. A stainless steel liner is in place of cladding in some nozzles. The pressurizer is connected to the hot leg of one of the reactor coolant loops by a surge line. Electric heaters are installed through the bottom head of the vessel while the spray nozzle and the relief valve and safety valve connections are in the top head of the vessel. The pressurizer, a part of the RCPB, mitigates steam generator tube ruptures, events that may cause RCS overpressure, and events that require RCS depressurization for cold shutdown conditions. The pressurizer provides a bleed path for bleed-and-feed RCS cooling. The pressurizer is required for RCS pressure control; however, pressure control and pressurizer water level control during normal power operation are not safety-related functions.

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

LRA Table 2.3.1-5 identifies pressurizer component types within the scope of license renewal and subject to an AMR:

- pressurizer shell
- pressurizer lower head
- pressurizer upper head
- pressurizer valve support bracket lugs
- pressurizer spray nozzle
- pressurizer relief nozzle
- pressurizer safety nozzle
- pressurizer surge nozzle
- pressurizer spray head
- pressurizer spray head coupling
- pressurizer spray head locking bar
- pressurizer spray nozzle thermal sleeve
- pressurizer surge nozzle thermal sleeve
- pressurizer instrument nozzles
- pressurizer spray nozzle safe end
- pressurizer relief nozzle safe end
- pressurizer safety nozzle safe end
- pressurizer surge nozzle safe end
- pressurizer manway covers and insert
- pressurizer manway studs
- pressurizer manway nuts
- pressurizer manway pad gasket seating surface
- pressurizer heater well nozzles
- pressurizer immersion heaters
- pressurizer support skirt and flange
- pressurizer seismic lugs
- pressurizer relief tank shell and heads
- pressurizer relief tank flanges
- pressurizer relief tank nozzles
- pressurizer relief tank rupture disk
- closure bolting
- containment isolation piping and components
- filter housings (air and gas)
- piping, piping components, and piping elements
- pressurizer power-operated relief valve (PORV) accumulators
- pressurizer PORV flex hoses
- regulators

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

- pressure-retaining boundary
- adequate and proper flow distribution
- structural support and seismic integrity
- thermal insulation

2.3.1.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.5 and FSAR Sections 5.4.10, 5.4.13, and 7.7.1.5 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance 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).

2.3.1.6 Steam Generator

2.3.1.6.1 Summary of Technical Information in the Application

LRA Section 2.3.1.6 describes the steam generators, originally Westinghouse Model D4s, a preheater-type steam generator with Alloy 600 mill-annealed tubes. These steam generators experienced tube and tube support component degradation and other problems similar to industry-wide experience with the model and in the fall of 2001 were replaced with Westinghouse Model Delta 75 steam generators. The steam generator primary function is to transfer heat from reactor coolant loop to the feedwater to generate steam for the turbine generator. The steam generators must maintain both RCPB and secondary side pressure boundary integrity. They provide a heat sink for the reactor core during normal operating, shutdown, and accident conditions. Steam generator level instrumentation is required for post-accident monitoring; however, these components are parts of the nuclear steam supply system (NSSS) process instrumentation system.

The steam generator contains safety-related components relied upon to remain functional during and following DBEs. In addition, the steam generator performs functions that support fire protection and ATWS.

LRA Table 2.3.1-6 identifies steam generator component types within the scope of license renewal and subject to an AMR:

- instrument manifolds and valves
- elliptical head
- steam nozzle
- steam nozzle flow limiter
- steam generator upper shell
- steam generator lower shell
- steam generator transition cone
- feedwater nozzle
- feedwater nozzle thermal sleeve
- AFW nozzle
- auxiliary nozzle thermal sleeve
- steam generator feedwater impingement plate and support
- secondary manway covers
- secondary manway bolting
- inspection port and handhole covers
- inspection port and handhole closure bolting
- sludge collector maintenance opening covers
- sludge collector maintenance openings closure bolting
- channel head
- steam generator: divider plate
- steam generator support ring
- steam generator primary nozzles
- steam generator primary nozzle safe ends
- secondary side shell penetrations (except steam and feedwater)
- primary manway cover and inserts
- primary manway bolting
- tubeplate
- tubes
- tube plugs
- tube support plates and flow distribution baffles
- steam generator: tube bundle wrapper
- steam generator: anti-vibration bars
- tube bundle support hardware
- feedwater distribution ring and supports
- feedwater distribution ring spray nozzles
- AFW internal spray pipe
- moisture separator assembly
- miscellaneous non-pressure boundary internals

The intended functions of the steam generator component types within the scope of license renewal include:

- heat transfer
- pressure-retaining boundary
- adequate and proper flow distribution
- structural support and seismic integrity
- thermal insulation
- flow regulation

2.3.1.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.6 and FSAR 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 FSAR 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).

2.3.1.6.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the steam generator 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 Systems

LRA Section 2.3.2 identifies the ESF systems SCs subject to an AMR for license renewal.

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

- 2.3.2.1 containment spray system
- 2.3.2.2 containment isolation system
- 2.3.2.3 high head safety injection system
- 2.3.2.4 low head safety injection / residual heat removal system
- 2.3.2.5 passive safety injection system
- 2.3.2.6 control room area ventilation system

The staff's findings on review of LRA Sections 2.3.2.1 – 2.3.2.6 are in SER Sections 2.3.2.1 - 2.3.2.6, respectively.

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 (CSS), which consists of two independent and redundant loops, each with a spray pump, piping, valves, spray headers, and spray valves. The CSS has two principal modes of operation: (a) the injection mode in which the system sprays borated water taken from the refueling water storage tank (RWST) and (b) the recirculation mode in which the system takes water from the containment sumps. The CSS must function following a loss-of-coolant accident (LOCA), following a safe shutdown earthquake, and under post-accident environmental conditions. Therefore, this system is safety-related and seismic Category I. The CSS provides adequate capability for the fission product scrubbing of the containment atmosphere following a LOCA to keep offsite doses and doses to operators in the control room within 10 CFR 50.67 guidelines.

The CSS has components for containment isolation. Containment isolation valve position indication is an RG 1.97 Category 1 requirement. The CSS has components for post-accident monitoring. RG 1.97 Category 1 parameters monitored include RWST level, containment sump level, containment water level, containment pressure, and sodium hydroxide tank level.

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

LRA Table 2.3.2-1 identifies CSS component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- containment spray additive tank
- containment spray nozzles
- containment spray pumps
- flow restricting elements
- piping insulation
- piping, piping components, and piping elements
- refueling water storage tank

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

- pressure-retaining boundary
- adequate and proper flow distribution
- thermal insulation
- flow regulation

2.3.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.1 and FSAR Sections 6.2.2.2.2 and 6.5.2 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 FSAR 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 2.3.3-2 dated August 27, 2007, the staff noted that Plant-Specific Note No. 716 for LRA Tables 3.3.2-1 through 3.3.2-68 reads "Alignments for piping and ducting may be considered equivalent components. This is supported by equivalencies in NUREG-1801, such as found in NUREG-1801, Section V.A-I." GALL Report Section V A, "Engineered Safety Features - Containment Spray System (PWR)," has an Item V.A-I for steel ducting, piping and components external surfaces in air-indoor uncontrolled (external) environment with the effect being loss of material/general corrosion and identifies the applicable AMP as GALL AMP XI.M36, "External Surfaces Monitoring." The staff requested that the applicant answer the following questions: (1) Is this the "Section V.A-I" being referred to, (2) What is the definition of "alignments," (3) Are "alignments for piping and ducting" referring to supports, fittings and/or components, assemblies or something else, and (4) In what sense or with what are they "considered equivalent components" and exactly how does GALL Report Section VA, Item V.A-1, support this equivalency determination.

In its response by letter dated September 24, 2007, the applicant stated:

> NUREG-1801 Section VA Engineered Safety Features - Containment Spray System (PWR) has an Item V.A-1 for Steel Ducting, piping and components external surfaces in Air - Indoor uncontrolled (External) environment with the effect being Loss of material / general corrosion and identifies the applicable aging management program as NUREG-1801 Chapter XI.M36, 'External Surfaces Monitoring.'
>
> Referring to Section 4.2.2 of NEI 95-10, 'Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule,' Rev. 6, 'alignments' are discussed as follows: Section 4.2.2 Consistency With NUREG-1801 Volume 2 Line Items: Each combination of component type, material, environment and aging effect requiring management should be compared with NUREG-1801 Volume 2 line items to identify consistencies. If there is no corresponding line item in NUREG-1801 Volume 2, the combination is a plant-specific aging evaluation result. Each applicant should identify how the aging evaluation results align with information in NUREG-1801, Volume 2. This is accomplished through a series of notes identified on Table 4.2-2. All note references with letters are standard notes that will be the same from application to application throughout the industry. Any notes the plant requires that are in addition to the standard notes will be identified by a number and deemed plant-specific.
>
> The various NUREG-1801 chapters contain summary descriptions and tabulations of evaluations of aging management programs for structures and components in the

various major plant systems in light-water reactor nuclear power plants. However, the evaluations in NUREG-1801 for a given system may not contain all of the material/environment combinations likely to be encountered. For example, NUREG-1801, Volume 2, Section VII, AUXILIARY SYSTEMS, F3 Primary Containment Heating and Ventilation System (i.e., VII F3), contains only one line item for stainless steel ducting (VII.F3-1). This line item contains condensation as the only environment choice. Referring to LRA Table 3.3.2-56 on Page 3.3-370 for the line items Containment Cooling System - ducting and components/stainless steel - Air/Gas (Wetted) (Inside) and Air - Indoor (Outside), it was deemed that a better alignment could be made to a line item in a different NUREG-1801 Section (i.e., VII.J-15) that is described as components of the type 'Piping, piping components, and piping elements.' Note 716 is stating that the duct and pipe are considered equivalent components and provides an example in NUREG-1801 (i.e., V.A-1) where precedence for such an equivalency is made. Section VA Item V.A-I supports this equivalency determination because the component 'ducting' is treated equivalently with the component 'piping and components' in this line item.

Based on its review, the staff finds the applicant's response to RAI 2.3.3-2 acceptable because the specific clarifications requested were provided and the applicant's application is consistent with the guidance of the GALL Report and NEI 95-10 with regard to the formulation and use of the note. This RAI is also applicable to LRA Sections 2.3.3.64, 2.3.3.66 and 2.3.3.67. The staff's concern described in RAI 2.3.3-2 is resolved.

In RAI 2.3.3-7a dated August 27, 2007, the staff requested that the applicant clarify the intended functions of the nonsafety-related components that are included within the scope of license renewal and if they are reflected in GALL Report Tables 2.0-1, 3.2.1 and 3.3.2.

In its response dated September 24, 2007, the applicant stated that HNP mechanical screening methodology does not treat components within the scope of license renewal pursuant to 10 CFR 54.4(a)(2) differently than components within the scope of license renewal pursuant to 10 CFR 54.4(a)(1) or (a)(3). The list of mechanical component intended functions in LRA Table 2.0-1 can be used individually or in combination to describe a component intended function that supports the overall intended function. The components within the scope of license renewal are treated equally regardless of the reason that they were brought into scope; therefore, the components are included in the appropriate tables.

Based on its review, the staff finds the applicant's response to RAI 2.3.3-7a acceptable because the requested clarification was provided and the applicant gave assurance that when applicable, the intended functions and the AMR of the nonsafety-related components were appropriately included within the scope of license renewal. The staff's concern described in RAI 2.3.3-7a is resolved.

In RAI 2.3.3-7b dated August 27, 2007, the staff requested that the applicant explain the general statement that "the system contains components that are conservatively assumed to meet the criteria of 10 CFR 54.4(a)(2) based on their quality class and are, therefore, included in scope of license renewal." The applicant was specifically asked to verify components that are included within the scope of license renewal due to the conservative assumption, and if they are reflected in the appropriate tables mentioned in the RAI above.

In its response dated September 24, 2007, the applicant stated that the major structures and plant components such as pumps, valves, tanks, heat exchangers, and instruments at HNP are assigned unique component numbers that are maintained in a controlled database called the PassPort EDB or EDB. The PassPort EDB is a corporate database platform which is utilized for, among other things, compiling and archiving quality requirements for SSCs at the applicant's nuclear power plants. The PassPort EDB is used to implement the graded quality classification system defined at HNP. The HNP procedure, "Component Quality Class," defines different categories of quality classifications for these unique components. Among these quality classifications, Quality Class B is reserved for nonsafety-related, quality augmented SSCs. This quality class is further broken down into subclasses, which provide a more specific basis for quality designations. Two of these Quality Class B subclasses are not currently defined in the HNP procedure but were incorporated into the EDB based on a historical augmented classification. For the purposes of license renewal, these undefined Quality Class B subclasses were aligned with the license renewal rule such that components with those designations were included within the scope of license renewal pursuant to 10 CFR 54.4(a)(2). The general statement noted in the RAI is included in the system descriptions of the LRA to indicate this case.

As an example, the applicant discussed the chemical volume and control system in LRA Section 2.3.3.1. The applicant noted that the general statement was included for this system and some of the components associated with this category include instrument valves. These valves are included in the "piping, piping components, and piping elements" component/commodity group in LRA Table 2.2.2-1.

The RAI's an applicants responses discussed above are applicable to sections of the LRA where similar statements were included (e.g. 2.3.3.56, 2.3.3.57, 2.3.3.59, 2.3.3.65 and 2.3.3.83).

Based on its review, the staff finds the applicant's response to RAI 2.3.3-7b acceptable because it is the staff's understanding that additional components were included within the scope of license renewal because they were conservatively assumed to meet the requirements of 10 CFR 54.4(a)(2) based on the PassPort EDB historical augmented classification of the SSCs at HNP. The staff's concern described in RAI 2.3.3-7b is resolved.

2.3.2.1.3 Conclusion

The staff reviewed the LRA, FSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the CSS 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 Containment Isolation System

2.3.2.2.1 Summary of Technical Information in the Application

LRA Section 2.3.2.2 describes the containment isolation system, which consists of the valves and actuators required to isolate the containment following a LOCA, main steamline break (MSLB), or fuel handling accident inside the containment.

Systems with primary CIVs are:

- reactor vessel and internals (including the RVLIS)
- RCS
- pressurizer system
- CSS
- high-head safety-injection (HHSI) system
- low-head safety-injection and RHR system
- passive safety-injection system
- chemical and volume control system
- primary sampling system
- PASS
- normal service water system
- ESW system
- CCW system
- instrument air system
- service air system
- fire protection system
- radioactive equipment drains system
- demineralized water system
- radiation monitoring system
- gaseous waste processing
- refueling system
- spent fuel pool cleanup system
- containment vacuum relief system
- containment pressurization system
- penetration pressurization system
- containment atmosphere purge exhaust system
- post-accident hydrogen system
- steam generator blowdown system
- main steam system
- feedwater system
- AFW system
- secondary sampling system

2.3.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.2 and FSAR Section 6.2.4 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 FSAR 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).

2.3.2.2.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance 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).

2.3.2.3 High-Head Safety-Injection System

2.3.2.3.1 Summary of Technical Information in the Application

LRA Section 2.3.2.3 describes the HHSI system, which supplies cooling water to the RCS when the RCS leak rate is relatively low or nonexistent, as during a main steam or feedwater line break, and the RCS pressure is high. The HHSI system functions in conjunction with the chemical and volume control system (CVCS) and the CSS via the RWST to deliver borated water to the RCS following a postulated LOCA, MSLB, or other event affecting the RCS liquid inventory. The HHSI system relies upon the charging and safety injection (CSI) pumps, which take suction on the RWST. The HHSI system includes nitrogen gas/air supply piping between the pressurizer PORVs and their pneumatic accumulators. For this reason, the HHSI system supports the pressurizer system intended functions that actuate the PORVs. The HHSI system has Class 1 piping to maintain the RCPB and components for containment isolation. Containment isolation valve position indication is an RG 1.97, Category 1, function.

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

LRA Table 2.3.2-2 identifies HHSI system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- flow restricting elements
- piping insulation
- piping, piping components, and piping elements

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

- pressure-retaining boundary

- thermal insulation
- flow regulation

2.3.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.3 and FSAR Section 6.3 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 FSAR 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 2.3.2-1 dated August 7, 2007, the staff stated that scoping boundary drawing 5-G-0808-LR, indicates that the boron injection tank is within the scope of license renewal; however, LRA Table 2.3.2-2 does not identify the boron injection tank separately as within the scope of license renewal. Therefore, the staff requests that the applicant indicate which line item in LRA Table 2.3.2-2 includes the subject component.

In its response dated September 5, 2007, the applicant stated that the boron injection tank is within the scope of license renewal and is discussed in LRA Section 2.3.2.3. LRA Table 2.3.2-2 component/commodity, piping, piping components, and piping elements, includes the boron injection tank.

Based on its review, and with the inclusion of this component, the staff finds the applicant's response to RAI 2.3.2-1 acceptable. Therefore, the staff's concern described in RAI 2.3.2-1 is resolved.

In RAI 2.3.2-2 dated August 7, 2007, the staff stated that scoping boundary drawing 5-G-0809-LR indicates that accumulator tanks are within the scope of license renewal; however, LRA Table 2.3.2-2 does not identify the accumulator tanks separately as within the scope of license renewal. Therefore, the staff requests that the applicant indicate which line item in LRA Table 2.3.2-2 includes the subject component.

In its response dated September 5, 2007, the applicant stated that the above-referenced accumulator tanks, shown on scoping boundary drawing 5-G-0809-LR, are within the scope of license renewal and discussed in LRA Section 2.3.2.5. LRA Table 2.3.2-4 identifies these tanks as component/commodity cold leg accumulators.

Based on the staff's review, and with the inclusion of this component, the staff finds the applicant's response to RAI 2.3.2-2 acceptable. Therefore, the staff's concern described in RAI 2.3.2-2 is resolved.

2.3.2.3.3 Conclusion

The staff reviewed the LRA, FSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the HHSI 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).

2.3.2.4 Low-Head Safety-Injection / Residual Heat Removal System

2.3.2.4.1 Summary of Technical Information in the Application

LRA Section 2.3.2.4 describes the low-head safety-injection (LHSI) and RHR system, which includes the RHR system and is one of three subsystems comprising the emergency core cooling system (ECCS). The LHSI protects the reactor core when the RCS leak rate is high and the RCS pressure low. The LHSI/RHR system includes the residual heat exchangers, RHR pumps, flow orifices, seal coolers, valves, and piping. Each of the lines from the RCS hot legs to the RHR pump suctions has two remote manual motor-operated valves as the boundary between the RCS and the RHR system. The RHR system monitors RHR pump performance during mid-loop operations. The LHSI/RHR system includes Class 1 piping for RCS pressure boundary maintenance and components for containment isolation. Containment isolation valve position indication is an RG 1.97, Category 1, function.

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

LRA Table 2.3.2-3 identifies LHSI/RHR system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- flow restricting elements
- piping insulation
- piping, piping components, and piping elements
- RHR heat exchanger components
- RHR heat exchanger tubes
- RHR pump seal water cooler components
- RHR pump seal water cooler tubes
- RHR pumps

The intended functions of the LHSI/RHR system component types within the scope of license renewal include:

- heat transfer
- pressure-retaining boundary
- thermal insulation
- flow regulation

2.3.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.4 and FSAR Sections 6.3.2 and 5.4.7 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 FSAR 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).

2.3.2.4.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the LHSI/RHR 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).

2.3.2.5 Passive Safety-Injection System

2.3.2.5.1 Summary of Technical Information in the Application

LRA Section 2.3.2.5 describes the passive safety-injection (PSI) system, one of three subsystems comprising the ECCS. The PSI system is the subsystem that functions at intermediate RCS pressure, when the HHSI system is not entirely effective because of the high leak rate and the LHSI system is not yet operable. The PSI function is by safety-injection accumulators, pressure vessels partially filled with borated water and pressurized with nitrogen gas. PSI system components include the accumulators, piping, valves, flow elements, and instrumentation. Makeup to the safety-injection accumulators is by borated water pumped from the RWST by a hydrostatic test pump, which serves no safety function and normally is isolated from the process piping during normal plant operation.

The PSI system includes Class 1 piping for the RCPB function, components to provide nitrogen for pressurizer PORV operation, and components required for containment isolation. Containment isolation valve position indication is an RG 1.97, Category 1, function.

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

LRA Table 2.3.2-4 identifies PSI system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- cold leg accumulators
- containment isolation piping and components
- piping, piping components, and piping elements

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

2.3.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.5 and FSAR Section 6.3 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 FSAR 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).

2.3.2.5.3 Conclusion

The staff reviewed the LRA, FSAR, drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the PSI 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).

2.3.2.6 Control Room Area Ventilation System

2.3.2.6.1 Summary of Technical Information in the Application

LRA Section 2.3.2.6 describes the control room area ventilation system, which consists of safety-related air conditioning and emergency filtration systems and provides heating, ventilation, cooling, filtration, air intake and exhaust isolation, and maintains 50-percent relative humidity for the control room envelope during normal operation and after design-basis accidents. The system, located in the reactor auxiliary building (RAB) at the 286-ft. and 305-ft. elevations, supports operation of the control room envelope, which has been designed for continuous occupancy within radiation exposure limits, during normal operation and extended occupancy throughout the duration of any one of the following postulated design-basis accidents: (a) LOCA, (b) fuel-handling accident, or (c) radioactive releases due to radwaste system failure.

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

LRA Table 2.3.2-5 identifies control room area ventilation system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- control room smoke purge and exhaust fan housings
- control room air handling unit and emergency filtration unit enclosure
- control room air handling unit and emergency filtration unit fan housings
- control room air handling unit and emergency filtration unit filter housings
- control room air handling unit cooling coil
- ducting
- ducting and components
- ducting closure bolting
- elastomer seals and components
- piping, piping components, and piping elements

The intended functions of the control room area ventilation system component types within the scope of license renewal include:

- filtration
- pressure-boundary
- heat transfer

2.3.2.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.6 and FSAR Sections 6.4, 7.3.1.5.7, 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 FSAR 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 2.3.3-1 dated August 27, 2007, the staff stated that the top of LRA page 3.3-440 reads: "Notes for Tables 3.3.2-1 through 3.3.2-68:" It appears that these Notes are also applicable to Tables 3.3.2-69 through 3.3.2-71. Also, the top of LRA page 3.5-198 reads: "Notes for Tables 3.5.2-1 through 3.5.2-26." It appears that these Notes are also applicable to Tables 3.5.2-27 through 3.5.2-29. The applicant was asked to provide clarification in reference to LRA table notes.

In its response dated September 24, 2007, the applicant stated that yes, the notes are applicable as described. These notes were addressed in LRA Amendment I as Self-Identified Changes 2 and 3 on page 12 of Enclosure 2 of HNP Letter to the NRC Serial: HNP-07-112, dated August 20, 2007.

Based on its review, the staff finds the applicant's response to RAI 2.3.3-1 acceptable because the specific clarification requested was provided and this uncertainty as to having a complete application was eliminated. The staff's concern described in RAI 2.3.3-1 is resolved.

In RAI 2.3.3-3 dated August 27, 2007, the staff noted that license renewal drawing 8-G-0517-LR has a box shaded green titled "DISCHARGE FROM CRDM COOLING FANS" at grid location G-9. The staff requested that the applicant clarify whether this drawing depicts a common discharge ductwork plenum or just a containment volume where mixing occurs and if the latter, why it is highlighted green.

In its response by letter dated September 24, 2007, the applicant stated that the box shaded green titled "DISCHARGE FROM CRDM COOLING FANS" at grid location G-9 on license renewal drawing 8-G-0517-LR represents the volume of air within the containment to which the CRDM cooling fans discharge. This volume should not have been highlighted on the subject scoping drawing.

Based on its review, the staff finds the applicant's response to RAI 2.3.3-3 acceptable because the drawing was labeled in error and the letter corrected the mistake. Therefore, the staff's concerns described in RAI 2.3.3-3 are resolved.

2.3.2.6.3 Conclusion

The staff reviewed the LRA, FSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the control room area 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 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:

- 2.3.3.1 Chemical and Volume Control System
- 2.3.3.2 Boron Thermal Regeneration System
- 2.3.3.3 Primary Makeup System
- 2.3.3.4 Primary Sampling System
- 2.3.3.5 Post-accident Sampling System
- 2.3.3.6 Circulating Water System
- 2.3.3.7 Cooling Tower System
- 2.3.3.8 Cooling Tower Make-up System
- 2.3.3.9 Screen Wash System

- 2.3.3.10 Main Reservoir Auxiliary Equipment
- 2.3.3.11 Auxiliary Reservoir Auxiliary Equipment

The staff's findings on review of LRA Sections 2.3.3.1 – 2.3.3.83 are in SER Sections 2.3.3.1 – 2.3.3.83, respectively.

2.3.3.1 Chemical and Volume Control System

2.3.3.1.1 Summary of Technical Information in the Application

LRA Section 2.3.3.1 describes the CVCS, which provides auxiliary services to the RCS. The CVCS maintains a programmed water level in the pressurizer to maintain the required RCS water inventory by means of the charging and letdown functions, which combine to form a continuous feed-and-bleed process. Reactor coolant is "letdown" to the CVCS from the RCS loop A crossover leg. The CVCS volume control tank (VCT) provides a surge capacity for reactor coolant expansion not accommodated by the pressurizer. Three CSI pumps take suction on the VCT and return the cooled, purified reactor coolant to the RCS, directing a portion of the charging flow through a seal water injection filter and then to each RCP for seal water injection. For refueling and maintenance, the RCS is drained to the recycle holdup tank via the CVCS letdown line. Following refueling and maintenance, the CSI pumps refill the RCS with purified reactor coolant at the desired blended boron concentration. The CVCS is a means to provide makeup to the RWST. Portions of the CVCS support the RCPB function. The CVCS has components for containment isolation. Containment isolation valve position indication is an RG 1.97, Category 1, function.

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

LRA Table 2.3.3-1 identifies CVCS component types within the scope of license renewal and subject to an AMR:

- backflushable filters
- boric acid transfer pumps
- CSI pump gear lube oil pumps
- charging pump mini-flow orifices
- closure bolting
- containment isolation piping and components
- CSI pump lube oil pumps
- CSI pumps
- CSI pumps gear oil cooler components
- CSI pumps gear oil cooler tubes
- CSI pumps oil cooler components
- CSI pumps oil cooler tubes
- CSI pumps lube oil piping components
- excess letdown heat exchanger components
- flow restricting elements

- letdown heat exchanger components
- piping insulation
- piping, piping components, and piping elements
- regenerative heat exchanger
- seal water heat exchanger components
- system strainers
- tank diaphragm
- tanks
- VCT

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

- filtration
- heat transfer
- pressure-retaining boundary
- structural support and seismic integrity
- thermal insulation
- flow regulation

2.3.3.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.1 and FSAR Section 9.3.4 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the CVCS 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 Boron Thermal Regeneration System

2.3.3.2.1 Summary of Technical Information in the Application

LRA Section 2.3.3.2 describes the boron thermal regeneration system (BTRS), which includes compressors, coolers, demineralizers, heat exchangers, pumps, valves, and piping, which was designed to vary the RCS boron concentration during reactor power changes, and which assists in changing RCS boron concentrations for fuel depletion, shutdowns, start-ups, and refueling. The BTRS utilizes a temperature-dependent ion exchange process to store and release boron from the RCS without discharging water to the boron recycle system. The BTRS was designed originally to control changes in reactor coolant boron concentration to compensate for xenon transients during load follow operations without additional makeup for either boration or dilution but is not used currently at HNP for that purpose. Towards the end of core life the BTRS reduces the reactor coolant boron concentration. All BTRS components except those in the chilled water loop are nuclear safety-related. The BTRS is required to maintain the CVCS pressure boundary.

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

LRA Table 2.3.3-2 identifies BTRS component types within the scope of license renewal and subject to an AMR:

- BTRS chiller lube oil cooler
- closure bolting
- letdown chiller heat exchanger components
- letdown reheat heat exchanger components
- moderating heat exchanger components
- piping, piping components, and piping elements
- tanks

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

2.3.3.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.2 and FSAR Section 9.3.4.1 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the boron thermal regeneration 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 Primary Makeup System

2.3.3.3.1 Summary of Technical Information in the Application

LRA Section 2.3.3.3 describes the primary makeup system designed to supply makeup water to various systems including the CVCS and boron recycle, spent fuel pool cooling, spent fuel pool cleanup, filter backwash, liquid waste processing, gaseous waste processing, and pressurizer systems. The primary makeup system stores and distributes recycled, demineralized water with some tritium content due to previous use within other plant systems. This system is an emergency water makeup source for the CCW system and supplies a sufficient reserve of makeup water to the CVCS to maintain a constant RCS pressurizer level during a cooldown to cold shutdown conditions. The system also provides water to nonsafety-related systems in the RAB during normal operation. The primary makeup system consists of the reactor makeup water storage tank, two reactor makeup water pumps, flow orifices, strainers, valves, and piping. The reactor makeup water storage tank is the head tank for the primary makeup system. Makeup to the reactor makeup water storage tank is supplied by the demineralized water system.

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

LRA Table 2.3.3-3 identifies primary makeup system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow restricting elements
- piping, piping components, and piping elements
- reactor makeup water storage tank
- tank diaphragm

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

- pressure-retaining boundary
- structural support and seismic integrity
- flow regulation

2.3.3.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.3 and FSAR 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the primary makeup 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 Primary Sampling System

2.3.3.4.1 Summary of Technical Information in the Application

LRA Section 2.3.3.4 describes the primary sampling system (PSS), which is designed to collect fluid and gas grab samples while minimizing radiation exposure to personnel. These samples can be taken from RCS Loop 2 or Loop 3 hot leg, the pressurizer liquid or vapor space, and the RCS support systems. The RCS support systems include the BTRS, the CVCS, the RHR system, the safety-injection system accumulators, and the reactor makeup water storage tank for information needed to maintain RCS chemistry and to control chemistry parameters during normal plant operational modes. The PSS has equipment skids, coolers, compressors, pumps, panels, tanks, sample sinks, piping, and tubing for determining fission and corrosion product activity levels; boron concentration; lithium, pH, conductivity, and radiation levels; crud, dissolved gas, and chloride concentration; and gas compositions in various tanks. The applicant uses the results determined to regulate boron concentration, monitor fuel rod and steam generator tube integrity, specify chemical additions to the various systems, and maintain proper hydrogen and nitrogen overpressure in the VCT. The PSS is required for containment isolation. Containment isolation valve position indication is an RG 1.97, Category 1, function.

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

LRA Table 2.3.3-4 identifies primary sampling system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping, piping components, and piping elements
- primary sampling condenser components
- primary sampling condenser tubes

- primary sampling cooler components
- primary sampling cooler tubes
- primary sampling evaporator components
- primary sampling evaporator tubes

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

- heat transfer
- pressure-retaining boundary

2.3.3.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.4 and FSAR 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 FSAR 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).

2.3.3.4.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the PSS 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 Post-Accident Sampling System

2.3.3.5.1 Summary of Technical Information in the Application

LRA Section 2.3.3.5 describes the PASS designed to collect and analyze fluid samples and to provide grab samples for additional analysis in a LOCA. Samples can be taken from the RCS Loop 2 or Loop 3 hot legs or from either RHR pump discharge line, the former sample points for a reactor coolant sample, the latter for a containment sump sample. The PASS sampling equipment is isolated from the RCPB and the containment and is, therefore, nonnuclear safety class and not designed to seismic Category I requirements; however, the system includes components required for containment isolation. Containment isolation valve position indication is an RG 1.97, Category 1, requirement.

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

LRA Table 2.3.3-5 identifies PASS component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping insulation
- piping, piping components, and piping elements

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

- pressure-retaining boundary
- thermal insulation

2.3.3.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.5 and FSAR 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the PASS 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 Circulating Water System

2.3.3.6.1 Summary of Technical Information in the Application

LRA Section 2.3.3.6 describes the circulating water system (CWS), which supplies the main condenser continuously with cooling water to remove heat from the main turbines. The water circulates through the condenser from the cooling tower basin and a concrete canal directs it from the coiling tower basin to the inlet of the CWS pumps in the circulating water intake structure. The CWS is equipped with three vertical wet-pit pumps that take suction from the circulating water intake structure and discharge water through individual steel pipes into the CWS pump discharge header. The CWS includes components relied on in plant evaluations to perform functions that demonstrate compliance with NRC regulations for fire protection (10 CFR 50.48) because of its interaction with the normal service water (NSW) system.

The NSW system is credited for fire protection. During normal operation, the NSW return flow paths from branch headers, with the exception of the waste processing building (WPB) return, discharge into the CWS return lines in the turbine building north of the main condenser. The NSW return flow from the WPB joins the CWS lines in the yard between the turbine building and the cooling tower. In the NSW return path to the cooling tower, the flow path within the scope of license renewal includes the return flow path from the outlet of the RAB to the cooling tower basin via the cooling tower sprays. The in-scope piping components extend in the CWS return paths to the branch isolation valves (*e.g.*, condenser discharge valves and WPB and turbine building NSW return flow valves) from other return lines.

The failure of nonsafety-related SSCs in the CWS potentially could prevent the satisfactory accomplishment of a safety-related function. The CWS also performs functions that support fire protection.

LRA Table 2.3.3-6 identifies CWS component types within the scope of license renewal and subject to an AMR:

- buried piping, piping components, and piping elements
- closure bolting
- piping, piping components, and piping elements

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

2.3.3.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.6 and FSAR Section 10.4.5 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 FSAR 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).

2.3.3.6.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the

CWS 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 Cooling Tower System

2.3.3.7.1 Summary of Technical Information in the Application

LRA Section 2.3.3.7 describes the cooling tower system, which is part of the CWS and designed to operate continuously throughout the year under various weather conditions. In addition, the system is the preferred heat sink for reactor cooldown under normal conditions. The cooling tower system consists of the cooling tower structure and mechanical and electrical components for its maintenance and operation (*e.g.*, spray nozzle, deicing gate valves, manual slide gate valves, bypass valves, and lighting). The cooling tower basin is the source of water for both CWS and NSW systems. Loss of the cooling tower system as a heat sink for the main condenser will result in a plant trip.

The cooling tower system performs functions that support fire protection.

LRA Table 2.3.3-7 identifies cooling tower system component types within the scope of license renewal and subject to an AMR:

- buried piping, piping components, and piping elements
- closure bolting
- piping, piping components, and piping elements
- spray nozzles

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

- pressure-retaining boundary
- adequate and proper flow distribution

2.3.3.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.7 and FSAR Section 10.4.5.2 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the cooling tower 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 Cooling Tower Make-Up System

2.3.3.8.1 Summary of Technical Information in the Application

LRA Section 2.3.3.8 describes the CTMU system, a part of the CWS. The CTMU system replaces water inventory lost from the cooling tower by natural evaporation, drift, and blowdown. The CTMU pump supplies water from the main reservoir to the cooling tower basin. One CTMU pump and one standby are in Bays B and C of the ESW and cooling tower (ESW & cooling tower) makeup intake structure. The CTMU system has components relied on in plant evaluations for functions that demonstrate compliance with NRC regulations for fire protection (10 CFR 50.48). The CTMU system discharge piping forms a pressure boundary with the concrete conduit (pipe) between the cooling tower basin and the ESW & CTMU intake structure.

The CTMU system performs functions that support fire protection.

LRA Table 2.3.3-8 identifies CTMU system component types within the scope of license renewal and subject to an AMR:

- buried piping, piping components, and piping elements
- closure bolting
- piping, piping components, and piping elements

The intended function of the CTMU 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 FSAR Section 10.4.5.2 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the CTMU 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 Screen Wash System

2.3.3.9.1 Summary of Technical Information in the Application

LRA Section 2.3.3.9 describes the screen wash system for traveling screens of the CTMU, ESW, and fire protection water systems. The traveling screens remove debris from the suction of pumps which deliver raw water from the main and auxiliary reservoirs. Screen wash spray keeps the screens clear for continued availability of water to the suction of the pumps. The screens rotate as required to present clear sections through which water flows to the pump suction. As the screens rotate, screen wash water sprayed through nozzles removes debris. The Screen Wash system is designed to operate outdoors. System piping exposed to the outdoor elements is heat-traced and insulated. The housing for each screen has electric heaters for freeze protection.

The failure of nonsafety-related SSCs in the screen wash system potentially could prevent the satisfactory accomplishment of a safety-related function. The screen wash system also performs functions that support fire protection.

LRA Table 2.3.3-9 identifies screen wash system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- fire service screen wash pumps
- piping, piping components, and piping elements
- system strainer screens and elements
- system strainers

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

- filtration
- pressure-retaining boundary

2.3.3.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.9 and FSAR Section 9.2.1.2 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the screen wash 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 Main Reservoir Auxiliary Equipment

2.3.3.10.1 Summary of Technical Information in the Application

LRA Section 2.3.3.10 describes the main reservoir auxiliary equipment, which has civil, mechanical, and electrical components. The civil components (*e.g.*, structural elements of the dam) are evaluated as civil structures. The mechanical and electrical components include electrical meters, monitors, level elements, and circuit breakers. These components located in the ESW & cooling tower makeup intake structure monitor the water level in the main reservoir. In the ultimate heat sink (UHS) analysis, a main reservoir level of 205.7 ft. is the starting point for determining final UHS temperature and level and water volume adequacy for removal of heat generated by the plant; however, to meet flow requirements for safety-related heat exchangers cooled by ESW, the UHS minimum main reservoir level is 215 ft. HNP technical specifications require UHS operation with a minimum main reservoir water level of 215 ft. mean sea level.

The main reservoir mechanical and electrical components indicate the main reservoir water level. As evaluated these components do not meet 10 CFR 54.4(a)(1) criteria for inclusion within the scope of license renewal as safety-related; however, a conservative assumption is that they meet 10 CFR 54.4(a)(2) criteria by their quality classification because they maintain the initial conditions for water level in the main reservoir.

The failure of nonsafety-related SSCs of the main reservoir auxiliary equipment potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.10 and FSAR Sections 2.4.11.6, 2.4.11.7, and 9.2.1.2 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the main reservoir auxiliary equipment 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 Auxiliary Reservoir Auxiliary Equipment

2.3.3.11.1 Summary of Technical Information in the Application

LRA Section 2.3.3.11 describes the auxiliary reservoir auxiliary equipment, which includes civil, mechanical, and electrical components. The civil components (e.g., structural elements of the dam) are evaluated as civil structures. The mechanical and electrical components include in the ESW screening structure level elements and transmitters that monitor the water level in the auxiliary reservoir. The auxiliary reservoir mechanical and electrical components indicate the auxiliary reservoir level. As evaluated these components do not meet 10 CFR 54.4(a)(1) criteria for inclusion within the scope of license renewal as safety-related; however, a conservative assumption is that they meet 10 CFR 54.4(a)(2) criteria by their quality classification because they maintain the initial conditions for water level in the auxiliary reservoir.

The failure of nonsafety-related SSCs of the auxiliary reservoir auxiliary equipment potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.11 and FSAR Sections 2.4.11.7 and 9.2.1.2 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the auxiliary reservoir auxiliary equipment 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 Normal Service Water System

2.3.3.12.1 Summary of Technical Information in the Application

LRA Section 2.3.3.12 describes the NSW system, which consists of components in the following systems:

- NSW system
- ESW system
- emergency screen wash system

The NSW system provides cooling water at a maximum temperature of 95°F to remove plant heat loads by utilizing the cooling tower and its components during normal and shutdown operations and detects, controls, and isolates radioactive leakage into and out of the system

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

LRA Table 2.3.3-10 identifies NSW system component types within the scope of license renewal and subject to an AMR:

- buried piping, piping components, and piping elements
- closure bolting
- containment isolation piping and components
- NSW pumps
- NSW seal and bearing water booster pump
- piping, piping components, and piping elements
- system strainer screens and elements
- system strainers

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

- filtration
- pressure-retaining boundary

2.3.3.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.12 and FSAR Section 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 FSAR 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 2.3.3.12-1 dated August 20, 2007, the staff asked the applicant to explain the discrepancy in operating requirements between FSAR Section 9.2.1.2, page 9.2.1-3 and LRA Section 2.3.3.12, pages 2.3-70 and 71, with respect to the function of the NSW pumps. In the LRA, the applicant states that "During Unit start-up, shutdown, and normal operation, SW requirements will be met by one of the NSW pumps"; whereas, in FSAR Section 9.2.1.2, the applicant states that "Both pumps may be required after four hours have elapsed from the plant shutdown initiation (see Table 9.2.1-1)."

In its response dated September 18, 2007, the applicant stated that the functional description of the NSW pumps in LRA Section 2.3.3.12 identifies the normal minimum requirements for one NSW pump to support safe shutdown in the event of a fire. The applicant also stated that the FSAR Section 9.2.1.2 was amplified in Note (3) of FSAR Table 9.2.1-1 to clarify that two NSW pumps would be used when accelerated shutdown would be desired.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.12-1 acceptable because the applicant clarified that the safety function of the NSW pumps is as described in the LRA, and the FSAR description function is when accelerated shutdown would be desired. Therefore, the staff's concern described in RAI 2.3.3.12-1 is resolved.

2.3.3.12.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the NSW 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 Emergency Service Water System

2.3.3.13.1 Summary of Technical Information in the Application

LRA Section 2.3.3.13 describes the ESW system, which consists of components in the following systems:

- NSW system
- ESW system
- emergency screen wash system

The ESW system flow path that operates continuously during normal and shutdown operating modes is designed to:

- provide cooling water at a maximum temperature of 95°F to remove essential plant heat loads by utilizing the auxiliary reservoir or its backup, the main reservoir, during emergency operation
- isolate nonessential from essential cooling loads during conditions which otherwise could compromise the system safety function
- provide a heat sink for essential loads assuming a single active or passive component failure
- withstand or be protected from the effects of safe shutdown earthquakes, design-basis tornados, maximum flood levels, or high-energy line breaks without loss of safety function
- provide essential cooling services assuming a loss of offsite power in conjunction with any event in items 3 or 4
- allow periodic testing and inspection of equipment for system integrity and capability
- detect, control, and isolate radioactive leakage into and out of the system
- supply water to the AFW system in the event of loss of the condensate storage tank (CST)

The ESW system includes electrical and mechanical components for containment isolation required to perform in harsh environments during accident conditions.

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

LRA Table 2.3.3-11 identifies ESW system component types within the scope of license renewal and subject to an AMR:

- buried piping, piping components, and piping elements
- closure bolting
- containment isolation piping and components
- ESW pumps
- flow-restricting elements
- piping insulation
- piping, piping components, and piping elements
- system strainer screens and elements
- system strainers

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

- filtration
- pressure-retaining boundary

- thermal insulation
- flow regulation

2.3.3.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.13 and FSAR Section 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 FSAR 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 2.3.3.13-1 dated August 20, 2007, the staff noted that in LRA Section 2.3.3.13, the applicant identifies that under emergency operation, the service water booster pumps start. However, the booster pumps are not identified in either LRA Table 2.3.3-11 or LRA Table 2.3.3-10 as one of the component/commodity types subject to an AMR. The staff asked the applicant to explain why the service water booster pumps are not identified as a component/commodity type in either LRA Tables 2.3.3-10 or 2.3.3-11.

In its response dated September 18, 2007, the applicant stated that the ESW pumps component/commodity group in LRA Table 2.3.3-11 and LRA Table 3.3.2-11 represents the ESW pumps and the ESW booster pumps. See Plant-Specific Note 323 in AMR Table 3.3.2-11. The "Note" describes the constituents of this AMR line item as follows:

> The component group in this line includes the main Emergency Service Water pumps and the booster pumps. This line only applies to the booster pumps, which are located in the RAB.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.13-1 acceptable because the applicant clarified that the ESW pumps component/commodity group represents both the ESW pumps and the ESW booster pumps. Therefore, the staff's concern described in RAI 2.3.3.13-1 is resolved.

2.3.3.13.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the ESW 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 Component Cooling Water System

2.3.3.14.1 Summary of Technical Information in the Application

LRA Section 2.3.3.14 describes the CCW system, which provides cooling water to various plant safety-related and nonsafety-related components during all phases of plant operation and shutdown as an intermediate system between the RCS and the ESW and NSW systems. The CCW system supports the ECCS by removing heat from water recirculated from the containment building sump to the reactor and provides cooling water to safeguards pumps in support of ESF functions. The CCW system cools redundant essential CCW loops and a nonessential CCW loop. Each of the two essential loops consists of the one RHR heat exchanger and one RHR pump oil cooler.

The nonessential loop consists of the following:

- one CVCS letdown heat exchanger
- one CVCS seal water heat exchanger
- two spent fuel pool heat exchangers
- one boron recycle evaporator package
- three RCP packages, each consisting of one lower bearing oil cooler and one thermal barrier cooler
- one lower bearing oil cooler and one thermal barrier cooler
- one gross failed fuel detector cooler
- one CVCS excess letdown heat exchanger
- one reactor coolant drain tank heat exchanger
- six PSS sample coolers

The CCW system water flow to the nonsafety process sampling system (*i.e.*, sample heat exchangers and gross failed fuel detector) has two air-operated valves on the inlet lines and two check valves on the outlet lines. The air-operated valves on the inlet lines close automatically on an safety-injection signal, thus isolating the CCW system from nonsafety-related systems. Water chemistry control of the CCW system is by additions to the chemical addition tank or to the surge tank.

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

LRA Table 2.3.3-12 identifies cooling water system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- CCW heat exchanger components

- CCW heat exchanger tubes
- CCW pumps
- CCW surge tank
- containment isolation piping and components
- flow-restricting elements
- piping insulation
- piping, piping components, piping elements, and tanks

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

- heat transfer
- pressure-retaining boundary
- thermal insulation
- flow regulation

2.3.3.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.14 and FSAR 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 FSAR 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).

2.3.3.14.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance 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).

2.3.3.15 Waste Processing Building Cooling Water System

2.3.3.15.1 Summary of Technical Information in the Application

LRA Section 2.3.3.15 describes the WPB cooling water system, which provides cooling water to waste processing system (WPS) components during various modes of plant operation and shutdown. The WPB cooling water system is also an intermediate heat transfer system between the WPS and the NSW system, reducing the probability of radioactive effluent leakage into the NSW system by transferring heat from WPS components to the two WPB cooling water system heat exchangers cooled by water supplied from the NSW system. Only one cooling water pump and one heat exchanger are required for operation.

The WPB cooling water system was designed originally to provide cooling water to the various WPS components listed below:

- waste gas compressors
- catalytic recombiners
- waste evaporators
- reverse osmosis concentrate evaporators
- reverse osmosis module precoolers
- reverse osmosis module chillers (refrigeration unit)
- waste evaporator concentrate tank vent gas condensers
- volume reduction condenser
- secondary waste evaporators
- radiation monitors

The WPB cooling water system is neither a nuclear safety class nor seismic Category I system. This system is not considered available during accident and emergency conditions and the applicant takes no credit in the safety evaluation for post-accident operation.

The failure of nonsafety-related SSCs in the WPB cooling water system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3-13 identifies WPB cooling water system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

The intended function of the WPB cooling water 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 FSAR Section 9.2.10 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 FSAR 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).

2.3.3.15.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the WPB 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).

2.3.3.16 Essential Services Chilled Water System

2.3.3.16.1 Summary of Technical Information in the Application

LRA Section 2.3.3.16 describes the essential services chilled water system, which provides chilled water to the cooling coils of air-handling units for the following systems:

- control room area ventilation system
- RAB normal ventilation system
- RAB nonnuclear safety ventilation systems
- RAB ESF equipment cooling system
- RAB switchgear ventilation system
- RAB electrical equipment protection rooms ventilation system
- spent fuel pool pump room ventilation system

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

LRA Table 2.3.3-14 identifies essential services chilled water system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- essential chilled water chiller condenser components
- essential chilled water chiller condenser tubes
- essential chilled water chiller compressors oil cooler components
- essential chilled water compressors oil cooler tubes
- essential chilled water system chiller cooler components
- essential chilled water system chiller cooler tubes
- essential chilled water system condenser service water recirculating pump
- essential chilled water system water pumps
- flow restricting elements
- piping, piping components, piping elements and tanks
- system strainers screens and elements
- system strainers
- tanks

The intended functions of the essential services chilled water system component types within the scope of license renewal include:

- filtration
- heat transfer
- pressure-retaining boundary
- flow regulation

2.3.3.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.16 and FSAR 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 FSAR 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 2.3.3.16-1 dated August 20, 2007, the staff stated that a license renewal drawing for the essential services chilled water system shows a flag with a "3" in it, indicating that the piping and valves beyond it are designed to meet Safety Class 3 and Seismic Category I requirements. The piping beyond the piping class flag (line number 3CX4-71SB-1) is partially highlighted as within the scope of license renewal pursuant to 10 CFR 54.4(a)(1). There is no piping class flag indicating a change in pipe class at the location along the pipe where the highlighting stops. The staff asked the applicant to explain why pipe line 3CX4-71SB-1 is not highlighted along its total length; thereby, indicating that it is not within the scope of license renewal in accordance with 10 CFR 54.4(a)(1).

In its response dated September 18, 2007, the applicant stated pipe line 3CX4-71SB-1 shown on the license renewal drawing should be highlighted. The applicant explained that this pipe line is included in the component/commodity "piping, piping components, piping elements and tanks" in LRA Table 2.3.3-14. Since the piping class is continuous and the locations are the same as the adjacent sections of highlighted piping there is no impact on the AMR results in AMR Table 3.3.3-14.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.16-1 acceptable because the applicant clarified that pipe line 3CX4-71SB-1 shown on the essential services chilled water system license renewal drawing should have been completely highlighted, indicating that it was within the scope of license renewal pursuant to 10 CFR 54.4(a)(1). Although not highlighted on the license renewal drawing, the components of pipe line 3CX4-71SB-1 have been included in the component/commodity "piping, piping components, piping elements and tanks" in LRA Table 2.3.3-14 and AMR results Table 3.3.3-14. Therefore, the staff's concern described in RAI 2.3.3.16-1 is resolved.

2.3.3.16.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the essential services 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).

2.3.3.17 Nonessential Services Chilled Water System

2.3.3.17.1 Summary of Technical Information in the Application

LRA Section 2.3.3.17 describes the nonessential services chilled water system, which supplies chilled water to the cooling coils of air handling units for the following nonsafety-related systems:

- Fuel handling building (FHB) HVAC system for spent fuel pools and operating floor areas
- WPB HVAC system

The nonessential services chilled water system that supplies a nominal 44 °F chilled water to the cooling coils in the air handling units consists of two 50-percent package water chillers, an expansion tank, a chemical addition tank, two chilled water pumps arranged in parallel (one operating and one stand-by), and a piping system. The cooling water for the condenser section of the chillers is supplied from the NSW system. The expansion tank provides positive suction head, accommodates system volume changes, and adds makeup water to the system. Makeup water to the expansion tank is fed from the fire protection system. A chemical addition tank prevents corrosion and scale buildup in the system. Chemical addition is manual when required by periodic water analysis test.

The failure of nonsafety-related SSCs in the non-essential services chilled water system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3-15 identifies non-essential services chilled water system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

The intended function of the non-essential services chilled water system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.17.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.17 and FSAR Section 9.2.9 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 FSAR 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).

2.3.3.17.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the non-essential services 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).

2.3.3.18 Emergency Screen Wash System

2.3.3.18.1 Summary of Technical Information in the Application

LRA Section 2.3.3.18 describes the emergency screen wash system for traveling screens of the CTMU system, ESW system, and fire protection water system. The traveling screens remove debris from the suction of pumps that deliver raw water from the main and auxiliary reservoirs. Screen wash spray keeps the screens clear for continued availability of water to the suction of the pumps. The screens rotate as required to present clear sections through which water flows to the pump suction. As the screens rotate, screen wash water sprayed through nozzles removes debris. The emergency screen wash system, including the traveling screens, is designed to operate outdoors. The housing for each screen has electric heaters for freeze protection. Portions of the system piping in the ESW screening structure and ESW & cooling tower makeup intake structure exposed to the outdoor elements are heat-traced and insulated. As it is required only to maintain the essential system portions in a condition of readiness prior to use, the heat tracing is not safety-related nor connectable to the onsite emergency power supply. Heat tracing failure is signaled by alarm in the radwaste control room.

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

LRA Table 2.3.3-16 identifies emergency screen wash system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- ESW screen wash pumps
- flow-restricting elements
- piping insulation
- piping, piping components, and piping elements

The intended functions of the emergency screen wash system component types within the scope of license renewal include:

- pressure-retaining boundary
- adequate and proper flow distribution

- thermal insulation
- flow regulation

2.3.3.18.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.18 and FSAR Section 9.2.1.2 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the emergency screen wash 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 Generator Gas System

2.3.3.19.1 Summary of Technical Information in the Application

LRA Section 2.3.3.19 describes the generator gas system, which removes heat in the generator windings and other electrical components during main generator operation. Because of its efficient heat transfer characteristics, hydrogen gas is circulated through the generator as the cooling medium. The system admits hydrogen into the generator and carbon dioxide for purging operations. To remove heat, hydrogen gas circulates throughout the generator and is then cooled by a heat exchanger supplied with service water.

A hydrogen gas supply system provides the necessary valves and instrumentation for the admission of hydrogen into the generator. A gas dryer removes moisture from the hydrogen gas to prevent the accumulation of condensation inside the generator. A gas analyzer monitors the purity of the hydrogen gas inside the generator continuously. Three liquid moisture detectors at low points inside the generator detect any accumulation of water or oil. A water detector is also on the inlet line to the gas dryer. Activation of a liquid detector would indicate a possible hydrogen cooler leak or hydrogen oil seal failure.

The failure of nonsafety-related SSCs in the generator gas system potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.19.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.19 and FSAR Section 10.2.2.2. 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 FSAR 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).

2.3.3.19.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the generator gas 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).

2.3.3.20 Hydrogen Seal Oil System

2.3.3.20.1 Summary of Technical Information in the Application

LRA Section 2.3.3.20 describes the hydrogen seal oil system, which provides oil for gland seals on the generator rotor shaft for a gas-tight enclosure to prevent the escape of hydrogen cooling gas along the generator shaft. During normal operations the seal oil unit always operates when hydrogen gas is in the generator. Oil supplied to two annular grooves in the gland seal ring flows in both directions along the shaft through the clearance space between the shaft and the gland seal rings. As long as oil pressure in the circumferential groove exceeds the gas pressure in the machine, the seal prevents the escape of hydrogen from the generator.

The purpose of two feed grooves in the gland ring is for separate hydrogen-side and air-side oil subsystems. This design prevents hydrogen-contaminated oil from reaching the main lube oil system. Conversely, the design also keeps oil contaminated with air and moisture out of the generator. When the feed pressure in these two subsystems is balanced properly there is little flow in the clearance space between the two feed grooves. The air-side seal oil pump normally supplies all oil pressure requirements to the air side and the hydrogen-side seal oil pump supplies oil pressure to the hydrogen side of the gland seals.

The failure of nonsafety-related SSCs in the hydrogen seal oil system potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.20.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.20 and FSAR Section 9.3.7 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 FSAR 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).

2.3.3.20.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified hydrogen seal oil 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 Emergency Diesel Generator System

2.3.3.21.1 Summary of Technical Information in the Application

LRA Section 2.3.3.21 describes the EDG system, which provides a reliable source of alternate power to the emergency 6.9 kV buses for use when normal sources of offsite power are not available. Each generator can start and carry the maximum ESF loads required under postulated accident conditions. Each diesel generator unit can be started either manually for test or automatically. The diesel generators automatically start on receipt of an ESF actuation signal, a low bus voltage as indicated by the bus undervoltage relays or a simulated accident signal. They are connected automatically to the bus through the generator output breaker upon either low or lost bus voltage. Each diesel also can supply all power needed for the safe shutdown of the plant under design emergency situations.

The EDG system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs 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.

LRA Table 2.3.3-17 identifies EDG system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- diesel combustion air intake filter housings and silencers
- diesel combustion air intake piping, piping components, and piping elements
- diesel engine exhaust piping, piping components, and piping elements
- diesel engine governor oil cooler components
- diesel engine governor oil cooler tubes
- diesel engine turbocharger intercooler components
- diesel engine turbocharger intercooler tubes
- diesel exhaust silencers
- piping, piping components, and piping elements

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

- heat transfer
- pressure-retaining boundary

2.3.3.21.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.21 and FSAR Section 8.3.1.1.1. 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 FSAR 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 2.3.3.21-1 dated August 20, 2007, the staff asked the applicant to clarify, in LRA Table 2.3.3-17, what the intended verbiage of the component/commodity type of "piping, piping components, and piping components" for the EDG system was supposed to be.

In its response dated September 18, 2007, the applicant stated that the component/commodity type in LRA Table 2.3.3.17 was a typographical error and should read "piping, piping components, and piping elements."

Based on its review, the staff finds the applicant's response to RAI 2.3.3.21-1 acceptable because it adequately explained that the component/commodity group in LRA Table 2.3.3-17 should be identified as "piping, piping components, and piping elements." 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, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the EDG 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 Diesel Generator Fuel Oil Storage and Transfer System

2.3.3.22.1 Summary of Technical Information in the Application

LRA Section 2.3.3.22 describes the diesel generator fuel oil storage and transfer system, which stores, maintains, and supplies fuel oil to the diesel generators as required for all modes of diesel generator operation during normal and abnormal site and plant conditions. The system consists of two separate, independent fuel oil supply subsystems, each serving one of the two EDG system diesel engines. The vertical steel day tanks located in separate, isolated, fire resistant compartments, are situated to assure sufficient pressure at the engine fuel pumps. The volume of each tank provides approximately six hours of storage, assuming maximum engine fuel consumption. The tank drains and overflows to the building floor drain system and the flow is then delivered to an oil separator unit in the yard for eventual disposal.

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

LRA Table 2.3.3-18 identifies diesel generator fuel oil storage and transfer system component types within the scope of license renewal and subject to an AMR:

- buried piping, piping components, and piping elements
- closure bolting
- diesel fuel oil storage tank building tank liners
- flow restricting elements
- fuel oil day tanks
- fuel oil system transfer pumps
- fuel oil tank flame arrestor elements
- fuel oil tank flame arrestors
- piping, piping components, and piping elements
- system strainer screens and elements
- system strainers

The intended functions of the diesel generator fuel oil storage and transfer system component types within the scope of license renewal include:

- filtration
- heat transfer
- pressure-retaining boundary
- flow regulation

2.3.3.22.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.22 and FSAR Section 9.5.4 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 FSAR 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 2.3.3.22-1 dated August 20, 2007, the applicant stated in LRA Section 2.3.3.22 that buried fuel oil piping is coated and cathodically protected. The staff noted that LRA Table 2.2-3 excludes the cathodic protection system from within the scope of license renewal. The staff requested that the applicant clarify whether cathodic protection for the diesel generator fuel oil storage and transfer system buried piping is included within the system identified in LRA Table 2.2-3, or if it should be included in LRA Table 2.3.3-18. Otherwise, the staff asked the applicant to explain why the cathodic protection system is not within the scope of license renewal.

In its response dated September 18, 2007, the applicant stated that the nonsafety-related cathodic protection system is correctly excluded from within the scope of license renewal in LRA Table 2.2-3. In addition, the applicant stated that coatings are used to prevent corrosion on the buried yard piping, and that the cathodic protection is used in addition to the coatings.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.22-1 acceptable because it adequately explained that the cathodic protection for the diesel generator fuel oil storage and transfer system buried piping is correctly excluded from within the scope of license renewal, and it is only used in addition to the buried piping's coating, which is the credited method of protection to prevent corrosion. Therefore the staff's concern described in RAI 2.3.3.22-1 is resolved.

In RAI 2.3.3.22-2 dated August 20, 2007, the staff noted that the applicant does not highlight on a license renewal drawing two supply lines from the fuel oil transfer pump piping sections of the diesel generator fuel oil day tanks, which indicates that they are not subject to an AMR. The staff believed that their failure could prevent the accomplishment of the system intended function, which is to transfer fuel oil to the day tanks. The staff requested that the applicant clarify whether or not these non-highlighted piping sections are subject to an AMR. The staff asked the applicant to explain the effects of their failure on the diesel generator fuel oil storage and transfer system if they are not subject to an AMR.

In its response dated September 18, 2007, the applicant agreed that the pipe vents identified on the license renewal drawing should be highlighted. Further, the applicant identified that these piping sections are included in component/ commodity "piping, piping components, and piping elements" in LRA Table 2.3.3-18.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.22-2 acceptable because it corrected the LRA and the piping sections identified are subject to an AMR and are represented in LRA Table 2.3.3-18 and AMR Table 3.3.2-18 under component/commodity "piping, piping components, and piping elements." Therefore the staff's concern described in RAI 2.3.3.22-2 is resolved.

2.3.3.22.3 Conclusion

The staff reviewed the LRA, FSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the diesel generator fuel oil storage and transfer 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 Diesel Generator Lubrication System

2.3.3.23.1 Summary of Technical Information in the Application

LRA Section 2.3.3.23 describes the diesel generator lubrication system, which provides essential lubrication to EDG system engine components during all modes of operation.

The system consists of the following equipment (per diesel engine):

- one engine-driven pump
- one motor-driven standby pump (motor-driven auxiliary lube oil pump)
- one lube oil cooler
- three lube oil strainers
- two lube oil filters (one duplex filter and one keep-warm filter)
- one lube oil keep-warm pump
- one lube oil prelube electric heater (lube oil heater)
- piping, valves, and instrumentation

The lube oil sump tank has low-level instrumentation for leak detection. The level alarm setpoint corresponds to an oil inventory of approximately 1,300 gallons in the system. Manual monitoring of the lube oil sump tank level can be performed either locally at the tank with the installed dipstick or remotely from the engine control panel with the tank level indicator.

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

LRA Table 2.3.3-19 identifies diesel generator lubrication system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- diesel engine lube oil sumps
- flow-restricting elements
- lube oil auxiliary pumps (motor-driven)
- lube oil cooler components
- lube oil cooler tubes
- lube oil keep-warm pumps
- piping, piping components, and piping elements
- system strainer screens and elements
- system strainers

The intended functions of the emergency screen wash system component types within the scope of license renewal include:

- pressure boundary
- throttle
- heat transfer
- filtration

2.3.3.23.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.23 and FSAR Section 9.5.7 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 FSAR 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).

2.3.3.23.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the diesel generator lubrication 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).

2.3.3.24 Diesel Generator Cooling Water System

2.3.3.24.1 Summary of Technical Information in the Application

LRA Section 2.3.3.24 describes the diesel generator cooling water system, which has a separate closed-loop cooling water system of a forced-circulation cooling water type to remove heat from the engine directly by means of a water jacket. The closed-loop system includes an engine-driven jacket water pump, standpipe, and heat exchanger with interconnecting piping. The closed-loop subsystem has an electric immersion heater and a motor-driven keep-warm circulating pump which maintains the engine in a ready to start condition. The tube side of the heat exchanger is supplied with cooling water from the ESW system. The engine-driven centrifugal jacket cooling water circulating pump is designed to provide cooling water during all diesel engine loadings.

The pump draws water from the bottom of the standpipe and discharges it through the heat exchanger before it enters the diesel engine cooling passages. The standpipe serves two purposes, as the storage tank for the system and as an absorbent of changes in cooling water volume as the diesel engine heats up and cools down. System makeup is from the potable water supply. The jacket water is treated by addition or removal of chemicals.

The diesel generator cooling water system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs in the diesel generator cooling water system potentially could prevent the satisfactory accomplishment of a safety-related function. The diesel generator cooling water system also performs functions that support fire protection.

LRA Table 2.3.3-20 identifies diesel generator cooling water system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- diesel jacket water keep-warm pumps
- diesel jacket water standpipes, vents, and heaters
- jacket water cooler components
- jacket water cooler tubes
- piping, piping components, and piping elements

The intended functions of the diesel generator cooling water system component types within the scope of license renewal include:

- pressure boundary
- heat transfer

2.3.3.24.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.24 and FSAR Section 9.5.5 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 FSAR 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).

2.3.3.24.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the diesel generator 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).

2.3.3.25 Diesel Generator Air Starting System

2.3.3.25.1 Summary of Technical Information in the Application

LRA Section 2.3.3.25 describes the diesel generator air-starting system, which can supply a sufficient quantity of air from its starting air tanks to start the cold diesel engine by cranking it five times without recharging the receiver. The diesel generator air-starting system operates under the same environmental conditions as the diesel generator it serves. Each of the diesel generators has a physically separate air-starting system consisting of two alternating current motor-driven air compressors, two moisture separators, two air dryers and two starting air tanks each capable of five cold start attempts. The system is designed so failure of one receiver does not affect the ability of the remaining receiver to deliver the required quantity of air. Each compressor can recharge one receiver within thirty minutes after a discharge following five starting attempts.

Each starting air tank connects to the diesel engine starting mechanism independently. Upon receipt of a diesel generator start signal, all start-air admission valves open simultaneously, delivering air to the air distributors and the individual air-start valves in proper sequence. Coincident with admission of air to the cylinders, starting air applied to the governor hydraulic system opens engine fuel racks to maximum fuel position on emergency start. Air supply to each receiver by a motor-driven nonsafety-related air compressor is isolated from the receiver by a safety grade check valve.

The diesel generator air-starting system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs in the diesel generator air starting system potentially could prevent the satisfactory accomplishment of a safety-related function. The diesel generator air starting system also performs functions that support fire protection.

LRA Table 2.3.3-21 identifies diesel generator air-starting system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- diesel starting air tanks
- piping, piping components, and piping elements
- system strainer screens and elements
- system strainers

The intended functions of the diesel generator air-starting system component types within the scope of license renewal include:

- filtration
- pressure-retaining boundary

2.3.3.25.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.25 and FSAR Section 9.5.6 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 FSAR 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).

2.3.3.25.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the diesel generator air-starting 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 Security Power System

2.3.3.26.1 Summary of Technical Information in the Application

LRA Section 2.3.3.26 describes the security power system, which provides reliable power to the security building and plant security equipment. For this purpose the system employs both an uninterruptible power supply, provided by an inverter, and an auxiliary diesel generator power source.

The security power system performs functions that support fire protection.

LRA Table 2.3.3-22 identifies security power system component types within the scope of license renewal and subject to an AMR:

- buried tanks
- closure bolting
- diesel combustion air intake piping, piping components, and piping elements
- diesel engine exhaust piping, piping components, and piping elements
- elastomer seals and components
- fan housings

- fuel oil system transfer pumps
- fuel oil tank flame arrestor elements
- fuel oil tank flame arrestors
- lube oil cooler components
- lube oil cooler tubes
- piping, piping components, and piping elements
- radiator components
- radiator tubes
- tanks

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

- heat transfer
- pressure-retaining boundary

2.3.3.26.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.26 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 FSAR 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).

2.3.3.26.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the security power 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 Instrument Air System

2.3.3.27.1 Summary of Technical Information in the Application

LRA Section 2.3.3.27 describes the instrument air system, which provides dry, filtered, oil-free compressed air to meet pneumatic instrument and control requirements. Any of three air compressors may supply the instrument air system. The service air system is normally connected to the instrument air system. Instrument air system components include two instrument air receivers, two service air receivers, two breathing air receivers, piping, valves, and instrumentation.

The air receivers are in the turbine building outdoor portion. There is an air-operated containment isolation valve at the containment penetration for the instrument air system.

Accumulators store compressed air/gas to actuate selected valves required to operate during and following an accident, when credit cannot be taken for the availability of air compressors. Systems and components supplied with accumulators include the pressurizer PORVs, containment hydrogen purge system valves, and containment vacuum breaker system relief valves. Air-operated valves without accumulators are designed to fail in their required safe position on loss of instrument air pressure.

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

LRA Table 2.3.3-23 identifies instrument air system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping, piping components, and piping elements

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

2.3.3.27.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.27 and FSAR 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 FSAR 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).

2.3.3.27.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the instrument 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).

2.3.3.28 Service Air System

2.3.3.28.1 Summary of Technical Information in the Application

LRA Section 2.3.3.28 describes the service air system, which is designed to deliver dry, filtered, oil-free compressed air for operation of pneumatic tools and other nonsafety-related services. The service air system performs no safety-related function other than containment isolation. Service air system lines penetrating the containment structure have locked, closed, manual isolation valves located outside the containment. Compressed air from the service air receivers supplies service air requirements. The service air system consists of piping, valves, and instrumentation downstream of the service air receivers in the turbine building. Safety-related system piping is for containment penetration as well as certain supply piping for essential services chilled water system.

Interacting systems include the instrument air system. A control valve in the common header for the service air and instrument air systems automatically isolates the service air system from the instrument air system in the event of decreased service air receiver pressure to preserve instrument air pressure. The compressed air supply system compresses, filters, and dries air supplied to the service air system. The design connections for the air compressors enable any of the three compressors to supply the service air system.

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

LRA Table 2.3.3-24 identifies service air system component types within the scope of license renewal and subject to an AMR:

- containment isolation piping and components
- piping, piping components, and piping elements

The intended function of the service air system 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 FSAR 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 FSAR 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 2.3.3.28-1 dated August 20, 2007, the staff stated that a license renewal drawing for the service air system depicts valve 7SA-V79-1 as attached to the continuation piping required for containment isolation at penetration M-41. The piping required for the containment isolation at penetration M-41 is highlighted as within the scope of license renewal for functional support (seismic continuity) pursuant to 10 CFR 54.4(a)(2). The staff asked the applicant to explain why valve 7SA-V79-1 is not highlighted as within the scope of license renewal in accordance with10 CFR 54.4(a)(2), since it may be a part of the continuation piping needed for seismic continuity.

In its response dated September 18, 2007, the applicant stated that valve 7SA-V79-1 is within the scope of license renewal and is depicted on the service air system license renewal drawing near containment penetration M-41. Valve 7SA-V79-1 should have been highlighted on the license renewal drawing as within the scope of license renewal pursuant to 10 CFR 54.4(a)(2), since it is part of the connected piping needed for seismic continuity. The applicant further stated that valve 7SA-V79-1 is included in the component/commodity group "piping, piping components, and piping elements" shown in LRA Table 2.3.3-24.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.28-1 acceptable because the applicant clarified that valve 7SA-V79-1 shown on the service air system license renewal drawing should have been highlighted indicating that it was within the scope of license renewal pursuant to 10 CFR 54.4(a)(2), since it is part of the connected piping for seismic continuity. Although not highlighted on the license renewal drawing, valve 7SA-V79-1 has been included in the component/commodity group "piping, piping components, piping elements" in LRA Table 2.3.3-24 and thus subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.28-1 is resolved.

In RAI 2.3.3.28-2 dated August 20, 2007, the staff stated that LRA Section 2.3.3.28 states that the service air system includes safety-related system piping associated with the containment penetration as well as supply piping for the essential services chilled water system. In the LRA, the applicant also stated that the license renewal scoping boundaries for the service air system are shown on one boundary drawing, which is listed. However, the staff noted that service air system piping and components are highlighted on two other license renewal scoping drawings associated with the essential services chilled water system, indicating these components are within the scope of license renewal. Therefore, the staff asked the applicant to explain why the two additional license renewal scoping drawings are not included on LRA page 2.3-110 as license renewal scoping drawings for the service air system.

In its response dated September 18, 2007, the applicant stated that license renewal drawings have been developed to facilitate staff review. These drawings depict mechanical components that support system intended functions and are within the scope of license renewal. In LRA Section 2.3.3.28, only the service air system scoping drawing is shown. This drawing is the primary drawing identifying components for the service air system. The applicant further stated that for any given system, it was not the intent of the license renewal review to cross reference every license renewal scoping drawing to every in-scope mechanical component of that system. In the case of the service air system, there are other license renewal scoping drawings that identify a small number of service air system components. The two drawings discussed in the question mainly depict essential services chilled water system components and are examples of drawings with a relatively small number of service air system components. These two drawings are considered secondary drawings for the service air system and are not required by the HNP process to be listed in LRA Section 2.3.3.28.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.28-2 acceptable because the applicant clarified that it was not required by the HNP license renewal process to list what HNP considered secondary drawings to the service air system in LRA Section 2.3.3.28. The applicant has identified service air system components within the scope of license renewal on the two secondary drawings but under its process elected not to list them in LRA Section 2.3.3.28, which addresses the service air system. Therefore, the staff's concern described in RAI 2.3.3.28-2 is resolved.

2.3.3.28.3 Conclusion

The staff reviewed the LRA, FSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the service 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).

2.3.3.29 Bulk Nitrogen Storage System

2.3.3.29.1 Summary of Technical Information in the Application

LRA Section 2.3.3.29 describes the bulk nitrogen storage system, which supplies nitrogen gas for various plant requirements. Examples of equipment which use this nitrogen are the VCT, steam generators during layup periods, pressurizer relief tank, reactor makeup water storage tank, main condenser, safety injection system accumulators, the main feedwater isolation valve (MFIV) accumulators, and the three accumulator tanks for the pressurizer PORVs. The bulk nitrogen storage system can be divided into two parts: (1) the bulk nitrogen storage equipment and (2) the nitrogen distribution system composed of piping, valves, and accumulators required to service plant components. The bulk nitrogen storage system consists of a cryogenic liquid storage tank, two nitrogen pumps, two pressure ambient air vaporizers, a pressure control manifold, and three pressure gas storage vessels in the gas storage yard. A low-pressure alarm informs the operator of a malfunction and the necessity of corrective action to prevent interruption of gases to various users.

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

LRA Table 2.3.3-25 identifies bulk nitrogen storage system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

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

2.3.3.29.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.29 and FSAR 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 FSAR 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).

2.3.3.29.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the bulk nitrogen 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).

2.3.3.30 Hydrogen Gas System

2.3.3.30.1 Summary of Technical Information in the Application

LRA Section 2.3.3.30 describes the hydrogen gas system, a nonsafety-related system that supplies hydrogen to (1) the plant main generator for generator rotor and stator cooling and (2) to the VCT in the CVCS to control oxygen concentration in the RCS. The system also has a hydrogen gas bottle for supply to the WPB laboratories. The hydrogen gas system can be divided into (1) bulk hydrogen storage equipment with a cryogenic liquid hydrogen storage vessel, an ambient vaporizer, pressure control manifolds, interconnecting piping, valves, and I&Cs and (2) the hydrogen distribution system with piping and valves to service the turbine generator and the VCT. The hydrogen gas storage area is located so any malfunction or failure of a hydrogen gas system component has no adverse effect on any safety-related system or component.

The failure of nonsafety-related SSCs in the hydrogen gas system potentially could prevent the satisfactory accomplishment of a safety-related function. The hydrogen gas system also performs functions that support fire protection.

LRA Table 2.3.3-26 identifies hydrogen gas system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

The intended function of the hydrogen gas system 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 FSAR Section 9.3.7 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 FSAR 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).

2.3.3.30.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the hydrogen gas 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).

2.3.3.31 Fire Protection System

2.3.3.31.1 Summary of Technical Information in the Application

LRA Section 2.3.3.31 describes the fire protection system with the following design features:

- a water supply and distribution system, including fire pumps and yard and interior distribution piping
- automatic suppression systems
- a fire detection system with automatic suppression systems actuation, and fire protection equipment supervision and signaling
- manual fire response equipment (*e.g.*, portable fire extinguishers, hose stations, breathing equipment, protective clothing, emergency communication equipment, and emergency lighting)
- certain types of fire barriers (*i.e.*, fire doors) and penetrations for piping, electrical cable/conduit, and HVAC ducts

The fire protection system contains nonsafety-related components that have the potential to cause an adverse physical interaction with safety-related equipment and/or nonsafety-related piping components connected to and providing support for the safety-related functional boundary of the system. The fire protection system includes components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRC regulations for the fire protection, SBO, and EQ programs.

LRA Table 2.3.3-27 identifies fire protection system component types within the scope of license renewal and subject to an AMR:

- buried piping, piping components, and piping elements
- closure bolting
- containment isolation piping and components
- diesel-driven fire pump
- diesel-driven fire pump fuel oil storage tank
- diesel engine exhaust piping, piping components, and piping elements
- diesel exhaust silencers
- filters
- fuel oil tank flame arrestor elements
- fuel oil tank flame arrestors
- heat exchanger components
- heat exchanger tubes
- jockey fire pump
- motor-driven fire pump
- piping, piping components, and piping elements
- spray nozzles
- sprinkler heads
- system strainer screens and elements
- system strainers

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

- filtration
- heat transfer
- pressure-retaining boundary
- adequate and proper flow distribution

2.3.3.31.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.31, FSAR Section 9.5.1, SER dated November 1983 (Supplements 1 through 4), and SER dated January 12, 1987, approving the HNP Fire Protection Program listed in the HNP Operating License Condition 2.F 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 FSAR 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 HNP's commitment to the fire protection program requirements of 10 CFR 50.48, (i.e., a point-by-point comparison with BTP CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," Revision 2, July 1981).

The staff's review of LRA Section 2.3.3.31 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 2.3.3.31-1 dated February 22, 2007, the staff stated that LRA Section 2.3.3.31 describes fire protection system components. It is not clear from review of LRA Tables 2.3.3-27 and 3.3.2-27 that fire hydrants, standpipes, manual hose stations, floor drains, dikes, filter housings, fire proofing, fire wrap, orifices, valve bodies, and RCP oil collection system components are included within the scope of license renewal and subject to an AMR. The staff requested that the applicant verify whether these components are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If not, the staff requested that the applicant provide a justification for their exclusion.

In its response dated March 23, 2007, the applicant stated that the components identified in RAI 2.3.3.31-1 are within the scope of license renewal and subject to an AMR. In LRA Section 2.3.3.31, the applicant states:

> The 'Fire Protection System' at HNP, which is primarily the water based fire suppression system. It includes the fire hydrants, standpipes, and valve bodies among other components shown on the license renewal highlighted reference drawings. This system also contains manual hose stations, as well as fire doors, fire wrap, and penetrations, which HNP license renewal methodology identifies as civil/structural commodities in the yard structures or within the specific structures that house them. Additionally, HNP methodology identifies fire proofing as a material in the civil/structural AMR tables and not a specific commodity. For example, a fire barrier may be constructed using a fire proofing material. Table 2.3.3.31-1 below provides a more complete discussion of this material and its use. As stated on LRA page 2.3-115, Section 2.4 contains the scoping and screening information for structures.

Other items in the above RAI are included as components/commodities in other systems and structures in the scoping and screening sections of the LRA. The associated mechanical systems have 10 CFR 54.4(a)(3) system intended functions associated with fire protection. For example, on LRA page 2.3-17 states:

> The Reactor Coolant Pump (RCP) and Motor System meets the scoping criteria for fire protection. In order to reduce the possibility of fire, the system includes an oil collection system. The system also supports the post-fire functions of Reactor Coolant System (RCS) inventory and pressure control.

Furthermore, the table on LRA page 2.3-17 lists the system intended functions. One of the functions states that the system "Support[s] functions associated with fire protection." The LRA screening and AMR tables do not distinguish between the criteria that would place the commodities within the scope for fire protection scoping as opposed to other scoping criteria. The functions listed in these tables are component/commodity intended functions and do not generally align themselves with any specific scoping criterion. Except for the components/commodities assigned to the Fire Water System Program and the Fire Protection Program, the fire protection scoping criteria have no bearing on the component, material and environment combinations listed in the AMR tables and the manner in which the aging effects are managed.

The structure intended functions, which have been used to address fire protection concerns, are listed below and in LRA Section 2.4 for each structure.

- C-4 Fire Barrier, which is defined as "Provide fire rated barriers to confine or retard a fire from spreading to or from adjacent areas of the plant."
- C-7 Structural Support for Criterion (a)(2) and (a)(3) components, which is defined as "Provide structural support and/or functional support to non-safety related components."

The full list of structure intended functions and their definitions are provided in LRA Table 2.0-1.

Table 2.3.3.31-1 below provides the specific component/commodities that represent the items in RAI 2.3.3.31-1. This table, provided by applicant in response to RAI 2.3.3.31-1, also lists the corresponding LRA Scoping/Screening and AMR Results Tables.

Table 2.3.3.31-1 Component/Commodity Locations in License Renewal Application

RAI Component	Screening Table	Included In Component/Commodity	AMR Table	Comments
Fire Hydrants	2.3.3-27	Buried piping, piping components, and piping elements	3.3.2-27 Carbon and Low Alloy Steel and Gray Cast Iron in Raw Water and Soil	Fire Protection System - see LRA Section 2.3.3.31 for the system description.
Standpipes	2.3.3-27	Piping, piping components, and piping elements	3.3.2-27	
Manual Hose Station	2.4.1-1 2.4.2-1 2.4.2-9 2.4.2-16 2.4.2-17 2.4.2-25 2.4.2-26 2.4.2-27 2.4.2-28	Fire Hose Stations	3.5.2-1 3.5.2-2 3.5.2-10 3.5.2-17 3.5.2-18 3.5.2-26 3.5.2.27 3.5.2-28 3.5.2-29 Includes Carbon Steel in all environments	The Fire Hose Stations listed on Table 2.4.2-28 and Table 3.5.2-29 are associated with the Fire Hose Cabinet Support Structures.

RAI Component	Screening Table	Included in Component/Commodity	AMR Table	Comments
Floor Drains	Drain systems are used to remove fire water to prevent accumulation in areas needed for safe shutdown and to collect potentially radioactive water. Drain systems are also within the scope of license renewal for other scoping criteria, e.g., safety-related containment penetrations, and nonsafety-related spatial interactions or augmented quality.			
	2.4.1-1 2.4.2-1 2.4.2-9 2.4.2-16 2.4.2-25	Floor Drains	3.5.2-1 3.5.2-2 3.5.2-10 3.5.2-17 3.5.2-26	This includes the grating and the exposed portion of embedded drains which mitigate the effects of flooding.
	2.3.3-29	Piping, piping components, and piping elements System Strainers	3.3.2-29 All Material/ environments for these components/commodities	Oily Drains System - LRA Section 2.3.3.33 describes the flow path supporting fire protection.
Floor Drains (continued)	2.3.3-30	Piping, piping components, and piping elements System Strainers Tanks	3.3.2-30 All Material/ environments for these components/commodities	Radioactive Floor Drains System - LRA Section 2.3.3.34 describes the flow path supporting fire protection in addition to the paths and equipment used to support other scoping criteria.
	2.3.3-31	Piping, piping, and piping elements and tanks System Strainers	3.3.2-31	The Radioactive Equipment Drains System contains components that interface with those required to collect fire fighting water flow. In addition to fire protection, LRA Section 2.3.3.35 describes the equipment and flow paths that are in-scope to support many other scoping criteria.

RAI Component	Screening Table	Included in Component/Commodity	AMR Table	Comments
	2.3.3-32	Piping, piping components, piping elements and tanks	3.3.2-32	Secondary Waste System - LRA Section 2.3.3.36 describes this system. The license renewal flow diagram shows the buried portion as the 8 inch drain supply pipe header to the Yard Oil Separator shown on drawing 5-G-0485-LR.
	2.3.3-33	Piping, piping components, piping elements WPB Laundry and Hot Shower Tanks	3.3.2-33	Laundry and Hot Shower System - LRA Section 2.3.3.37 describes the interface with drains that collect fire fighting water in the WPB, Fuel Handling Building, and the Reactor Auxiliary Building.
Floor Drains (continued)	2.3.3-39	Piping, piping components, piping elements, and tanks	3.3.2-39	Oily Waste Collection and Separation System - LRA Section 2.3.3.43 describes the interface with fire fighting water drainage.
	2.3.3-40	Liquid Waste Holdup Tank Piping, piping components, piping elements, and tanks	3.3.2-40	Liquid Waste Processing System - LRA Section 2.3.3.44. The system interfaces with systems required to collect fire fighting water drainage.

RAI Component	Screening Table	Included In Component/Commodity	AMR Table	Comments
Dikes	2.4.2-21	Concrete: Exterior Above Grade	3.5.2-22	This includes the concrete dike wall which make a pit around the diesel oil storage tank (for the diesel engine driven fire pump).
	2.4.2-24	Concrete: Exterior Above Grade	3.5.2-25	This includes the concrete foundation and walls which make a pit around the Main, Startup, and Unit Auxiliary Transformers.
	2.4.2-28	Concrete: Exterior Above Grade	3.5.2-29	This includes the curb/wall which retains oil spillage at the Oil Separator and at the Diesel Fuel Unloading Area.
	2.4.2-24	Concrete: Exterior Below Grade	3.5.2-25	This includes the concrete foundation and walls which make a pit around the Main, Startup, and Unit Auxiliary Transformers.
Dikes (continued)	2.4.2-28	Concrete: Exterior Below Grade	3.5.2-29	This includes the curb/wall which retains oil spillage at the Oil Separator and at the Diesel Fuel Unloading Area.
Filter Housings	2.3.3-27	Filters	3.3.2-27 All material/ environment combinations for this commodity	This represents the Diesel Driven Fire Pump Engine Oil Bath Air Intake Filter.

RAI Component	Screening Table	Included In Component/Commodity	AMR Table	Comments
Fire Proofing	None	Fire Barrier Assemblies and Fire Barrier Penetration Seals	3.5.2-2, 3.5.2-10, 3.5.2-12, 3.5.2-13, 3.5.2-17, 3.5.2-22, 3.5.2-26, 3.5.2-27, 3.5.2-28	Fire Proofing is not listed as a separate commodity group for license renewal but is generically included as a material type in for the commodity groups listed in AMR tables. These commodity groups include materials such as sealants, elastomers, foams, thermo-lag, gypsum, etc., as defined in plant documents. The AMR tables in which they appear are listed. There are no sprayed on flame retardant cable coatings used at HNP.
Fire Wrap	2.4.2-1 2.4.2-11 (See Comments) 2.4.2-16	Fire Barrier Assemblies	3.5.2-2 3.5.2-12 3.5.2-17	Fire Barrier Assemblies includes cable and cable tray fire wraps, cable tray fire breaks, fire damper wraps, thermo-lag barriers, and one gypsum board wall. The Fire Barrier Assemblies listed on Table 3.5.2-12 were inadvertently omitted from Table 2.4.2-11.
Orifices	None		None	No system orifices were found in the fire protection system.

RAI Component	Screening Table	Included in Component/Commodity	AMR Table	Comments
Valve bodies	2.3.3-27	Piping, piping components, and piping elements Buried piping, piping components, and piping elements	3.3.2-27 All material/ environment combinations for these commodities	
Reactor coolant pump oil collection system components	2.3.1-4	RCP Lube Oil Collection Tank RCP Oil Spill Protection System Piping	3.1.2-4 All material/ environment combinations for these commodities	RCP and motor system

Based on its review, the staff finds the applicant's response to RAI 2.3.3.31-1 acceptable because it adequately explained the applicant's interpretation of the component characterization.

The applicant explained that the fire hydrants, standpipes, and valve bodies are included in LRA Section 2.3.3.31 and are highlighted in license renewal drawings. Manual hose stations, as well as fire doors, fire wrap, and penetrations are included in the civil/structural commodities. Fire proofing was not identified as a specific commodity in license renewal methodology; however, fire proofing material is included as a material type in the commodity group such as sealant, elastomer, foams, Thermo-Lag, gypsum as defined in plant documents. Further, in its response, the applicant stated that the RCP oil collection system components motor system meets the scoping requirements in 10 CFR 54.4(a)(3) for support functions associated with fire protection that are within the scope of license renewal and subject to an AMR.

The staff noted that Hemyc/MT fire barrier assemblies were not included in the line item description in LRA Table 3.5.2-12. The staff believes that Hemyc/MT fire barriers considered as a passive component should be within the scope of license renewal in accordance with 10 CFR 54.49(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). The staff concludes that Hemyc/MT fire barriers were excluded incorrectly from within the scope of license renewal and subject to an AMR.

During a telephone conference dated November 14, 2007, the staff requested that the applicant justify why Hemyc/MT fire barriers were not included within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to an AMR in accordance with 10 CFR 54.21(a)(1).

In its response dated December 11, 2007, the applicant stated that LRA Plant-Specific Note 565 to LRA Tables 3.5.2-2, 3.5.2-12, and 3.5.2-17 reads:

Fire barriers assemblies types include the following: Thermo Lag walls, Gypsum Board walls, Cable Fire Wraps (including Hemyc™, Interam™ and Promatec MT™), and Cable Tray Breaks.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.31-1 acceptable because the applicant to include fire hydrants, standpipes, manual hose stations, floor drains, dikes, filter housings, proofing material, fire wrap (thermo lag walls, gypsum board walls, cable fire wraps, and cable tray breaks), orifices, valve bodies, and RCP oil collection system components in the radioactive waste system, as within the scope of license renewal and subject to an AMR. The staff is adequately assured that these components will be considered appropriately during plant aging management activities. Therefore, the staff's concern described in RAI 2.3.3.31-1 is resolved.

In RAI 2.3.3.31-2 dated February 22, 2007, the staff stated that the LRA Section B.2.14 includes an AMP for fire barrier assemblies. It is not clear from the review of LRA Tables 2.3.3-27 and 3.3.2-27 that fire barrier walls, ceilings, floor, slabs, penetration seals, seismic joint filler, and fire doors are included within the scope of license renewal and subject to an AMR. The staff requested that the applicant verify whether these components are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If not, the staff requested that the applicant provide a justification for their exclusion.

In its response dated March 23, 2007, the applicant stated that the commodities listed in this RAI are within the scope of license renewal and are subject to an AMR as described in LRA Section 2.4. In LRA Section 2.3.3.31, the applicant describes the "Fire Protection System" at HNP, which is primarily the water-based fire suppression system. It includes the fire hydrants, standpipes, and valve bodies among other components shown on the highlighted reference drawings. This system also includes penetration seals (fire barrier penetration seals at HNP), seismic joint filler, and fire doors (fire rated doors at HNP). The HNP license renewal methodology identifies fire barrier penetration seals, seismic joint filler, and fire rated doors as civil/structural commodities in the structures that house them. As stated in LRA Section 2.3.3.31 on Page 2.3-115, "Fire barriers are addressed as civil commodities within the associated structure. Scoping and screening of structures is discussed in Section 2.4." Fire barrier walls, ceilings, floors, slabs are not included with the "Fire Protection System" in LRA Tables 2.3.3-27 and 3.3.2-27. Table 2.3.3.31-2 below indicates the specific components/commodities that represent the items in RAI 2.3.3.31-2 and the relevant tables in LRA Sections 2.4 and 3.5.

Table 2.3.3.31-2 Component/Commodity Locations in License Renewal Application

RAI Component	Screening Table	Included in Component/Commodity	AMR Table	Comments
Fire Barrier Assemblies	2.4.2-1 2.4.2-11 (See Comments) 2.4.2-16	Fire Barrier Assemblies	3.5.2-2 3.5.2-12 3.5.2-17	Fire Barrier Assemblies include cable and cable tray fire wraps, cable tray fire breaks, fire damper wraps, thermo-lag barriers, and one gypsum board wall as discussed in response to RAI 2.3.3.31-1. This would include thermo-lag barrier walls which are located only in the reactor auxiliary building. The Fire Barrier Assemblies listed on Table 3.5.2-12 were inadvertently omitted from Table 2.4.2-11.
Fire Barrier Walls, Ceilings, Floor Slabs	2.4.1-1	Concrete: Above Grade - Dome; Wall; Ring girder; Basement	3.5.2-1	These concrete commodity groups have a C-4 intended function of: "Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant."
	2.4.2-1 2.4.2-9 2.4.2-11 2.4.2-12 2.4.2-16 2.4.2-21 2.4.2-24 2.4.2-25 2.4.2-26 2.4.2-27	Concrete: Exterior Above Grade Concrete: Interior Concrete: Roof Slab	3.5.2-2 3.5.2-10 3.5.2-12 3.5.2-13 3.5.2-17 3.5.2-22 3.5.2-25 3.5.2-26 3.5.2-27 3.5.2-28	These concrete commodity groups have a C-4 intended function of: "Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant."
Fire Barrier Walls	2.4.2-1 2.4.2-16	Masonry Walls	3.5.2-2 3.5.2-17	This masonry commodity group has a C-4 intended function of: "Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant."
Penetration Seals	2.4.2-1 2.4.2-9 2.4.2-11 2.4.2-12 2.4.2-16 2.4.2-21 2.4.2-25 2.4.2-26 2.4.2-27	Fire Barrier Penetration Seals	3.5.2-2 3.5.2-10 3.5.2-12 3.5.2-13 3.5.2-17 3.5.2-22 3.5.2-26 3.5.2-27 3.5.2-28	This Fire Barrier Penetration Seal commodity group has a C-4 intended function of: "Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant."

RAI Component	Screening Table	Included In Component/Commodity	AMR Table	Comments
Seismic Joint Filler	2.4.2-1 2.4.2-16 2.4.2-27	Seismic Joint Filler	3.5.2-2 3.5.2-17 3.5.2-28	This Seismic Joint Filler commodity group has a C-4 intended function of: "Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant."
Fire Doors	2.4.2-1 2.4.2-9 2.4.2-11 2.4.2-16 2.4.2-25 2.4.2-26 2.4.2-27	Fire Rated Doors	3.5.2-2 3.5.2-10 3.5.2-12 3.5.2-17 3.5.2-26 3.5.2-27 3.5.2-28	This Fire Rated Doors commodity group has a C-4 intended function of: "Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant."

Based on its review, the staff finds the applicant's response to RAI 2.3.3.31-2 acceptable because the applicant states that it considers fire barrier walls, ceilings, floor, slabs, penetration seals, seismic joint filler as civil/structural commodities, as discussed in LRA Section 2.4. The staff is adequately assured that these components will be considered appropriately as within the scope of licensing renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.31-2 is resolved.

In RAI 2.3.3.31-3 dated August 7, 2007, the staff stated that the LRA drawing 5-G-0055-LRA, "Fire Protection System Unit 1," shows the auxiliary boiler fuel oil storage tanks foam fire suppression system as out of the scope of license renewal (i.e., not highlighted). The staff requested that the applicant verify whether the foam fire suppression system and its components are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requested that the applicant provide a justification for their exclusion.

In its response dated September 5, 2007, the applicant stated:

> As described in LRA Section 2.3.3.31, the HNP fire protection system is within the scope of license renewal in accordance with 10 CFR 54.4(a). Although the auxiliary boiler fuel oil storage tanks foam fire suppression system is a part of the fire protection system, as discussed on LRA Page 2.3-116, the foam fire suppression system components do not support or perform any system intended function and are; therefore, not subject to an AMR per 10 CFR 54.21(a)(1). In LRA Section B.2.14, the applicant describes the position regarding the auxiliary boiler fuel oil storage tanks foam fire suppression system.
>
> In addition, a foam suppression system is used to protect the auxiliary boiler fuel oil tanks, which are isolated from and over 500 feet from any Class 1 structure and those structures directly related to power production. The foam suppression system is not needed to comply with the requirements of 10 CFR 50.48.

These tanks are considered part of the miscellaneous structures and are excluded from within the scope of license renewal. The foam protection equipment is isolated from the fire water system water supply and can have no impact on it (refer to the subject Scoping Drawing 5-G-055-LR). Miscellaneous structures are described in the response to item BTP 9.5-1, C.7.r, in a letter from S. R. Zimmerman (CP&L) to H. R. Denton, (NRC), (Serial: NSL 86-137), "Fire Protection - BTP 9.5-1," dated May 7, 1986. An excerpt from that response is:

> Project Conformance:
> C.7.r. Miscellaneous Areas
> Miscellaneous areas such as plant administrative offices, shops, warehouses, and auxiliary boilers are located so that a fire or effects of a fire, including smoke, do not adversely affect any safety-related systems or equipment, since most will be located in separate, detached buildings.

The Fire Protection - BTP 9.5-1 position goes on to describe the protection equipment that is also provided. Since the fires in the miscellaneous areas are located so they do not adversely affect any safety-related systems or equipment, the components do not support the system intended function; therefore, do not require an AMR.

This position is consistent with the, NRC approved industry guidance, NEI 95-10 position regarding what to include within the scope of the CLB for regulated events. NEI 95-10, Revision 6, Section 3.1.3, states the following regarding systems that are relied on to support regulated events:

> The information sources in Table 3.1-1 could be considered for identifying the systems, structures and components whose functions are relied on to demonstrate compliance with the regulatory requirements (i.e., whose functions were credited in the analysis or evaluation). Mere mention of a system, structure or component in the analysis or evaluation does not constitute support of a specified regulatory function.

The applicant stated that the foam fire suppression system and its components are a part of the fire protection system, which is within the scope of license renewal in accordance with 10 CFR 54.4(a). However, the foam fire suppression system components are not subject to an AMR in accordance with 10 CFR 54.21(a)(1), because these components are not needed to support the fire protection system intended function.

Based on its review, the staff did not find the applicant's response to RAI 2.3.3.31-3 acceptable. The applicant stated that the auxiliary boiler fuel oil storage tanks foam fire suppression system is a part of the fire protection system, as discussed on LRA Page 2.3-116, and that the foam fire suppression system components do not support or perform any system intended function and; are therefore, not subject to an AMR pursuant to 10 CFR 54.21(a)(1). The staff finds this contrary to the HNP Point-by-Point Comparison with BTP CMEB 9.5-1, dated May 7, 1986. HNP's response to BTP CMEB 9.5-1, Position C.7.r, states that, "...The fuel oil tanks for auxiliary boiler are above ground surrounded by dikes sized to contained the entire tank content of oil and are equipped with a semi-fixed manual foam system."

The applicant indicated in the RAI response that the foam suppression system in question was not within the scope of license renewal because the system is not required to function to suppress a fire to protect SSCs. Therefore, the applicant is using the requirements of 10 CFR 54.4(a)(2) to exclude the foam system. The applicant assumes there is no adverse effect due to the foam system failure. The applicant is excluding this component on that basis and has not properly identified the fact that this component is relied upon to meet the requirements of 10 CFR 50.48 (in accordance with the CLB) pursuant to10 CFR 54.4(a)(3). However, BTP CMEB 9.5-1 Position C.7.r, states, "Miscellaneous areas such as shops, warehouses, auxiliary boiler rooms, fuel oil tanks, and flammable and combustible liquid storage tanks should be so located and protected that a fire or effects of a fire, including smoke, will not adversely affect any safety-related systems or equipment."

The applicant's CLB demonstrates that this component was credited to meet the guidance of BTP CMEB 9.5-1. Therefore, the foam system in question should not be excluded from the scope of license renewal. In addition, this component should not be excluded on the basis that it is not required to function to suppress a fire, nor is it required for compliance with 10 CFR 50.48, without factoring in the CLB.

During a telephone conference on November 14, 2008, the staff requested that the applicant justify why the foam fire suppression system and its associated components were not included within the scope of license renewal in accordance with to 10 CFR 54.4(a), and subject to an AMR in accordance with 10 CFR 54.21(a)(1).

In its response dated December 11, 2007, the applicant stated that regarding the auxiliary boiler fuel oil storage tank manual foam suppression system, a review of historical documentation was performed in concert with interviews with knowledgeable plant personnel.

By letter to the applicant dated October 1978, the HNP architect/engineer recommended that a field-purchased and -installed, semi-fixed mechanical foam system be provided for the auxiliary boiler fuel oil storage tanks. The applicant approved the recommendation in December 1978 and requested that the architect/engineer provide the details of the installation. The details of the installation were transmitted in December 1982 with a recommendation that the foam system details be submitted to Nuclear Mutual Limited for review and approval. No additional requirements were identified at the time.

By letter from A. B. Cutter (CP&L) to H. R. Denton (NRC), Serial: NLS-86-188, dated June 4, 1986, the applicant incorporated the fire protection program into FSAR Chapter 9. Table 3.7-5 included the ESW intake structure, ESW screening structure, diesel generator building, and the diesel fuel oil storage tank building. The technical specification bases stated:

> The OPERABILITY of the Fire Suppression Systems ensures that adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related equipment is located.

In the event of a fire in the auxiliary boiler fuel oil storage tank area, the out building fire pre-plans procedure states that the primary access route is from hydrant 1FP-521 east of the fuel oil tanks with a fog nozzle; and, for fire extinguishment:

- A hose trailer is needed
- Hydrant 1FP-521 east of tanks is equipped with a fog nozzle

- The backup hydrant is south of 1FP-521, and
- Hydrant 1FP-523, north of gas storage, may also be used to attack the area from the west

In addition, two 50 ft. sections of 2 inch fire hose, a double female adapter, adjustable wrench and a pickup tube are required to connect the eductor for each tank to the hydrant in order to apply 150 gallons of foam concentrate to extinguish a fire in the diked area.

Based on the preceding discussion, the installation of the manual foam suppression system for the auxiliary boiler fuel oil storage tanks was based on commercial requirements and not related to compliance with the fire protection rule.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.31-3 acceptable because the applicant explained that the foam fire suppression system and its associated components are not credited for compliance with 10 CFR 40.48 and GDC3. This system is for property protection and for loss prevention. Therefore, the staff's concern described in RAI 2.3.3.31-3 is resolved.

In RAI 2.3.3.31-5 dated August 7, 2007, the staff stated that the FSAR listed various types of water fire suppression systems provided in the plant fire areas for fire suppression activities. The fire suppression systems in various areas are:

- Automatic Pre-Action Sprinkler System (Fire Areas: 10-A-CSRA, 12-A-BAL, 12-A-HV&IR, 5-W-BAL, and Turbine Generator- Unit No.1)
- Automatic Multi-Cycle Sprinkler System (Fire Areas: 1-A-BAL, 1-A-EPA, 1-A-EPB, 5-F-CHF, 5-F-FPP,1-D-DGA,1-D-DGB,1-D-DTA,1-D-DTB,1-O-PA, and 1-O-PB)
- Water Spray System (Fire Area: Turbine Generator- Unit No. 1 and Charcoal Filter Assemblies)
- Manual Fluoro-Protein Mechanical Foam System (Fuel Oil Storage Tanks)
- Wet-Pipe System
- Deluge Systems

The staff requested that the applicant verify whether the above fire suppression systems installed in various areas of the plant are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). 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 their exclusion.

In its response dated September 5, 2007, the applicant stated that, as described in LRA Section 2.3.3.31, the HNP fire protection system is within the scope of license renewal pursuant to 10 CFR 54.4(a). Included in the fire protection system are the fire suppression systems listed below. Also listed is whether the fire suppression system and/or fire area combination is subject to an AMR pursuant to 10 CFR 54.21(a)(1) and justification for their exclusion if not subject to the requirements of 10 CFR 54.21(a)(1).

Some of the fire areas listed below are very large areas consisting of many fire zones as indicated in the fire hazards analysis. These fire areas may have more than one type of fire suppression system. For example, Fire Area 5-W-BAL has wet pipe systems on Elevations 261 ft. and 276 ft., and a pre-action system on Elevation 91 ft. If the suppression system in the fire area listed is subject to an AMR, an affirmative answer is given. In this case, that type of suppression system protects equipment in at least one of the fire zones in the fire area. A negative answer contains an accompanying justification for the exclusion from an AMR. Additionally, a not applicable (N/A) response has a corresponding explanation.

YES Automatic Pre-Action Sprinkler System (Fire Areas: 1-A-CSRA (The question incorrectly identified this area as 10-A-CSRA.), 12-A-BAL, 12-A-HV&IR, 5-W-BAL, and Turbine Generator- Unit No. 1)

YES Automatic Multi-Cycle Sprinkler System (Fire Areas: 1-A-BAL, 1-A-EPA, 1-A-EPB, 5-F-CHF, 5-F-FPP, 1-D-DGA, 1-D-DGB, 1-D-DTA, 1-D-DTB, 1-O-PA, and 1-O-PB); although not included in the RAI, Fire Area 1-C also uses these suppression systems, and the water supplies are shown in License Renewal Scoping drawing 5-G-0388-LR.

YES Water Spray System (Fire Area: Turbine Generator- Unit No. 1 Building).

N/A Water Spray System (Fire Area: Turbine Generator- Unit No. 1 Building charcoal filter room). This equipment in the Turbine Building is protected by a Pre-Action System as noted above. Water Spray Systems are not used for protection of charcoal filter assemblies.

NO Manual Fluoro-Protein Mechanical Foam System (Fuel Oil Storage Tanks). This system protects the Auxiliary Boiler Fuel Oil Storage Tanks. See response to RAI 2.3.3.31-3.

YES Wet-Pipe Systems are shown on 5-G-0406-LR. They are in the HVAC room on the roof of the RAB (coordinate B-16) and in various locations in the Waste Processing Building.

YES Deluge Systems (Note: The deluge systems are the same as the Water Spray System. There are five Water Spray (deluge) systems using open sprinklers for several areas on Elevation 261 ft. in the Turbine Building and seven systems using spray nozzles protecting the transformers adjacent to the Turbine Building.).

The above fire suppression systems that are subject to an AMR are highlighted components on license renewal drawing 5-G-0406-LR. The following designators on these drawings show the types of systems that are within the scope of license renewal. The symbols on the drawings indicating the type of system are these letters enclosed in a triangle.

M - Multi-cycle Sprinkler Systems

P - Pre-Action Sprinkler Systems

W - Water Spray Systems (Note that this designator is also used for the "Deluge Systems" listed in FSAR Table 9.5.1-5B

S - Wet Pipe Sprinkler System

Based on its review, the staff did not find the applicant's response to RAI 2.3.3.31-5 acceptable. The applicant explains that the manual fluoro-protein mechanical foam system for fuel oil storage tanks listed above is not needed to meet the requirements of 10 CFR 50.48. The staff finds this contrary to the HNP fire protection SER, dated April 1981, as the CLB. HNP committed to BTP CMEB 9.5-1 to satisfy Regulatory Position C.7.r "Miscellaneous Areas," by providing fuel oil storage tanks with a manual fluoro-protein mechanical foam system. The staff finds that the applicant's analysis of fire protection regulations did not completely capture the fire protection SSCs required for compliance with 10 CFR 50.48. The scope of SSCs required for compliance with 10 CFR 50.48 and GDC 3 goes beyond preserving the ability to maintain safe-shutdown in the event of a fire. GDC 3 states in part, that "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."

Furthermore, the general requirements provided in GDC 3 to "minimize the adverse effects of fires on SSCs important to safety" are stated to provide a general level of protection which is afforded to all systems, not only where required to prevent a loss of safe-shutdown capability. Section 50.48(a) of 10 CFR states that "each operating nuclear power plant must have a fire protection plan that satisfies Criterion 3 of Appendix A of this part." The term "important to safety" encompasses a broader scope of equipment than safety-related and safe-shutdown equipment. Though there is a focus on the protection of safety-related equipment or safe-shutdown equipment, this does not imply that there is an exclusion of any equipment which protects nonsafety-related equipment. For example, in accordance with 10 CFR 50.48, some portions of suppression systems may be required in plant areas where a fire could result in the release of radioactive materials to the environment, even if no safety-related or safe-shutdown equipment is located in that particular fire area.

Based on the preceding discussion in RAI 2.3.3.31-3 (pg 2-118 through 2-120), the staff finds the foam fire suppression system and its associated components are not credited for compliance with 10 CFR 50.48 and GDC3. This system is for property protection and for loss prevention. Therefore, the staff's concern described in 2.3.3.31-5 is resolved.

In RAI 2.3.3.31-6 dated August 7, 2007, the staff stated that the LRA Table 2.3.3-27 excludes several types of fire protection components that appear in the SER and/or FSAR, and which are also highlighted in the LRA drawings. These components are listed below:

- yard fire hydrants
- interior hose standpipe
- hose connections and racks
- manual hose stations
- pipe fittings
- pipe supports
- couplings
- threaded connections
- restricting orifices
- interface flanges
- chamber housings
- heat-actuated devices
- gauge snubbers
- tank heaters

- Halon 1301 storage cylinders
- thermowells
- water motor alarms
- expansion joint
- filter housing
- gear box housing
- heat exchangers (bonnet)
- heat exchangers (shell)
- heat exchangers (tube)
- heater housing
- diesel driven fire pump engine's muffler
- diesel driven fire pump engine's intake and exhaust silencers
- orifices
- sight glass
- strainer housing
- turbocharger housing
- flexible hose
- latch door pull box
- pneumatic actuators
- actuator housing
- dikes (contain oil spill)
- storage tanks for fire water system
- buried underground fuel oil tanks
- expansion tank
- jacket cooling water keepwarm pump and heater
- lubricating oil collection system components for reactor coolant pump
- lubricating oil cooler
- auxiliary lubricating oil makeup tank
- rocker lubricating oil pump
- flame retardant coating for cables
- fire barrier penetration seals
- fire barrier walls, ceilings, floor, and slabs
- fire doors
- fire rated enclosures
- fire retardant coating for structural steel supporting wall and ceiling

For each, the staff requested that the applicant determine whether the component should be included in LRA Table 2.3.3.27, and if not, the staff requested that the applicant provide justification for the exclusion.

In its response dated September 5, 2007, the applicant stated that LRA Section 2.3.3.31 describes the fire protection system. LRA Section 2.3.3 provides the scoping and screening results for mechanical systems designated as auxiliary systems. LRA Table 2.3.3-27 lists the passive mechanical components/commodities that require an AMR. LRA Table 2.3.3-27 does not include mechanical components that do not require an AMR, and it does not include civil or electrical components/commodities. Civil and electrical scoping and screening results are in LRA Sections 2.4 and 2.5.

As described in the LRA Section 2.3.3.31:

> The Fire Detection System is an electrical system. Scoping and screening of electrical systems are discussed in Section 2.5. Fire barriers are addressed as civil commodities within the associated structure. Scoping and screening of structures is discussed in Section 2.4.

Components and/or subcomponents, such as fire rated doors, penetrations, other fire barriers (e.g., walls, floors, and ceilings), fire rated enclosures, spray-on fire proofing coating, cable enclosures, and fire breaks are addressed as civil commodities. They are included in the structures that are within the scope of license renewal and have a fire protection structure intended function.

As noted in LRA Section 2.5:

> The screening for electrical/instrumentation & control (I&C) components was performed on a generic component (commodity group) basis for the in-scope electrical/I&C systems listed in Table 2.2-3, as well as the electrical/I&C component types associated with in-scope mechanical systems and civil structures listed in Tables 2.2-1 and 2.2-2.

Therefore, electrical/I&C type components are not included in LRA Table 2.3.3-27.

The component/subcomponent column in the table below addresses the items listed in this RAI. The column on the right either identifies the corresponding component/commodity that includes the component or subcomponent or justifies why it is not subject to an AMR.

Table 2.3.3.31-6 Component/Commodity Justification for Exclusion

Component/ Subcomponent	Included with the following Component/Commodity or Justification for Exclusion
yard fire hydrants	Included in buried piping, piping components, and piping elements
interior hose standpipe	Included in piping, piping components, and piping elements
hose connections and racks	Hose connections are included in piping, piping components, and piping elements. Racks are not included in Table 2.3.3-27; refer to Fire Hose Stations which are a Civil Commodity included in various structures that house them
manual hose stations	Not included in Table 2.3.3-27. Refer to Fire Hose Stations which are a Civil Commodity included in various structures that house them. See Response to RAI 2.3.3.31-1 in applicant's letter to NRC (Serial: HNP-07-032), dated March 23, 2007
pipe fittings	Included in buried piping, piping components, and piping elements and included in piping, piping components, and piping elements
pipe supports	Not included in Table 2.3.3-27. Refer to Anchor/Embedment and Supports for Non-ASME Piping & Components which are Civil Commodities included in various structures that house them
couplings	Included in piping, piping components, and piping elements
threaded connections	Threaded connections are considered part of the associated Component/Commodity piping, piping components, and piping elements

Component/ Subcomponent	Included with the following Component/Commodity or Justification for Exclusion
restricting orifices	Not included in Table 2.3.3-27; there were no restricting orifices identified in the system
interface flanges	Considered part of the associated buried piping, piping components, and piping elements and piping, piping components, and piping elements
chamber housings	Included in piping, piping components, and piping elements
heat-actuated devices	Not included in Table 2.3.3-27; heat-actuated electrical devices do not require an AMR as they are active devices. Fire detection components that are used to detect fires; actuate fire suppression systems; monitor the operating status of fire suppression system components; annunciate fire, operation, trouble, and actuation signals; actuate local and general fire alarms; identify the location of fires; and maintain a record of fire related events are part of the Fire Detection System. This system is an electrical system per LRA Table 2.2-3 License Renewal Scoping Results For Electrical/I&C Systems (LRA Page 2.2-11). Damper fusible links do not require an AMR. A fusible link is part of the damper actuating mechanism. Heat changes its properties, and it changes configuration to permit operation of the damper. Therefore, it is considered an active subcomponent. Heat from a fire will cause individual sprinkler heads to fuse, allowing water flow from the sprinkler heads. These heat-actuated devices are considered active subcomponents; because, as heat changes their properties, they change configuration to operate and perform their intended function.
gauge snubbers	Not included in Table 2.3.3-27. There were no gauge snubbers identified in the system.
tank heaters	Not included in Table 2.3.3-27. There were no tank heaters identified in the system.
Halon 1301 storage cylinders	Not included in Table 2.3.3-27. As described in LRA Section B.2.14, the fixed Halon 1301 system does not support a license renewal intended function and is not subject to an AMR. Portable storage cylinders are replaced on condition by the Fire Protection Program activities and are therefore short-lived and not subject to an AMR.
thermowells	Not included in Table 2.3.3-27. There were no thermowells identified in the system.
water motor alarms	Included in piping, piping components, and piping elements
expansion joint	Not included in Table 2.3.3-27. There was no expansion joint identified in the diesel engine exhaust system.
filter housing	Included in filters
gear box housing	Included in Heat Exchanger Components. The angle gear box housing between the Diesel-Driven Fire Pump engine and pump shaft also contains cooling coils. Therefore the gear box housing was considered part of the Heat Exchanger Components.
heat exchangers (bonnet)	Included in Heat Exchanger Components
heat exchangers (shell)	Included in Heat Exchanger Components
heat exchangers (tube)	Included in Heat exchanger tubes for the Heat Transfer Function, and included in Heat Exchanger Components for the Pressure Boundary function
heater housing	Included in piping, piping components, and piping elements
diesel driven fire pump engine's muffler	Included in Diesel Exhaust Silencers

Component/ Subcomponent	Included with the following Component/Commodity or Justification for Exclusion
diesel driven fire pump engine's intake and exhaust silencers	Included in Diesel Exhaust Silencers. This small diesel engine does not have an intake silencer.
orifices	Not included in Table 2.3.3-27. There were no orifices identified in the system.
sight glass	Included in Heat Exchanger Components, or included in a larger component and identified as part of the AMR evaluation. See Plant-Specific Note 355 in LRA Table 3.3.2-27.
strainer housing	Included in system strainers
turbocharger housing	Not included in Table 2.3.3-27. In the case of this small diesel engine, HNP methodology considers this part of a complex assembly; and, therefore, it is considered active. See LRA Section 2.1.2.1, Page 2.1-21, item 2, for a discussion regarding complex assemblies.
flexible hose	Included in piping, piping components, and piping elements
latch door pull box	Not included in Table 2.3.3-27. This is a Civil Commodity included in Racks, Panels, Cabinets, and Enclosures for Electrical Equipment and Instrumentation (includes support members, welds, bolted connections, support anchorage to building structure).
pneumatic actuators	Not included in Table 2.3.3-27. The HNP methodology considers this an active component.
actuator housing	Not included in Table 2.3.3-27. The HNP methodology considers Actuators in their entirety as part of the active component.
dikes (contain oil spill)	Not included in Table 2.3.3-27. These are a Civil Commodity included in Concrete: Exterior Above Grade and Concrete: Exterior Below Grade in various structures that house them. See response to RAI 2.3.3.31-1 in applicant's letter to NRC (Serial: HNP-07-032), dated March 23, 2007.
storage tanks for fire water system	Not included in Table 2.3.3-27. HNP uses the Auxiliary Reservoir as the Fire Water Supply. The fire water pumps are located at the Emergency Service Water Screening Structure.
buried underground fuel oil tanks	Not included in Table 2.3.3-27. There are no buried underground fuel oil tanks in the Site Fire Protection System. The Diesel-Driven Fire Pump Fuel Oil Storage Tank is an elevated saddle tank.
expansion tank	Included in piping, piping components, and piping elements. The small jacket water coolant container is treated as part of the miscellaneous piping associated with Diesel-Driven Fire Pump Engine auxiliaries.
jacket cooling water keepwarm pump and heater	A keepwarm pump is not included in Table 2.3.3-27. There is no keepwarm pump for this diesel. The electric heater housing is part of the commodity piping, piping components, and piping elements.
lubricating oil collection system components for reactor coolant pump	Not included in LRA Table 2.3.3-27. These lubricating oil collection system components are included in the Reactor Coolant Pump and Motor System and not the Fire Protection System. See LRA Table 2.3.1-4 (Page 2.3-18).

Component/ Subcomponent	Included with the following Component/Commodity or Justification for Exclusion
lubricating oil cooler	Not included in Table 2.3.3-27. For the diesel-driven fire pump, the lubricating oil cooler is bolted to the engine block and is treated as part of the diesel engine complex assembly. See LRA Section 2.1.2.1, Page 2.1-21, item 2, for a discussion regarding complex assemblies. The approach to the diesel-driven fire pump engine is supported by the GALL Report. There is no listing in GALL Report, Volume 2, Section VII.G, "Fire Protection," that suggests that the diesel-driven fire pump lube oil cooler requires aging management.
auxiliary lubricating oil makeup tank	Not included in Table 2.3.3-27. There is no auxiliary lubricating oil makeup tank for this small diesel engine.
rocker lubricating oil pump	Not included in Table 2.3.3-27. The oil pump is part of the diesel engine complex assembly.
flame retardant coating for cables	Not included in Table 2.3.3-27. There are no sprayed on flame retardant cable coatings used at HNP. See the response to RAI 2.3.3.31-1 in applicant's letter to NRC (Serial: HNP-07-032), dated March 23, 2007, under Fire Proofing
fire barrier penetration seals	Not included in Table 2.3.3-27. See the response to RAI 2.3.3.31-2 in applicant's letter to NRC (Serial: HNP-07-032), dated March 23, 2007
fire barrier walls, ceilings, floor, and slabs	Not included in Table 2.3.3-27. These are Civil commodities included in the structure that houses them. See the corresponding civil commodities in response to RAI 2.3.3.31-2 in applicant's letter to NRC (Serial: HNP-07-032), dated March 23, 2007
fire doors	Not included in Table 2.3.3-27. See the response to RAI 2.3.3.31-2 in applicant's letter to NRC (Serial: HNP-07-032), dated March 23, 2007.
fire rated enclosures	Not included in Table 2.3.3-27. These are civil commodities included in Fire Rated Assemblies in the structures that house them.
fire retardant coating for structural steel supporting wall and ceiling	Not included in Table 2.3.3-27. See the civil commodity Fire Rated Assemblies in response to RAI 2.3.3.31-1 in applicant's letter to NRC (Serial: HNP-07-032), dated March 23, 2007

Based on its review, the staff finds the applicant's response to RAI 2.3.3.31-6 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 (e.g., racks, manual hose stations, latch door pull box, dikes (contain oil spill), expansion tank, fire rated enclosures, and fire retardant coating for structural steel supporting wall and ceiling) as being included in the civil commodity type. The applicant has included the following items within the scope of license renewal and subject to an AMR because of their intended functions as part of the pressure boundary: yard fire hydrants, interior hose standpipe, pipe fittings, pipe supports, couplings, threaded connections, interface flanges, chamber housings, water motor alarms, filter housing, gear box housing, heat exchanger (bonnet), heat exchange (shell), heat exchange (tube), heater housing, diesel driven fire pump engine's muffler, diesel driven fire pump engine's intake and exhaust silencers, sight glass, strainer housing, fire barrier penetration seals, fire barrier walls, ceilings, floor, and slab, and fire doors. Because the applicant committed to treat these components as included in the line items specified, the staff is adequately assured that these components will be considered appropriately during plant aging management activities. For each of the following components, the staff found that they were not included in the line item descriptions in the LRA: heat-actuated devices, Halon 1301 storage cylinders, pneumatic actuators, and actuator housing. The staff recognizes that the applicant's treatment of these components as active will result in continuous oversight of their condition and performance. 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 2.3.3.31-6 is resolved.

2.3.3.31.3 Conclusion

The staff reviewed the LRA, FSAR, RAI responses, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the fire protection 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).

2.3.3.32 Storm Drains System

2.3.3.32.1 Summary of Technical Information in the Application

LRA Section 2.3.3.32 describes the storm drains system, which removes grade elevation run-off and routes it to plant waterways. One function of the storm drains system is to dispose of water run-off from all areas of the plant. The water is collected in local catch basins, gravity-drained through concrete piping, and released through drop structures into the following plant waterways: CTMU water intake channel, ESW intake channel, ESW discharge channel, and the main reservoir. Sumps are located in low elevation areas where gravity draining is impossible. Sump pumps are then used to pump the water up to the storm drain piping and eventually the plant waterways.

The failure of nonsafety-related SSCs in the storm drains system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3-28 identifies storm drains system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

The intended function of the storm drains 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 FSAR Sections 3.4.1.1 and 9.3.3.2.2.1 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the storm drains 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).

2.3.3.33 Oily Drains System

2.3.3.33.1 Summary of Technical Information in the Application

LRA Section 2.3.3.33 describes the oily drains system, which brings inputs to the oily waste collection and separation system from the following locations:

- diesel fuel oil storage tank building sump
- diesel fuel oil unloading area sump
- diesel generator building sumps

The major system components of the oily drains system are the diesel fuel oil storage tank building sump pumps, the diesel fuel oil unloading area sump pump, and the EDG building sump pumps. Portions of the system piping near the diesel fuel oil storage tank building and the diesel fuel oil unloading area are buried.

The failure of nonsafety-related SSCs in the oily drains system potentially could prevent the satisfactory accomplishment of a safety-related function. The oily drains system also performs functions that support fire protection.

LRA Table 2.3.3-29 identifies oily drains system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements
- system strainers

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

- filtration
- pressure-retaining boundary

2.3.3.33.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.33 and FSAR Sections 9.3.3.2.2.4 and 9.3.3.2.2.6 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 FSAR 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).

2.3.3.33.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the oily drains 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).

2.3.3.34 Radioactive Floor Drains System

2.3.3.34.1 Summary of Technical Information in the Application

LRA Section 2.3.3.34 describes the radioactive floor drains system, one of the radioactive drainage systems between reactor auxiliary equipment and waste processing treatment facilities for drainage of equipment, tanks, and wetted surfaces during normal plant operation. The radioactive floor drain system collects and processes water from the floor drains in the RAB, FHB, WPB, tank area/building, and portions of the hot machine shop. The radioactive floor drain system uses floor drains and sumps to collect potentially radioactive drainage, including water for fire fighting, then pumps the wastewater to floor drain tanks for treatment by the modular fluidized transfer demineralizer system. The water then is sampled and reused or discharged to the environment via the cooling tower blowdown line.

In the WPB, drainage from expected nonradioactive areas is collected by the building sanitary drainage system and discharged to the site sanitary drainage system. Drainage from radioactive areas is collected by the radioactive floor drains system and discharged to the floor drains tanks.

The failure of nonsafety-related SSCs in the radioactive floor drains system potentially could prevent the satisfactory accomplishment of a safety-related function. The radioactive floor drains system also performs functions that support fire protection.

LRA Table 2.3.3-30 identifies radioactive floor drains system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements
- system strainers
- tanks

The intended functions of the radioactive floor drains system component types within the scope of license renewal include:

- filtration
- pressure-retaining boundary

2.3.3.34.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.34 and FSAR Sections 9.3.3.2.1 and 9.3.3.2.2.6 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 FSAR 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 2.3.3.34 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 RAIs as discussed below.

In RAI 2.3.3.34-1 dated August 20, 2007, the staff noted that, in LRA Section 2.3.3.34, the applicant has included "system strainers" as a component/commodity type in LRA Tables 2.3.3-30 and 3.3.2-30. This component has intended functions of filtration and pressure boundary. On license renewal scoping drawings 5-G-0816-LR at location F-3, and 5-G-0866-LR at locations F-2, 4 and 6, pump strainers were found, however these strainers are not highlighted on the drawings as being within the scope of license renewal. Additionally, if these strainers as indicated in LRA Tables 2.3.3-30 and 3.3.2-30 have a pressure boundary intended function, the surrounding piping would also need to have a pressure boundary function. The staff requested that the applicant clarify if these strainers and the surrounding piping are the specified components indicated in LRA Tables 2.3.3-30 and 3.3.2-30 that are subject to an AMR or justify their exclusion.

In its response dated September 18, 2007, the applicant stated that in-line pump strainers and the surrounding piping identified on license renewal scoping drawings 5-G-0816-LR at location F-3, and 5-G-0866-LR at locations F-2, 4, and 6 are not the system strainers indicated in LRA Tables 2.3.3-30 and 3.3.2-30 that are subject to an AMR. Radioactive floor drains system strainers identified in LRA Section 2.3.3.34, LRA Table 2.3.3-30, and LRA Table 3.3.2-30 include strainers such as: a) in-line pump strainers depicted on 5-G-0816-LR at locations K-11, 14 with a pressure boundary required intended function, b) sump pump integral strainers depicted on 5-G-0187-LR at locations L-10, 15 with both a pressure boundary and filtration required intended function, and c) sump pump integral strainers depicted on 5-G-0184-LR at locations I-16, 18 with both pressure boundary and filtration required intended functions. The referenced sump pumps are mounted vertically with the strainer attached to the bottom of the pump volute.

Based on the above discussion, the staff finds the applicant's response to RAI 2.3.3.34-1 acceptable because the applicant specifically identified the system strainers subject to an AMR that were referenced in LRA Tables 2.3.3-30 and 3.3.2-30. Therefore, the staff's concern described in RAI 2.3.3.34-1 is resolved.

2.3.3.34.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the radioactive floor drains 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).

2.3.3.35 Radioactive Equipment Drains System

2.3.3.35.1 Summary of Technical Information in the Application

LRA Section 2.3.3.35 describes the radioactive equipment drains system, one of the radioactive drainage systems between reactor auxiliary equipment and waste processing treatment facilities for drainage of equipment, tanks, and wetted surfaces during normal plant operation. The radioactive equipment drains system collects and transfers reactor grade water from equipment leaks and drains, valve leakoffs, pump seal leakoffs, tank overflows, and tritiated water sources to the waste holdup tank.

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

LRA Table 2.3.3-31 identifies radioactive equipment drains system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping, piping components, piping elements and tanks
- reactor coolant drain tank heat exchanger components
- reactor coolant drain tank heat exchanger tubes
- system strainers

The intended functions of the radioactive equipment drains system component types within the scope of license renewal include:

- filtration
- heat transfer
- pressure-retaining boundary

2.3.3.35.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.35 and FSAR Sections 9.3.3.2.1 and 9.3.3.2.2.6 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 FSAR 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).

2.3.3.35.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the radioactive equipment drains 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).

2.3.3.36 Secondary Waste System

2.3.3.36.1 Summary of Technical Information in the Application

LRA Section 2.3.3.36 describes the secondary waste system, which drains high- and low-conductivity wastes generated by secondary steam and condensate, condensate polisher regeneration, steam generator blowdown electromagnetic filter back flush equipment, miscellaneous leak-off points, and certain floor drainage in the turbine building and FHB. HVAC condensate drains are also parts of this system. Secondary waste drains are located in their respective buildings near equipment requiring them. In general, drainage to the secondary waste drains is confined to water from the turbine building containing oil, acid, or both and caustic and water from the FHB. After treatment and sampling for acceptable purity, water may be released to the environment. A portion of the piping routed to the oil-water separator is buried.

The failure of nonsafety-related SSCs in the secondary waste system potentially could prevent the satisfactory accomplishment of a safety-related function. The secondary waste system also performs functions that support fire protection.

LRA Table 2.3.3-32 identifies secondary waste system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, piping elements, and tanks

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

2.3.3.36.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.36 and FSAR Section 9.3.3.2 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 FSAR 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).

2.3.3.36.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the secondary waste 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).

2.3.3.37 Laundry and Hot Shower System

2.3.3.37.1 Summary of Technical Information in the Application

LRA Section 2.3.3.37 describes the laundry and hot shower system, a liquid waste processing system subsystem that collects, stores, and processes potentially radioactive liquid wastes from detergent, hot shower, decontamination drains, and various sumps. The laundry and hot shower system receives inputs from the WPB detergent drain sump, RAB detergent drain sump, FHB detergent drain sump, FHB decontamination receiving and transfer tank, and gravity detergent drains, chemical drains, fuel cask wash, and fuel pool drains; however, as laundry is sent offsite for processing, there are no laundry wastes. The system is designed to process accumulated liquids by filtration, reverse osmosis, evaporation, and ion exchange to meet water quality requirements. The system transfers the processed water to the treated laundry and hot shower tanks where it is mixed and sampled.

LRA Table 2.3.3-33 identifies laundry and hot shower system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- FHB decontamination receiving and transfer tank
- FHB decontamination transfer pumps
- FHB detergent drain sump pumps
- piping, piping components, and piping elements
- RAB detergent drain sump pumps
- system strainers
- WPB laundry and hot shower tanks

The intended functions of the laundry and hot shower system component types within the scope of license renewal include:

- filtration
- pressure-retaining boundary

2.3.3.37.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.37 and FSAR Section 11.2.1 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 FSAR 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).

2.3.3.37.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the laundry and hot shower 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).

2.3.3.38 Upflow Filter System

2.3.3.38.1 Summary of Technical Information in the Application

LRA Section 2.3.3.38 describes the upflow filter system, formerly a subsystem of the primary filtered makeup water system designed to provide treated water for the potable and sanitary water and demineralized water systems; however, the upflow filter system components in the water treatment building have been abandoned in place. The modified primary filtered makeup system consists of a microfiltration system followed by a nanofiltration system, both skid-mounted and located in the water treatment building with redundant filtration flowpaths for treated water to the potable water and the demineralized water systems.

The failure of nonsafety-related SSCs in the upflow filter system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3-34 identifies upflow filter system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

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

2.3.3.38.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.38 and FSAR Section 9.2.3.1 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 FSAR 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).

2.3.3.38.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the upflow filter 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).

2.3.3.39 Potable and Sanitary Water System

2.3.3.39.1 Summary of Technical Information in the Application

LRA Section 2.3.3.39 describes the potable and sanitary water system, which provides the plant and the Harris Energy and Environmental Center both hot and cold water at required pressures, flow rates, and temperature for human consumption and for the operation of all sanitary plumbing fixtures and selected equipment. The system is not cross-connected to any fixture or equipment with potentially radioactive material. The boundary between the potable and sanitary water system and the diesel generator cooling water system is at safety-related check valves of the diesel generator cooling water system. When required, a temporary hose from the nonsafety-related piping in the potable and sanitary water system fills the diesel generator standpipes.

As an alternate supply of cooling water for the NSW pump seals and bearings the potable and sanitary water system has piping and check valves that form a pressure boundary with the NSW system booster pump discharge piping.

The failure of nonsafety-related SSCs in the potable and sanitary water system potentially could prevent the satisfactory accomplishment of a safety-related function. The potable and sanitary water system also performs functions that support fire protection.

LRA Table 2.3.3-35 identifies potable and sanitary water system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

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

2.3.3.39.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.39 and FSAR 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 FSAR 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).

2.3.3.39.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the potable and sanitary 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).

2.3.3.40 Demineralized Water System

2.3.3.40.1 Summary of Technical Information in the Application

LRA Section 2.3.3.40 describes the demineralized water system, which supplies water of specified quality sufficient for the anticipated makeup demands of various systems, including the RCS, and demands for plant startup and operation with allowance for regeneration of the demineralizers and a normal amount of downtime for maintenance. The demineralized water system is designed to supply demineralized water to the 500,000-gallon demineralized water storage tank. One of two demineralized water transfer pumps operates continuously and distributes water to the following:

- reactor makeup water storage tank
- CST
- refueling water storage tank
- miscellaneous users

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

LRA Table 2.3.3-36 identifies demineralized water system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping, piping components, and piping elements

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

2.3.3.40.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.40 and FSAR 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 FSAR 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).

2.3.3.40.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the demineralized 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).

2.3.3.41 Filter Backwash System

2.3.3.41.1 Summary of Technical Information in the Application

LRA Section 2.3.3.41 describes the filter backwash system, a liquid waste processing system subsystem which backflushes designated flushable filters of the following systems to collect, store, and transfer filtered sludge and particulates to the solid waste processing system via the filter particulate concentrates tank:

- liquid waste processing system
- secondary waste treatment system
- CVCS
- boron recycle system
- spent fuel pool cooling
- spent fuel pool cleanup system

Filtered waste goes to the respective filter backflush transfer tanks. The filter backwash transfer tank pumps transfer the filter sludge to the backwash storage tank in the WPB and recycle the sludge through the backwash storage tank filters. After filtering, the liquid goes to the waste hold-up tanks for further processing. The sludge from the filters is pumped to the filter particulate concentrates tank, which has pumps that route its contents to either the solidification system or the spent resin storage tanks.

LRA Table 2.3.3-37 identifies filter backwash system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

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

2.3.3.41.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.41 and FSAR Section 11.2.2.3 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 FSAR 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).

2.3.3.41.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the filter backwash 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).

2.3.3.42 Radiation Monitoring System

2.3.3.42.1 Summary of Technical Information in the Application

LRA Section 2.3.3.42 describes the radiation monitoring system, which consists of the process and effluent radiological monitoring and sampling systems and the area and airborne radioactivity monitoring systems. The major function of the radiation monitoring system is to provide plant operations and health physics personnel with both current and historical measurements of radiological conditions in certain areas and plant systems during both normal and design-basis conditions. In addition, this system automatically warns plant personnel by alarms and in certain cases acts to control unusual radiological conditions or equipment malfunctions. The radiation monitoring system has nonsafety-related and safety-related portions.

The radiation monitoring system consists of the following:

- area radiation monitoring system
- airborne radiation monitoring system
- process radiological monitoring system
- effluent radiological monitoring system
- process and effluent radiological sampling system

The normal functions of the area radiation monitoring system are to provide local and remote indication and alarms of ambient gamma radiation in general plant areas; to furnish records, including radiation survey information, of radiation levels in specific plant areas; and to warn of uncontrolled or inadvertent movement of radioactive material in the plant. The functions of the area radiation monitoring system during postulated accidents are to signal to isolate the containment in a LOCA or for abnormally high radiation inside the containment, to monitor post-LOCA long-term conditions inside the containment and in vital access areas outside containment, and to signal to isolate the FHB and start the emergency ventilation system in a fuel-handling accident.

The normal functions of the airborne radiation monitoring system are to inform operations personnel and furnish records of airborne particulate, iodine, and gaseous activity trends in the various plant structures; to help detect leaks from the reactor coolant pressure boundary (as recommended in RG 1.45) and other areas of the plant; and to provide information for evaluation of the performance of plant systems that function to minimize the release of airborne radioactivity and for maintenance of low radiation exposure for plant personnel via inhalation of airborne particulates and iodine, in accordance with 10 CFR Part 20. The functions of the airborne radiation monitoring system during postulated accidents are to indicate particulate and gaseous radioactivity levels inside the containment; to signal to close the normal control room outside air intake valves, stop the exhaust fans, close the exhaust dampers, start up the emergency filtration fans, and put the air flow into the recirculation mode; and to indicate radioactivity levels at each emergency air intake to allow the operator to choose which emergency intake to open.

The process radiological monitoring system, supplemented by the process sampling system (*i.e.*, the primary sampling and secondary sampling systems and the PASS), is designed to provide radiological information for system operation and early detection of radioactivity leakage into normally nonradioactive systems. The system has safety-related components that monitor CCW system radioactivity levels to detect leakage into the system from equipment that may contain radioactivity.

The normal functions of the effluent radiological monitoring system are representative sampling, monitoring, storage of information, indication, and, if necessary, alarm on liquid and gaseous radioactivity levels in plant effluents; automatic closure of the waste discharge valves before effluent release limits are approached or exceeded; and detection of noncondensable fission product gases for redirection to high-efficiency particulate air (HEPA) and charcoal filters before release to the environment.

The radiation monitoring system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs 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 fire protection and EQ.

LRA Table 2.3.3-38 identifies radiation monitoring system component types within the scope of license renewal and subject to an AMR:

- containment isolation piping and components
- flow straighteners
- piping, piping components, and piping elements

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

2.3.3.42.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.42 and FSAR Section 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 FSAR 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).

2.3.3.42.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that 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).

2.3.3.43 Oily Waste Collection and Separation System

2.3.3.43.1 Summary of Technical Information in the Application

LRA Section 2.3.3.43 describes the oily waste collection and separation system designed to collect nonradioactive oily water generated during normal plant operation or during fire fighting with hoses or sprinklers. This system receives water from plant areas that could contain oil or oily solid contaminants, separates the water from any oil or oily solid contaminants, and discharges it to the waste neutralization basin to remove any residual hydrazine and to adjust pH. Oil wastes are drummed for offsite shipment.

The oily waste collection and separation system receives water from the following locations:

- auxiliary boiler fuel oil diked area sump
- auxiliary boiler fuel oil unloading area sump
- diesel fuel oil storage tank building sump
- diesel fuel oil storage unloading area sump
- diesel generator building sumps
- turbine building condensate pump area sump
- security building oil sump
- turbine building industrial waste sumps
- paint shop and storage building sump

In the diesel fuel oil storage tank building, the floor drain system collects drainage from fire-fighting water flow and routes it to the building sumps. The sump pumps discharge the water to the yard oil separator, which pumps its contents to the waste neutralization system. Major system components include the following:

- oil-water separator and holding tanks
- water transfer pumps
- oil transfer pumps
- sludge transfer pumps
- sludge bin
- sump pumps in the areas where oily water is collected

The failure of nonsafety-related SSCs in the oily waste collection and separation system potentially could prevent the satisfactory accomplishment of a safety-related function. The oily waste collection and separation system also performs functions that support fire protection.

LRA Table 2.3.3-39 identifies oily waste collection and separation system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, piping elements, and tanks

The intended function of the oily waste collection and separation system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.43.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.43 and FSAR Sections 9.3.3.2.2.4, 9.3.3.2.2.5, and 9.3.3.2.2.6 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 FSAR 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 2.3.3.43-1 dated August 20, 2007, the staff noted that, on the license renewal scoping drawing titled "Scoping Notes for Miscellaneous Systems," also known as "System Boundary Drawing Scoping Discussions," Attachment 4, Revision 2, the applicant states that highlighted flow paths in the oily drains system are intended to indicate flow paths for draining fire fighting water when needed. However, on license renewal scoping drawing 5-G-0485-LR, the applicant does not highlight portions of the system downstream of the oil water separator. The staff asked the applicant to explain why the piping downstream of the oil water separator is not within the scope of license renewal to support the intended function of draining fire fighting water. The staff asked the applicant to justify the exclusion of the cited piping from within the scope of license renewal, or include the piping downstream of the oil water separator necessary to support the fire protection intended function within the scope of license renewal.

In its response dated September 18, 2007, the applicant stated that the piping downstream of the oil water separator is not needed to support the intended function of draining fire fighting water. The applicant stated that the floor drains on license renewal scoping drawings 5-G-133-LR, for the diesel generator building floor drains, and 5-G-485-LR for the diesel fuel oil storage tank building floor drains at location H-12, are designed to accommodate any water discharged from fire suppression equipment and prevent damage to safety-related equipment.

The HNP methodology treats the piping downstream of the oil water separator as an interfacing system that is secondary to the portion of the system that supports the fire protection intended function. This downstream interfacing system does not need to be included within the scope of license renewal based on considerations described in NEI 95-10. As discussed in NEI 95-10, Section 3.1.3, in regards to SSCs relied on to demonstrate compliance with certain specific commission regulations:

> Mere mention of a system, structure or component in the analysis or evaluation does not constitute support of a specified regulatory function. An applicant should rely on the plant's CLB, plant-specific experience, industry wide operating experience, as appropriate and existing plant-specific engineering evaluations to determine the appropriate systems, structures and components in this category. Consideration of hypothetical failures that could result from system interdependencies that are not part of the plant's CLB and that have not been previously experienced is not required.

Based on the above discussion, the staff finds the applicant's response to RAI 2.3.3.43-1 acceptable because the applicant adequately explained why the piping downstream of the oil water separator is not needed to support the intended function of draining fire fighting water. This function is met by the floor drains in the diesel generator building and diesel fuel oil storage tank building, which are within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.43-1 is resolved.

2.3.3.43.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the oily waste collection and separation 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).

2.3.3.44 Liquid Waste Processing System

2.3.3.44.1 Summary of Technical Information in the Application

LRA Section 2.3.3.44 describes the liquid waste processing system, which collects, stores, processes, and controls release of radioactive and potentially radioactive liquids in the operation of the nuclear power plant. The discharge of treated wastes is controlled and monitored to ensure that any discharges are as low as reasonably achievable. The liquid waste processing system is designed to collect and process all primary plant radioactive waste water to reduce its radionuclide concentration to permit its discharge to the environs. In addition, the liquid waste processing system is designed to treat occasional batches of secondary liquids if primary to secondary leakage occurs. The system has six subsystems:

- equipment drain treatment system
- floor drain treatment system
- laundry and hot shower treatment system
- chemical drains system
- filter backwash system
- secondary waste treatment system

These subsystems segregate the various types of liquid radwaste according to their sources because of their composition and process requirements. Waste input to the floor drain treatment system, laundry and hot shower system, and the chemical drain system have not differed so much that separate processing trains have been necessary. These wastes are processed by the modular fluidized transfer demineralization system, which is designed to reduce the radionuclide concentrations in the station effluents but not to produce reactor coolant quality water from the liquid radwaste.

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

LRA Table 2.3.3-40 identifies liquid waste processing system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- liquid waste holdup tank
- piping, piping components, and piping elements

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

2.3.3.44.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.44 and FSAR Section 11.2 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 FSAR 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).

2.3.3.44.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the liquid waste processing 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).

2.3.3.45 Secondary Waste Treatment System

2.3.3.45.1 Summary of Technical Information in the Application

LRA Section 2.3.3.45 describes the secondary waste treatment system, which collects, stores, and processes the following potentially radioactive wastes:

- low-conductivity wastes from condensate polisher rinsing, steam generator blowdown, electromagnetic filter backflush, contaminated auxiliary steam condensate, and industrial waste sumps
- high-conductivity wastes from condensate polisher regeneration and the turbine building acid and caustic sumps

Secondary waste treatment system components are not safety-related and are not required to operate during design-basis accidents. The secondary waste sample tank releases its content continuously to the "A" waste neutralization basin, where it is pH neutralized and discharged to the lake through the waste neutralization settling basin to the cooling tower blowdown line. Major system components are the pH adjusting skid, holding and sample tanks, pumps, filters, piping, and I&Cs.

The failure of nonsafety-related SSCs in the secondary waste treatment system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3-41 identifies secondary waste treatment system component types within the scope of license renewal and subject to an AMR:

- closure piping
- piping, piping components, piping elements, and tanks

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

2.3.3.45.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.45 and FSAR Section 11.2 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 FSAR 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 2.3.3.45-1 dated August 20, 2007, the staff noted that in LRA Section 2.3.3.45, the applicant stated that the secondary waste treatment system only performs the system intended function of containing components that have the potential for spatial interactions with safety-related SSCs or are relied on for seismic continuity in accordance with 10 CFR 54.4(a)(2). However, on license renewal scoping drawing titled "Scoping Notes for Miscellaneous Systems," the applicant stated that highlighted flow paths in the liquid waste processing system are intended to indicate flow paths for draining fire fighting water when needed. In FSAR Section 11.2.2.6, the applicant described the secondary waste treatment system as a subsystem of the liquid waste processing system. The staff asked the applicant to explain the exclusion of the system intended function associated with fire protection (10 CFR 50.48) for the secondary waste treatment system in accordance with 10 CFR 54.4(a)(3).

In its response dated September 18, 2007, the applicant stated that the HNP license renewal system scoping process is described in LRA Section 2.1. In part, the applicant cited the following on LRA page 2.1-2:

> The initial step in the process is to compile a list of SSCs for scoping. Major structures and plant components, such as pumps, valves, tanks, heat exchangers, and instruments at HNP, are assigned unique component numbers that are maintained in a controlled database called the PassPort Equipment Database (PassPort EDB or EDB). Each HNP system is identified in EDB by a unique system number, and each component in a given system is assigned a unique EDB component identification number.

The applicant stated that the secondary waste treatment system has a unique system number assigned to it by the PassPort EDB, which is different than the system number assigned to the liquid waste processing system. Based on this methodology, the secondary waste treatment system is treated as a different system than the liquid waste processing system. License renewal system scoping and identification of system intended functions were performed on each system identified in the EDB with a unique system number. Since the secondary waste treatment system does not process or receive inputs from systems associated with fire protection, the secondary waste treatment system does not have a system intended function associated with fire protection (10 CFR 50.48) in accordance with 10 CFR 54.4(a)(3).

Based on its review and the above discussion, the staff finds the applicant's response to RAI 2.3.3.45-1 acceptable because the applicant explained that the secondary waste treatment system is treated as a different system than the liquid waste processing system in the PassPort EDB, and that the secondary waste treatment system does not process or receive inputs from systems associated with fire protection. Therefore, the staff's concern described in RAI 2.3.3.45-1 is resolved.

2.3.3.45.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the secondary waste treatment 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).

2.3.3.46 Boron Recycle System

2.3.3.46.1 Summary of Technical Information in the Application

LRA Section 2.3.3.46 describes the boron recycle system, which receives and recycles reactor coolant effluent to be recycled as boric acid and makeup water for the RCS. The system decontaminates the effluent by demineralization and gas stripping and separates and recovers the boric acid and makeup water by evaporation. The boron recycle system collects and processes effluent which can be reused readily as RCS makeup and, for water management purposes, as makeup to the spent fuel pools. For the most part, this effluent is the deaerated, tritiated, borated, and radioactive water from the CVCS letdown line and process drains. The boron recycle system also collects water from the following sources:

- CVCS letdown line
- reactor coolant drain tank (primarily RCP seal leakage)
- VCT and charging pump suction pressure relief and RHR pumps pressure relief
- boric acid blender
- spent fuel pool pumps
- valve leakoffs and equipment drains
- safety-injection system (flush water)

The evaporator concentrates the boric acid solution until a 4-weight-percent solution is obtained. The accumulated batch is normally transferred directly to the boric acid tanks in the CVCS through the recycle evaporator concentrates filter. Before transfer from the evaporator to the boric acid tank, the boric acid is analyzed and can be diverted back to the recycle holdup tank for reprocessing or to the liquid waste processing system for disposal if it does not meet required chemical standards.

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

LRA Table 2.3.3-42 identifies boron recycle system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- heat exchanger components

- piping, piping components, and piping elements
- tanks

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

2.3.3.46.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.46 and FSAR Section 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 FSAR 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).

2.3.3.46.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the 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).

2.3.3.47 Gaseous Waste Processing System

2.3.3.47.1 Summary of Technical Information in the Application

LRA Section 2.3.3.47 describes the gaseous waste processing system, which collects, processes, and stores gaseous wastes generated by plant operation including expected startup and maintenance operations. The system processes the influent gases by compressing them with the waste gas compressor followed by hydrogen conversion to water in the catalytic recombiner. Radioactive gases are stored in the gas decay tanks. Water formed or condensed in the system is filtered and returned to the VCT in the CVCS or to the boron recycle system holding tanks. The gaseous waste processing system is designed to receive gaseous inputs from the following sources:

- CVCS VCT purge
- boron recycle system recycle evaporator
- liquid waste processing waste evaporators (acting as recycle evaporators)
- PRT
- reactor coolant drain tank
- boron recycle system recycle holdup tank
- primary sampling panel

The gaseous waste processing system also has sufficient capacity to hold the gases generated during reactor shutdown. Nitrogen gas from previous shutdowns contained in the gas decay tanks strips hydrogen from the RCS during subsequent shutdowns. One gas decay tank normally at low pressure accepts relief valve discharges from the inservice gas decay tank, the hydrogen recombiner, and the waste gas compressors.

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

LRA Table 2.3.3-43 identifies gaseous waste processing system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping insulation
- piping, piping components, piping elements, and tanks

The intended functions of the gaseous waste processing system component types within the scope of license renewal include:

- pressure-retaining boundary
- thermal insulation

2.3.3.47.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.47 and FSAR Section 11.3 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 FSAR 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).

2.3.3.47.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the

gaseous waste processing 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).

2.3.3.48 Radwaste Sampling System

2.3.3.48.1 Summary of Technical Information in the Application

LRA Section 2.3.3.48 describes the radwaste sampling system, which transports radioactive liquid and gaseous samples from process points in the radiological waste processing systems to sample sinks located in shielded rooms at various places in the WPB and tank area/building to minimize sample tubing runs. Ventilated hoods protect those who obtain samples at each of the sinks. The results of sample analyses aid operators in monitoring radwaste operations, selecting treatment paths, and demonstrating compliance of liquid and gaseous effluents with discharge limitations.

The radwaste sampling system is designed to collect representative samples from process points in the following waste processing systems:

- secondary waste
- filter backwash
- radioactive floor drains
- chemical drain
- spent resin storage and transfer
- solid waste processing (for recirculation loop of pretreatment tanks)
- waste holdup and evaporation
- gaseous waste processing
- laundry and hot shower

System sampling is manual with no special instrumentation. The waste processing sampling system has Safety Class 2 valves which isolate it from the RWST; therefore, the system must maintain the RWST pressure boundary.

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

LRA Table 2.3.3-44 identifies radwaste sampling system component types within the scope of license renewal and subject to an AMR:

- piping, piping components, and piping elements

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

2.3.3.48.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.48 and FSAR Section 11.5.1.3 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 FSAR 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).

2.3.3.48.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the radwaste 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).

2.3.3.49 Refueling System

2.3.3.49.1 Summary of Technical Information in the Application

LRA Section 2.3.3.49 describes the refueling system, a subset of the fuel handling system. The refueling system equipment consists of:

- manipulator crane
- fuel transfer system
- fuel handling tools and fixtures

The bridge and trolley manipulator crane has a vertical mast extending down into the refueling water. The bridge spans the refueling cavity. The bridge and trolley place the vertical mast in position over a fuel assembly in the core. A long tube with a pneumatic gripper on the end lowered out of the mast grips the fuel assembly. The fuel assembly is raised and transported while inside the mast tube to its new position. The fuel transfer system transports fuel assemblies between the FHB and containment through the fuel transfer tube and has an underwater conveyor car on tracks extending from the refueling cavity through the transfer tube and into the fuel transfer canal. When a fuel assembly is removed from the reactor, the upending frame in the refueling cavity receives it in the vertical position from the manipulator crane and lowers it to a horizontal position for passage through the transfer tube. Then, the upending frame in the fuel transfer canal raises it to a vertical position.

The hoist on the spent fuel bridge takes the fuel assembly to a position in the spent fuel racks via the fuel transfer canals. The reactor containment is sealed during unit operation by a double-gasketed blind flange bolted on the end of the transfer tube in the refueling cavity inside containment and a manually-operated valve locked closed in the fuel transfer canal in the FHB. The blind flange performs the containment isolation function for this penetration. The gaskets are short-lived and replaced whenever the flange is removed. The transfer tube and the blind flange are designed to seismic Category I requirements. The refueling system has tools and fixtures for handling fuel assemblies, rod cluster control assemblies, and other components during refueling operations.

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

LRA Table 2.3.3-45 identifies refueling system component types within the scope of license renewal and subject to an AMR:

- closure piping
- containment isolation piping and components
- piping, piping components, and piping elements

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

2.3.3.49.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.49 and FSAR Section 9.1.4.2 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 FSAR 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).

2.3.3.49.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the refueling 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).

2.3.3.50 New Fuel Handling System

2.3.3.50.1 Summary of Technical Information in the Application

LRA Section 2.3.3.50 describes the new fuel handling system, a fuel handling system subset that consists of the components that transport, handle, inspect, and store new (unirradiated) fuel assemblies and that maintain fuel assemblies, when stored in either wet or dry condition, in a subcritical nuclear state. The major components of the new fuel handling system consist of:

- dry storage racks located in the new fuel inspection pit to maintain subcriticality of the new fuel assemblies stored in an air environment
- fuel racks in Spent Fuel Pool A that can store either new or spent fuel and maintain subcriticality of the new fuel assemblies when flooded with unborated water
- the new fuel handling tool that lifts and transfers new fuel assemblies between the shipping containers and the new fuel inspection stand, dry fuel storage rack and the new fuel elevator
- the new fuel elevator that lowers new fuel from the FHB operating deck level down to the bottom of the fuel transfer canal where it can be removed from the elevator by the spent fuel tool and placed in a fuel pool storage rack

The new fuel racks, which maintain subcriticality of the fuel, are safety-related because of the structural design of the rack. Boraflex is encapsulated for neutron absorption in the stainless steel walls of each storage cell of the storage racks located in Spent Fuel Pool A.

The failure of nonsafety-related SSCs in the new fuel handling system potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.50.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.50 and FSAR Sections 9.1.1 and 9.1.4.2 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 FSAR 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).

2.3.3.50.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the new fuel 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).

2.3.3.51 Spent Fuel System

2.3.3.51.1 Summary of Technical Information in the Application

LRA Section 2.3.3.51 describes the spent fuel system, a fuel handling system subset that safely and reliably handles and stores and maintains subcriticality of fuel assemblies when stored in the fuel storage racks in the fuel pool. The major components of the spent fuel handling system and their purposes are as follows:

- spent fuel handling tools safely handle fuel assemblies in the fuel pools and transfer canals. HNP utilizes tools for handling both PWR and boiling-water reactor (BWR) spent fuel
- spent fuel racks are designed to safely store both PWR and BWR spent fuel assemblies. For license renewal, the spent fuel racks are evaluated as civil/structural components within the FHB
- handling tools to safely remove, transfer, and install various fuel inserts in the fuel assemblies (*e.g.*, thimble plug change tool, portable RCCA change tool, burnable poison rod assembly change tool, and trash basket handling tool) in the pools

The spent fuel system is designed to minimize the possibility of fuel assembly mishandling, which could cause fuel damage and fission product release. Safety-related components in the spent fuel system are the fuel handling tools and the fuel storage racks. The fuel handling tools handle fuel safely and reliably. The BWR storage racks in Pools A, B, and C and the PWR storage racks in Pools C and D are designed to maintain a subcritical array of keff < 0.95 even if the pools are flooded with unborated water. Soluble boron is credited to maintain keff < 0.95 for the PWR racks in Pools A and B. A neutron-absorbing material is encapsulated into the stainless steel walls of the BWR racks in Pools A, B and C and the PWR racks in Pools C and D. Some fuel racks utilize Boraflex panels as a neutron absorber; others utilize Boral plates. The function of the Boraflex and Boral material is to maintain subcriticality by absorbing neutrons.

The failure of nonsafety-related SSCs in the spent fuel system potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.51.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.51 and FSAR Sections 9.1.2 and 9.1.4.2 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 FSAR 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).

2.3.3.51.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the spent fuel 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).

2.3.3.52 Spent Fuel Pool Cooling System

2.3.3.52.1 Summary of Technical Information in the Application

LRA Section 2.3.3.52 describes the spent fuel pool cooling system, a part of the FSAR-described fuel pool cooling and cleanup systems servicing Pools A and B - south end, Pools C and D - north end, and fuel transfer canals. The new fuel pool, Pool A, and the spent fuel pool, Pool B, are connected by the south fuel transfer canal. The cask loading/unloading pool, Pool C, and Pool D are connected by the north fuel transfer canal. The main fuel transfer canal connects the south and north fuel transfer canals. The spent fuel pool cooling system provides safety-related cooling for the new and spent fuel pools, adequate cooling water inventory to support the cooling function, and shielding via the large water inventory. The fuel pools are cooled by two independent cooling loops, either of which can remove the decay heat loads generated. In the event of a single failure in one of the spent fuel cooling system loops, the other loop will provide adequate cooling. System piping removes water from a pool, passes it through a strainer, and pumps it to a heat exchanger for cooling prior to returning the water to the pool.

The FHB fuel pools are not affected by any LOCA in the containment building. The water in the pools is isolated from that in the refueling cavity during most of the refueling operation. Only a very small amount of water interchange occurs as fuel assemblies are transferred during refueling. The fuel pool cooling pump suction line, which can lower the pool water level, penetrates the fuel pool wall approximately 18 ft. above the fuel assemblies. The penetration location precludes uncovering of the fuel assemblies by a postulated suction line rupture. Piping in contact with fuel pool water is austenitic stainless steel welded except where flanged connections facilitate maintenance.

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

LRA Table 2.3.3-46 identifies spent fuel pool cooling system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- flow-restricting elements
- fuel pool cooling pumps

- fuel pool heat exchanger components
- fuel pool heat exchanger tubes
- piping insulation
- piping, piping components, and piping elements
- system strainers

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

- filtration
- heat transfer
- pressure-retaining boundary
- thermal insulation
- flow regulation

2.3.3.52.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.52 and FSAR 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 FSAR 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).

2.3.3.52.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the spent fuel pool cooling 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).

2.3.3.53 Spent Fuel Pool Cleanup System

2.3.3.53.1 Summary of Technical Information in the Application

LRA Section 2.3.3.53 describes the spent fuel pool cleanup system, part of the FSAR-described fuel pool cooling and cleanup systems servicing Pools A and B - south end, Pools C and D - north end, and fuel transfer canals. Gates isolate the pools as necessary. The spent fuel pool cleanup system maintains water inventory as well as water quality and clarity in the fuel pools and refueling cavity by utilizing skimmers, filters, and a demineralizer to remove impurities and suspended solids. Spent fuel pool cleanup system components include demineralizers, filters, skimmers, skimmer pumps, connecting valves, piping, and fuel pool and refueling water purification pumps. The latter pumps can take suction from and return fluid to the RWST via the safety-injection system, transfer canal, fuel pools, or the refueling cavity. Each pump can also take suction from the demineralized water storage tank for makeup to the fuel pools and line flushing. The system has CIVs.

The containment isolation function is required to maintain containment integrity for the purification lines connecting the spent fuel pool cleanup system to the refueling cavity. The vertical steel fuel pool gates on the new fuel pool, spent fuel pools, fuel transfer canals, and cask loading pools allow the spent fuel to be immersed at all times while being moved to its destination, allow each area to be isolated for drainage if necessary, and enable new fuel to be stored dry in the new fuel pool.

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

LRA Table 2.3.3-47 identifies spent fuel pool cleanup system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping, piping components, and piping elements

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

2.3.3.53.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.53 and FSAR 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 FSAR 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).

2.3.3.53.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the spent fuel pool cleanup 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).

2.3.3.54 Spent Fuel Cask Decontamination and Spray System

2.3.3.54.1 Summary of Technical Information in the Application

LRA Section 2.3.3.54 describes the spent fuel cask decontamination and spray system, which consists of a series of spray nozzles located around the periphery of the cask loading pool, a cask stand and cask decontamination enclosure with horizontal and vertical spray nozzles, a decontamination chemical addition tank, and the pumps, valves, and piping necessary to rinse and wash a spent fuel cask with demineralized water. While the spent fuel cask is lifted out of the cask loading pool, the decontamination rinse pump may be started to deliver demineralized water to the spray nozzles. This rinse removes pool water and prepares the cask for transfer to the cask stand and final decontamination. The cask is washed down by the decontamination wash pump in the cask decontamination enclosure with warm demineralized water and a mild detergent. The cask also can be scrubbed by hand until acceptable decontamination has been achieved. A final rinse of demineralized water is then applied. This system also has an ultrasonic generator, an ultrasonic tank, a rinse tank, and a service sink to clean and decontaminate tools and equipment used in fuel and cask handling.

The failure of nonsafety-related SSCs in the spent fuel cask decontamination and spray system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3-48 identifies spent fuel cask decontamination and spray system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

The intended function of the spent fuel cask decontamination and spray system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.54.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.54 and FSAR Section 9.1.4.2 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 FSAR 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).

2.3.3.54.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the spent fuel cask decontamination and 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).

2.3.3.55 Spent Resin Storage and Transfer System

2.3.3.55.1 Summary of Technical Information in the Application

LRA Section 2.3.3.55 describes the spent resin storage and transfer system, which sluices, collects, stores, and then transfers spent resins for dewatering and transport to an offsite disposal facility. The system is designed to receive inputs from the following sources:

- secondary waste demineralizers
- spent fuel pool demineralizers
- recycle evaporator condensate demineralizers
- recycle evaporator feed demineralizers
- boron thermal regeneration demineralizers
- laundry and hot shower demineralizer
- waste monitor tanks demineralizer
- mixed-bed demineralizers (CVCS)
- cation-bed demineralizer (CVCS)
- waste evaporator condensate demineralizer
- filter particulates and resin fines from the filter backwash system
- condensate polishing demineralizers

The influent is collected in the two low-activity or two high-activity spent resin storage tanks from which it is pumped to outside contractor liners for processing. The spent resin storage and transfer system is designed to operate as a batch process and provides sufficient holdup capacity for average yearly input to the system. System components include spent resin storage tanks, spent resin sluice pumps, spent resin transfer pumps, spent resin sluice filters, system piping, and instrumentation.

LRA Table 2.3.3-49 identifies spent resin storage and transfer system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

The intended function of the spent resin storage and transfer system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.55.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.55 and FSAR Section 11.4 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 FSAR 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).

2.3.3.55.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the spent resin storage and transfer 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).

2.3.3.56 Containment Auxiliary Equipment

2.3.3.56.1 Summary of Technical Information in the Application

LRA Section 2.3.3.56 describes the containment auxiliary equipment (*e.g.*, lighting fixtures, floor drains, sump pumps, piping, and valves) for the structure. These items may be within the scope of license renewal because they have components that perform one or more license renewal intended functions and the applicant has evaluated this equipment for components that support such functions. The containment building has electrical (*e.g.*, fuses, breakers, process control boards, pressure transmitters, recorders, and video displays) and mechanical (*e.g.*, air leak test equipment and pressure indicators) components that monitor containment internal pressure, provide electrical protection for a nonsafety-related electrical circuit, and test pressure.

The primary function of the containment auxiliary equipment electrical and mechanical components is to provide containment pressure monitoring signals that initiate ESF systems. These components display pressure values in the control room for a maximum available pressure range of 0 - 55 psig. Containment pressure is sensed by four physically separated differential pressure transmitters mounted by rigid supports outside the containment and connected to the containment atmosphere by a filled, sealed hydraulic transmission system.

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

LRA Table 2.3.3-50 identifies containment auxiliary equipment component types within the scope of license renewal and subject to an AMR:

- piping, piping components, and piping elements

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

2.3.3.56.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.56 and FSAR Section 7.3.1.1.2 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 FSAR 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).

2.3.3.56.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the containment auxiliary equipment 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).

2.3.3.57 Containment Liner Penetration Auxiliary Equipment

2.3.3.57.1 Summary of Technical Information in the Application

LRA Section 2.3.3.57 describes the containment liner penetration auxiliary equipment (*e.g.*, floor drains, sump pumps, piping, and valves) for the structure. These items may be within the scope of license renewal because they have components that perform license renewal intended functions and the applicant has evaluated them for components that support such functions. The components that support the containment liner penetration auxiliary equipment are position and pressure switches, fuses, motors, electro-hydraulic operators, valves, pumps, and pressure indicators that support operation of containment hatches and airlocks. The personnel emergency air lock has a door at each end of the lock in series and mechanically interlocked to ensure that one door cannot be opened until the other is sealed. Leakage and pressure test clamps for the personnel emergency air lock fit either door and are designed to withstand, as a minimum, the full peak containment internal pressure.

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

LRA Table 2.3.3-51 identifies containment liner penetration auxiliary equipment component types within the scope of license renewal and subject to an AMR:

- piping, piping components, and piping elements

The intended function of the containment liner penetration auxiliary equipment component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.57.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.57 and FSAR Sections 3.8.1.1.3.3 and 3.8.2.1.2 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 FSAR 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).

2.3.3.57.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the containment liner penetration auxiliary equipment 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).

2.3.3.58 Security Building HVAC System

2.3.3.58.1 Summary of Technical Information in the Application

LRA Section 2.3.3.58 describes the security building HVAC system, an independent ventilation system dedicated to the security building, classified as nonsafety-related, and not required for the safe shutdown of the plant. The security building HVAC system operations are independent from the modes of plant operation and continuous to maintain the environment for mechanical and electrical equipment and to provide comfort for operating personnel. The security building HVAC system is designed as once-through ventilation with separate provision for heating by electric unit heaters. The system, except the heating components, receives electric power from the security system diesel generator in a loss of offsite power. Mechanical components in this system include fans, ductwork, filters, dampers, compressors, cooling coils, chillers, heaters, valves, and necessary instrumentation to support operation for personnel and equipment.

The security building HVAC system performs functions that support fire protection.

LRA Table 2.3.3-52 identifies the security building HVAC system component types within the scope of license renewal and subject to an AMR:

- bird screens
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings

The intended functions of the security building HVAC system component types within the scope of license renewal include:

- filtration
- pressure-retaining boundary

2.3.3.58.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.58 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 FSAR 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).

2.3.3.58.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the security 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).

2.3.3.59 Containment Vacuum Relief System

2.3.3.59.1 Summary of Technical Information in the Application

LRA Section 2.3.3.59 describes the containment vacuum relief system, which consists of a check valve and an automatic air-operated butterfly valve outside containment in each of two independent vacuum relief lines. Actuation of the butterfly valves is controlled by differential pressure between the outside atmosphere and the containment. There are two safety-grade differential pressure transmitters for monitoring and two for control. One set of transmitters signals for control action to open the butterfly valves when the differential pressure between the containment and outside reaches its setpoint value. The second set, by a different manufacturer, signals continuously to the control room for indication and sets off an alarm before the differential pressure reaches the butterfly valve setpoint.

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

LRA Table 2.3.3-53 identifies containment vacuum relief system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- containment isolation piping and components
- containment vacuum relief accumulator tank
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- piping, piping components, and piping elements

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

- filtration
- pressure-retaining boundary

2.3.3.59.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.59 and FSAR Section 6.2.1.1.3.4 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 FSAR 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).

2.3.3.59.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the containment vacuum relief 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).

2.3.3.60 Bridge Crane Equipment

2.3.3.60.1 Summary of Technical Information in the Application

LRA Section 2.3.3.60 describes the bridge crane equipment, which consists of the following bridge cranes:

- fuel handling bridge crane
- FHB auxiliary crane
- EDG bridge cranes A & B
- reactor containment building jib cranes A & B
- miscellaneous bridge cranes in the RAB, WPB, and service building

The fuel handling bridge crane is designated safety-related. The bridge crane system has equipment conservatively assumed to meet 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(2) criteria based on quality class designation and therefore included within the scope of license renewal. The structural parts of the bridge cranes system are evaluated as civil/structural components/commodities within the buildings or structures of their locations.

The bridge crane equipment contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs of the bridge crane equipment potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.60.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.60 and FSAR Section 9.1.4 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 FSAR 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).

2.3.3.60.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the

bridge crane equipment 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).

2.3.3.61 Containment Pressurization System

2.3.3.61.1 Summary of Technical Information in the Application

LRA Section 2.3.3.61 describes the containment pressurization system for containment pressurization during Type A integrated leak rate testing. The system consists of piping from the southwest corner of the tank area/building through Containment Penetration M-96. Portable air compressors connected to the piping outside of the tank area/building pressurize the containment for the integrated leak rate test. There are also penetrations and piping for containment pressure sensing and for a controlled flow release (verification flow) during the integrated leak rate test. The containment pressurization system has components required for containment isolation.

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

LRA Table 2.3.3-54 identifies containment pressurization system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping, piping components, and piping elements

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

2.3.3.61.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.61 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 FSAR 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).

2.3.3.61.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the containment pressurization 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).

2.3.3.62 Penetration Pressurization System

2.3.3.62.1 Summary of Technical Information in the Application

LRA Section 2.3.3.62 describes the penetration pressurization system, designed as a flow path for pressurizing the containment electrical penetrations, valve chambers, equipment hatch, and air locks for testing by pressurization to the accident design pressure to determine penetration leak rate. The system uses both nitrogen and instrument air for testing. System components include valves, piping components, and flow and pressure instrumentation. Containment electrical penetrations are pressurized continuously by nitrogen to verify integrity and to prevent the entry of moisture into the internals of the penetration itself. The flow rate of the nitrogen is monitored to assure the integrity of the electrical penetrations. Each electrical penetration is designed to be isolated and tested individually if necessary. The instrument air system can supply the penetration pressurization system piping for testing of the following mechanical penetrations:

- emergency air lock
- personnel air lock
- containment spray valve chambers
- RHR valve chambers

During testing of the mechanical penetrations, air flow is directed to the penetration where local pressure indicators monitor penetration pressure during testing. The air flow rate is monitored for the integrity of the mechanical penetrations.

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

LRA Table 2.3.3-55 identifies penetration pressurization system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping, piping components, and piping elements

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

2.3.3.62.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.62 and FSAR Sections 6.2.6.1.3 and 3.8.1.1.3.3 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 FSAR 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).

2.3.3.62.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the penetration pressurization 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).

2.3.3.63 Containment Cooling System

2.3.3.63.1 Summary of Technical Information in the Application

LRA Section 2.3.3.63 describes the containment cooling system, which supports the containment heat removal system, which performs the containment heat removal function required by 10 CFR 50 Appendix A, GDC-38, "Containment Heat Removal." The containment cooling system performs the following functions:

- during normal operation, the containment cooling system is designed to maintain the indicated containment temperature below 120°F
- in a design-basis accident, containment fan coolers are designed to remove heat
- in a design-basis accident, containment fan coolers are designed to assist in mixing the containment atmosphere

The containment cooling system consists of four safety-related fan cooler units and three nonsafety fan coil units. Following a design-basis accident only the safety-related fan cooler units are required to operate. During normal power operation, safety-related units operate with the nonsafety-related fan coil units to maintain the required containment temperature. Each of the safety-related containment fan cooler units consists of a service water cooling coil section and two fans. A gravity damper at the discharge side of each fan prevents airflow in the reverse direction when only one fan per unit is required to operate. Both fans of the unit discharge into a common duct connected to a concrete airshaft. A branch duct connection upstream of the shaft isolation damper serving as a post-accident discharge nozzle is normally isolated by a pneumatically-operated, fail-open damper. When in operation, air is drawn from containment space through the cooling coils to the fan suction.

The fan discharge is directed to either the concrete shaft or the post-accident nozzles, depending on the operation mode. A ductwork distribution network supplies air to the steam generator and pressurizer subcompartments, the operating floor, the ground floor, the instrument room, and the containment dome. A portion of the fan discharge is tapped to serve the reactor supports cooling system, the digital rod position indication cabinets, and the primary shield cooling system. Other areas of containment are cooled by natural convection. Each of the nonsafety-related containment fan coil units consists of a service water cooling coil and two fans. Each fan has an air-operated discharge damper to isolate the fan not in operation. Both fans discharge into common ductwork. When in operation, air is drawn from containment space, through the cooling coils, to the fan suction. Cooling air from the fan coil unit is directed to the RCP sub-compartments.

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

LRA Table 2.3.3-56 identifies containment cooling system component types within the scope of license renewal and subject to an AMR:

- containment fan cooler - cooler coil
- containment fan cooler - housing
- containment fan-coil - housing
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings
- flow-restricting elements
- piping, piping components, and piping elements

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

- heat transfer
- pressure-retaining boundary
- flow regulation

2.3.3.63.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.63 and FSAR Sections 6.2.2 and 7.3.1.3.1.2 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 FSAR 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).

2.3.3.63.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the penetration pressurization 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).

2.3.3.64 Airborne Radioactivity Removal System

2.3.3.64.1 Summary of Technical Information in the Application

LRA Section 2.3.3.64 describes the airborne radioactivity removal system, designed to remove airborne particulate radioactivity from the containment atmosphere to permit personnel entry by recirculating the atmosphere through HEPA filters and charcoal adsorbers. The airborne radioactivity removal system consists of two recirculating airborne radioactivity removal units, one operational and one standby. Each unit includes a medium efficiency filter bank, a HEPA filter bank, a charcoal adsorber bank, and a centrifugal fan. The airborne radioactivity removal unit operates continuously to limit the build-up of airborne radioactivity which might leak from the RCS during normal operation. The airborne radioactivity removal system is not safety-related and not required to operate during accident conditions. Upon a loss of power, the system is shut down.

The failure of nonsafety-related SSCs in the airborne radioactivity removal system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3-57 identifies airborne radioactivity removal system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings
- filter housings
- piping, piping components, and piping elements

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

2.3.3.64.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.64 and FSAR 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 FSAR 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).

2.3.3.64.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the airborne radioactivity removal 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).

2.3.3.65 Containment Atmosphere Purge Exhaust System

2.3.3.65.1 Summary of Technical Information in the Application

LRA Section 2.3.3.65 describes the containment atmosphere purge exhaust system, designed for the following functions:

- maintain low concentration of radioactivity in the containment atmosphere by continually purging the containment with a low volume of outside air to allow the system to draw down the containment atmosphere to a slight negative pressure
- reduce radioactivity concentration in the containment atmosphere to a level acceptable for personnel access by purging the containment with a high volume of outside air
- control combustible gases in containment; the hydrogen purge function as a backup for the redundant hydrogen recombiners and is not relied upon for safety

The containment hydrogen purge system for hydrogen control inside the containment building purges hydrogen from the containment as a backup to the hydrogen recombiner system. The system consists of a purge make-up penetration line, an exhaust penetration line, and a filtered exhaust system. The post-accident hydrogen purge system, up to the first isolation valve outside Containment is Safety Class 2, seismic Category I, and is designed to retain its integrity following a design-basis LOCA. The remainder of the system is not for design-basis safety as it serves as a backup system to the hydrogen recombiners. The system is designed to exhaust the air and hydrogen from the containment for replacement with outside air. The system has no functional and operational redundancy as it serves only as a diverse backup to the already

redundant containment hydrogen recombiners; however, the system can control hydrogen inside containment following a LOCA independently of operation of the recombiners.
The containment atmosphere purge exhaust system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs in the containment atmosphere purge exhaust system potentially could prevent the satisfactory accomplishment of a safety-related function. The containment atmosphere purge exhaust system performs functions that support SBO, fire protection, and EQ.

LRA Table 2.3.3-58 identifies containment atmosphere purge exhaust system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- containment isolation piping and components
- containment purge cooling coil housing
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings
- filter housings
- piping, piping components, and piping elements

The intended functions of the containment atmosphere purge exhaust system component types within the scope of license renewal include:

- filtration
- pressure-retaining boundary

2.3.3.65.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.65 and FSAR Sections 9.4.7.2.2 and 6.2.5.1.3 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 FSAR 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).

2.3.3.65.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the containment atmosphere purge exhaust 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).

2.3.3.66 Control Rod Drive Mechanism Ventilation System

2.3.3.66.1 Summary of Technical Information in the Application

LRA Section 2.3.3.66 describes the CRDM ventilation system, a forced-air cooling system that reliably supplies cooling air to the CRDM magnetic coil housing during normal reactor operation. The system draws containment air into a plenum area above the CRDM assemblies and down over the coil housing faces. The air exits below the coil housing and across the upper surface of the reactor vessel head via a return duct to centrifugal fans which exhaust to the containment atmosphere. The system consists of four 50-percent capacity centrifugal fans mounted on the upper section of the shroud structure. Internal baffles between the cooling shroud and the outer row of mechanisms along with dummy CRDM cans in positions which do not contain mechanisms create an exhaust plenum between the reactor vessel head and the lower mechanism coil housings.

Ducts inside the shroud structure direct air from this plenum up to and through fans on the upper portion of the shroud structure. In the unlikely event of a complete loss of CRDM cooling air, overheating eventually results in shorting of the CRDM coils and tripping of the rods. This problem is not a considered significant problem because these coils perform no safeguard function. The fans are not required to operate during a LOCA or MSLB; therefore, this system is not safety-related.

The failure of nonsafety-related SSCs in the control rod drive mechanism ventilation system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3-59 identifies CRDM ventilation system component types within the scope of license renewal and subject to an AMR:

- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings
- rod drive cooling system screens

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

- filtration
- pressure-retaining boundary

2.3.3.66.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.66 and FSAR 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 FSAR 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 2.3.3.66 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. See Section 2.3.3.63 and the RAI 2.3.3-2 response discussion.

2.3.3.66.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the control rod drive mechanism 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).

2.3.3.67 Primary Shield and Reactor Supports Cooling System

2.3.3.67.1 Summary of Technical Information in the Application

LRA Section 2.3.3.67 describes the primary shield and reactor supports cooling system, designed to supply cooling air to the annular clearance between the reactor vessel and primary shield wall, the reactor vessel supports, and the annular space between the reactor coolant legs and the concrete wall. The primary shield and reactor supports cooling system is a subsystem of the containment heat removal system. The primary shield cooling portion of the system consists of two Safety Class 3, 100-percent capacity, direct-driven supply fans, each serving as a standby for the other with a locked open inlet damper and a gravity-type discharge damper to prevent back flow through the standby fan. Each axial supply fan draws cool air from the vertical concrete air shaft and supplies it to the annular clearance between the reactor vessel and primary shield wall through connecting ductwork. Cooling by the primary shield cooling system minimizes the possibility of concrete dehydration.

The reactor supports cooling portion of the system consists of two Safety Class 3, 100-percent capacity direct-driven vane axial fans, each serving as a standby for the other with a locked open inlet damper and a gravity-type discharge damper to prevent back flow through the idle fan. The system draws cooling air from the vertical concrete air shaft and supplies it to the reactor vessel supports and to the annular space between reactor coolant legs and sleeves through the primary shield. Cool air is forced through these spaces uniformly in a ductwork distribution system. Cooling by the reactor supports cooling system limits thermal expansion of the reactor vessel supporting steelwork. The primary shield and reactor supports cooling system includes fans, fan motors, dampers, and I&Cs.

The primary shield and reactor supports cooling system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs in the primary shield and reactor supports cooling system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.3-60 identifies primary shield and reactor supports cooling system component types within the scope of license renewal and subject to an AMR:

- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings

The intended function of the primary shield and reactor supports cooling system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.3.67.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.67 and FSAR Section 6.2.2 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 FSAR 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 2.3.3.67 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. See Section 2.3.3.63 and the RAI 2.3.3-2 response discussion.

2.3.3.67.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the primary shield and reactor supports cooling 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).

2.3.3.68 Fuel Cask Handling Crane System

2.3.3.68.1 Summary of Technical Information in the Application

LRA Section 2.3.3.68 describes the fuel cask handling crane system, part of the fuel handling system. The fuel cask handling crane transfers the spent fuel cask between the cask transport railroad car and the spent fuel cask loading pool. The FHB design and the fuel cask handling crane prevent the cask from passing over or falling into any fuel pool.

The failure of nonsafety-related SSCs in the fuel cask handling crane system potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.68.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.68 and FSAR Section 9.1.4 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 FSAR 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).

2.3.3.68.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the fuel cask handling crane 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).

2.3.3.69 Reactor Auxiliary Building Ventilation System

2.3.3.69.1 Summary of Technical Information in the Application

LRA Section 2.3.3.69 describes the RAB ventilation system, which is designed for RAB cooling, heating, ventilation, differential pressure control, and radiological habitability control, and consists of the following systems:

- The RAB normal ventilation system ventilates the RAB during normal plant operation. The once-through type system consists of a supply system and an exhaust system. Under accident conditions, spaces with major containment penetrations and selected potentially contaminated areas are isolated automatically, the normal ventilation system shuts down, and the air from those areas is treated by the filtered RAB emergency exhaust system prior to release to the environment.
- The RAB emergency exhaust system maintains selected potentially contaminated RAB areas below atmospheric pressure following an safety-injection signal and minimizes unfiltered outleakage of airborne radioactive materials. This system consists of redundant fan and filter subsystems. Each of the two subsystem filter trains has a valve,

decay heat cooling air connection, demister, electric heating coil, medium-efficiency filter, HEPA prefilter, charcoal adsorber, and HEPA after-filter. Connected to each filter train outlet is a fan with a valve on its inlet and a backdraft damper on its outlet to prevent reverse airflow through the inactive fan.

- The RAB nonnuclear safety ventilation system consists of two heating and ventilating equipment room subsystems (north and south), each having an outside air intake plenum, medium-efficiency filter, electric heating coil, chilled water cooling coil, and centrifugal supply and return fans. The system can function as a once-through or as a mixed (recirculation with makeup) system. The chilled water for the cooling coil is supplied from the essential services chilled water system. The RAB nonnuclear safety ventilation system is not safety-related and not required to operate during accident conditions.
- The RAB ESF equipment cooling system provides emergency cooling by fan coolers for areas with equipment essential for safe shutdown. The system consists of cooling systems for various ESF equipment areas and a steam tunnel ventilation system. Each cooling system has an air handling unit which consists of fan, cooling coil, and filter sections.
- The RAB switchgear rooms ventilation system serves the RAB switchgear rooms, battery rooms, and the process instrument Cabinet Room "A." Each switchgear room has its own independent air conditioning system. Each switchgear room ventilation system consists of an air intake protected from missiles and equipped with a self-acting tornado damper, medium efficiency filter, electric heating coil, two 100-percent redundant chilled water cooling coils connected in series, and two redundant fans arranged in parallel.
- The RAB electrical equipment protection room ventilation system has two redundant trains that share the same ductwork. The system consists of two 100-percent capacity subsystems in parallel, one normally operating and one in standby. Each supply subsystem consists of a motorized inlet damper, medium-efficiency filter, chilled water cooling coil, supply fan, gravity damper and electric heating coil. The exhaust subsystem has redundant fans. Exhausted air is discharged to the atmosphere through a valve protected from missiles.
- The RAB computer and communication rooms ventilation system consists of the computer and communication rooms HVAC system and the battery and HVAC equipment room HVAC system. The areas served are at an elevation of 305 ft. in a superstructure on the RAB roof. The system maintains areas at the proper design temperature and pressure for suitable operation of equipment, mitigates the consequences of a radiological accident, removes smoke in case of fire, and removes hydrogen by ventilation near batteries.

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

LRA Table 2.3.3-61 identifies reactor auxiliary building ventilation system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings
- filter housing
- piping, piping components, and piping elements
- RAB nonsafety-related cooling coil housings
- RAB safety-related cooling coil housings
- RAB safety-related cooling coils

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

- filtration
- heat transfer
- pressure-retaining boundary

2.3.3.69.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.69 and FSAR Sections 6.5.1, 9.4.3, 9.4.5, and 9.4.9 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 FSAR 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 2.3.3.69 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 2.3.3-4 dated August 27, 2007, the staff noted that license renewal drawing 8-G-0517-SO3-LR, Grid B-2, shows fan P-5 IB housing as being partially highlighted while fan P-5 IA housing is entirely highlighted. The staff requested that the applicant clarify whether fan P-5 1B housing is entirely within the scope of license renewal.

In its response dated September 24, 2007, the applicant stated that P-5 (1A-NNS) and P-5 (1B-NNS) are pumps. License renewal drawing 8-G-0517 S03-LR should have shown pump P-5 (1B-NNS) casing as being entirely highlighted identically as the casing for pump P-5 (IA-NNS) is entirely highlighted. The casing for pump P-5 (1B-NNS) is within the scope of license renewal and is included in the AMR results in LRA Table 3.3.2-61, "Auxiliary Systems - Summary of Aging Management Evaluation - Reactor Auxiliary Building Ventilation System," in the component/commodity "piping, piping components, and piping elements."

Based on its review, the staff finds the applicant's response to RAI 2.3.3-4 acceptable because the drawing was labeled in error. The staff's concern described in RAI 2.3.3-4 is resolved.

2.3.3.69.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the RAB 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).

2.3.3.70 Emergency Service Water Intake Structure Ventilation System

2.3.3.70.1 Summary of Technical Information in the Application

LRA Section 2.3.3.70 describes the ESW intake structure ventilation system located in the ESW & CTMU intake structure and consisting of the electric equipment room HVAC system and the emergency pump room ventilation system. This safety-related system designed to maintain a maximum temperature of 116F in each electrical motor control center room and of 122°F in the emergency pump room is an ESF ventilation system. The pump room ventilation system operates during emergency conditions and can be started manually as required during normal conditions. The system consists of two exhaust systems, each exhausting and ventilating a single pump room.

The exhaust unit consists of an inline fan with a gravity discharge damper. Intake air is drawn from outside through louvers protected from missiles to the emergency pump room and discharged to atmosphere through a louver protected from missiles. Four electric unit heaters maintain the temperature for each pump room. In a loss of offsite power, this system is powered from the EDGs.

A single active failure in this system can affect only one of the two motor control center rooms or pump rooms; therefore, one pump is available to mitigate the consequences of a design-basis accident for safe plant shutdown.

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

LRA Table 2.3.3-62 identifies ESW intake structure ventilation system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- ESW intake structure cooling coil enclosures
- fan housings
- filter housings
- piping, piping components, and piping elements

The intended functions of the ESW intake structure ventilation system component types within the scope of license renewal include:

- filtration
- pressure-retaining boundary

2.3.3.70.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.70 and FSAR Section 9.4.5 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 FSAR 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 2.3.3.70 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 2.3.3-5 dated August 27, 2007, the staff noted that license renewal drawing 8-G-0548-LR, Grid B-8, shows a screen that is partially highlighted. The staff requested that the applicant clarify whether this is the "bird screen" and if this screen is entirely within the scope of license renewal.

In its response dated September 24, 2007, the applicant stated that the two damper bodies/enclosures, DG-GD3 (SA- 1) and DG-GD4 (SA- 1), shown on license renewal drawing 8-G-0548-LR at location J-4 should be entirely highlighted. The two damper bodies/enclosures are within the scope of license renewal and are included in the AMR results in LRA Table 3.3.2-65, "Auxiliary Systems - Summary of Aging Management Evaluation - Diesel Generator Building Ventilation System," in the component/commodity "Damper Housings."

Based on its review, the staff finds the applicant's response to RAI 2.3.3-5 acceptable because the specific clarification requested was provided and this uncertainty as to what was highlighted on the drawing as being within the scope of license renewal was eliminated. The staff's concern described in RAI 2.3.3-5 is resolved.

2.3.3.70.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the ESW intake structure 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).

2.3.3.71 Turbine Building Area Ventilation System

2.3.3.71.1 Summary of Technical Information in the Application

LRA Section 2.3.3.71 describes the turbine building area ventilation system, which ventilates, cools, heats, and filters enclosed areas in the turbine generator building. The system also filters and purges exhaust air from potentially contaminated areas and can vent and purge smoke from areas with potential smoke conditions. The following subsystems make up the turbine building area ventilation system:

- The condensate polishing demineralizers area ventilation system heats and ventilates spaces in the condensate polishing demineralizer areas, corridor areas, and the heating & ventilating equipment room.
- The electrical and battery room ventilation system heats and ventilates the electrical equipment room and battery room. The system, consisting of supply and exhaust units, is a once-through type during summer operation and an economizer cycle-type during the winter season.
- The general service switchgear room ventilation system heats and ventilates the turbine building switchgear room. The ventilation system for the switchgear room is a once-through during summer operation and an economizer cycle during winter operation.
- The condensate vacuum pump effluent treatment system filters exhaust for the condensate vacuum pump. It is a nonnuclear-safety, nonseismic Category I-designed ventilation cleanup system.
- The elevator machinery room ventilation system and sampling room HVAC system ventilate and heat the elevator machinery room and the secondary sampling room.
- The secondary sampling equipment enclosure system cools the secondary sampling equipment enclosure. The system consists of two four-ton split-system air conditioning units. The two air conditioning units start in sequence according to the demand of the thermostat and operate in a recirculation mode.
- The turbine building decontamination facility HVAC system is designed (1) to provide heating, ventilating and cooling for personnel comfort during plant normal operation, (2) to provide potentially contaminated areas with once-through ventilation, (3) to purge smoke in a fire, and (4) to provide redundant fans for continuous reliable operation. The

system serves the health physics rooms, health physics office, decontamination rooms, locker rooms, corridors, and vestibule. The system is not safety-related and not required to operate during accident conditions.

The turbine building area ventilation system performs functions that support fire protection.

LRA Table 2.3.3-63 identifies turbine building area ventilation system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings
- filter housings
- piping, piping components, and piping elements

The intended functions of the turbine building area ventilation system component types within the scope of license renewal include:

- filtration
- pressure-retaining boundary

2.3.3.71.2 *Staff Evaluation*

The staff reviewed LRA Section 2.3.3.71 and FSAR Sections 9.4.4 and 9.4.10 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 FSAR 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).

2.3.3.71.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the turbine building area 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).

2.3.3.72 Waste Processing Building HVAC System

2.3.3.72.1 Summary of Technical Information in the Application

LRA Section 2.3.3.72 describes the WPB HVAC system, which ventilates and heats WPB areas. The system has a filtered exhaust system for potentially contaminated areas to reduce offsite airborne radioactivity during the normal operation of the plant. The system detects and controls the spread of smoke through WPB areas. The WPB HVAC system consists of the following:

1. The waste processing areas ventilation system ventilates WPB areas during normal plant operation. The major part of the system is a once-through type for contaminated areas. A small portion of the system serving noncontaminated areas is an economizer cycle which blends outside air and return air as required. The filtered exhaust consists of filtered subsystems including dampers, medium-efficiency filter, HEPA filter, charcoal adsorber, and a fan.
2. The WPB control room HVAC system provides heating, ventilation, and air conditioning for personnel comfort and safety and for functional protection of equipment and controls. The system includes two 50-percent capacity units consisting of a common outside air intake plenum, a return outside air mixing section with dampers, medium-efficiency filters, electric heating coil, chilled water cooling coil, electric reheat coil, and a fan.
3. The personnel handling facility HVAC system provides heating, ventilating, and air conditioning for selected WPB areas. The system consists of an outside air intake plenum, dampers, medium-efficiency filters, electric heating coil, chilled water cooling coil, and a fan.
4. The office and laundry areas HVAC system provides heating, ventilating, and air conditioning for three subsystems:
   a. The laundry dryer supply system is a once-through system providing makeup air, heat, and ventilation to the cold laundry area. The supply system has six supply fans sharing a common outside air intake with a prefilter section and common supply air ductwork.
   b. The laundry facility air conditioning system is a once-through system with an air-handling unit and a zone reheat coil.
   c. The office areas air conditioning system consists of an air-handling unit, a recirculating fan, and electric zone reheat coils. The air-handling unit includes a mixing section with dampers, a medium-efficiency filter, an electric heating coil, a chilled water cooling coil, and a fan. The cooling coil is supplied with chilled water from the nonessential services chilled water system.
5. The laboratory areas HVAC system provides heating ventilating and air conditioning for laboratory areas and ventilation for fume hoods. The system has three supply units for all the fume hoods and an air-handling unit for laboratory areas. Each fume hood supply unit includes dampers, medium-efficiency filters, an electric heating coil, and a fan.
6. The instrumentation and control shop HVAC system provides ventilation for personnel comfort and safety and for functional protection of equipment. The system consists of an

air-handling unit which draws air from the outside through a damper, medium-efficiency filters, an electric heating coil, a chilled water cooling coil, and a fan followed by an electric reheat coil.

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

LRA Table 2.3.3-64 identifies WPB HVAC system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- cooling coil housing
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings
- filter housings
- motor control center and instrument rack area cooling coil housing
- motor control center and instrument rack area cooling coil
- piping, piping components, and piping elements

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

- filtration
- heat transfer
- pressure-retaining boundary

2.3.3.72.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.72 and FSAR 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 FSAR 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).

2.3.3.72.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the WPB 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).

2.3.3.73 Diesel Generator Building Ventilation System

2.3.3.73.1 Summary of Technical Information in the Application

LRA Section 2.3.3.73 describes the diesel generator building ventilation system, designed for temperature control and ventilation in rooms of that building to maintain the temperature in the EDG rooms whenever the EDGs operate and to maintain the temperature in the electrical equipment and fan rooms to protect electric equipment and motors. This safety-related ESF system provides redundant trains and remains functional during and after a safe shutdown earthquake. The following descriptions are for each EDG unit:

- The diesel generator room ventilation system has two EDG room exhaust fans, 1A and 1B, each with a gravity discharge damper.
- The electrical equipment room ventilation system is designed to filter and pressurize this air space to limit dust accumulation. The system consists of an air handling unit with medium efficiency filters, an electric heating coil, and two EDG electrical equipment room cooling fans.
- The fuel oil day tank and exhaust silencer room ventilation system consists of two centrifugal exhaust fans and dampers.
- The air start system and axial fan area ventilation system contains the exhaust fans and dampers for the EDG room.
- The HVAC equipment room ventilation system draws air through its room by two centrifugal exhaust fans via the adjacent silencer room. During EDG operation, combustion air is withdrawn from this area via the engine air intakes.

System safety-related components required for safe shutdown of the plant and design-basis accidents receive emergency power from their respective EDGs. An independent instrument air system provides instrument and control air for operation of the nonsafety-related air-operated dampers at the outside air intakes of the EDG room and fuel oil day tank area and HVAC equipment room. Electric unit heaters for the EDG areas are not safety-related and not required to operate during emergency conditions.

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

LRA Table 2.3.3-65 identifies diesel generator building ventilation system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- cooling coil housing
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings
- filter housings
- piping, piping components, and piping elements

The intended functions of the diesel generator building ventilation system component types within the scope of license renewal include:

- filtration
- pressure-retaining boundary

2.3.3.73.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.73 and FSAR Section 9.4.5 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 FSAR 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).

2.3.3.73.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance 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).

2.3.3.74 Fuel Oil Transfer Pump House Ventilation System

2.3.3.74.1 Summary of Technical Information in the Application

LRA Section 2.3.3.74 describes the fuel oil transfer pump house ventilation system, designed to remove combustible diesel fuel fumes and maintain temperature in the fuel oil transfer pump rooms. Although the system has safety-related components, it is not required for operability of the diesel fuel oil system. This ESF system can operate during normal and emergency conditions but performs no safety-related function required to support EDG operation. The system consists of two exhaust subsystems, each supporting one of two fuel oil transfer pump rooms with two redundant full-capacity exhaust fans with gravity discharge dampers to prevent reverse airflow through the inactive fans. One outside air intake structure and one air discharge structure for the system are located on the roof and protected from missiles. The electric unit heaters are not safety-related and not required to operate during emergency conditions. During emergency conditions, a single failure in the system can affect only one of the two fuel oil transfer pump rooms; furthermore, the affected fuel oil transfer pump remains fully operable even with its ventilation system inoperable.

The fuel oil transfer pump house ventilation system contains safety-related components relied upon to remain functional during and following DBEs. In addition, the fuel oil transfer pump house ventilation system performs functions that support fire protection.

LRA Table 2.3.3-66 identifies fuel oil transfer pump house ventilation system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- damper housings
- ducting and components
- ducting closure bolting
- elastomer seals and components
- fan housings
- piping, piping components, and piping elements

The intended functions of the fuel oil transfer pump house ventilation system component types within the scope of license renewal include:

- filtration
- pressure-retaining boundary

2.3.3.74.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.74 and FSAR Section 9.4.5 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 FSAR 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).

2.3.3.74.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the fuel oil transfer 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).

2.3.3.75 Fuel Handling Building Auxiliary Equipment

2.3.3.75.1 Summary of Technical Information in the Application

LRA Section 2.3.3.75 describes the FHB auxiliary equipment (*e.g.*, lighting fixtures, floor drains, sump pumps, discharge piping, and valves) for the structure. These items may be within the scope of license renewal because they have components that perform one or more license renewal intended functions. The applicant has evaluated this equipment for mechanical or electrical/I&C components that support license renewal intended functions. The FHB houses (1) facilities for storing, moving, and handling both new and spent fuel, (2) secondary waste equipment (*e.g.*, evaporators, demineralizers, heaters, condensers, pumps, filters, and control panels), and (3) recycle evaporators, recycle holdup tanks, HVAC ducts, pumps, filters, and the hydrogen purge unit. Structural elements, cranes, cubicles, panel, and racks are evaluated as structural components with the FHB structure.

This subsection evaluates electrical and mechanical equipment (*e.g.*, heaters, lights, and circuit breakers) that support the FHB. FHB auxiliary equipment has mechanical and electrical components conservatively assumed to meet 10 CFR 54.4(a)(2) criteria based on their quality class designation and therefore included within the scope of license renewal.

The failure of nonsafety-related SSCs of the FHB auxiliary equipment potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.75.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.75 and FSAR Section 3.8.4.1.3 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 FSAR 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).

2.3.3.75.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the

FHB auxiliary equipment 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).

2.3.3.76 Fuel Handling Building HVAC System

2.3.3.76.1 Summary of Technical Information in the Application

LRA Section 2.3.3.76 describes the FHB HVAC system, which provides heating, ventilation, and cooling to maintain the FHB indoor design temperature range during plant operation; to isolate fuel handling areas in any accidental release of radioactive material; and to maintain these areas at sub-atmospheric pressure by the emergency exhaust system to limit potential offsite exposures. The system also cools the spent fuel pool pump room and other areas housing safety-related equipment during normal and emergency conditions and detects and controls the spread of smoke in a fire. The FHB HVAC system consists of:

- The air conditioning system for the operating floor (*i.e.*, the spent fuel pool area) provides ventilation and the proper temperature for personnel comfort and safety, equipment protection, and isolation of selected areas in a fuel handling accident or any accidental release of radioactive material. The system consists of a supply and an exhaust subsystems.
- The emergency exhaust system is a safety-related ESF filter system designed to mitigate the consequences of a postulated fuel handling accident by removing the airborne radioactivity from the FHB exhaust air prior to release to the atmosphere. The system maintains the FHB operating floor under negative pressure following a fuel handling accident to prevent unfiltered outleakage of airborne radioactive materials.
- The normal ventilation system ventilates areas below the operating floor, provides cooling to protect mechanical and electrical equipment, and directs air flow from areas of low to areas of progressively higher potential radioactivity. The system consists of a normal supply and a normal exhaust subsystems.
- The spent fuel pool pump room ventilation system cools pumps, heat exchangers, and equipment of the emergency exhaust system. The system includes two 100-percent capacity air handling units with consisting of medium-efficiency filters, a chilled water cooling coil, and a fan.

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

LRA Table 2.3.3-67 identifies FHB HVAC system component types within the scope of license renewal and subject to an AMR:

- bird screens
- closure bolting
- damper housings
- ducting and components
- ducting closure bolting

- elastomer seals and components
- fan housings
- filter housings
- flow-restricting elements
- FHB normal supply cooling coil housing
- FHB pump room cooling coil
- FHB pump room cooling coil housing
- pipe, piping components, and piping elements

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

- heat transfer
- pressure-retaining boundary
- flow regulation

2.3.3.76.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.76 and FSAR Sections 6.5.1, 9.4.2, and 9.4.5 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 FSAR 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).

2.3.3.76.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the FHB 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).

2.3.3.77 Turbine Building Health Physics Room Auxiliary Equipment

2.3.3.77.1 Summary of Technical Information in the Application

LRA Section 2.3.3.77 describes the turbine building health physics room auxiliary equipment (*e.g.*, lighting fixtures, floor drains, sump pumps, discharge piping, and valves) for the structure. These items may be within the scope of license renewal because they have components that perform one or more license renewal intended functions. The applicant has evaluated this equipment for components that support license renewal intended functions. The turbine building health physics room has equipment for the support and maintenance of respirators. Mechanical equipment (*e.g.*, decontamination devices, heaters) and electrical equipment (*e.g.*, breakers, motors, meters, and modules) are evaluated as parts of this system. The turbine building health physics room auxiliary equipment has components conservatively assumed to meet 10 CFR 54.4(a)(2) criteria based on their quality class designation and therefore included within the scope of license renewal.

The failure of nonsafety-related SSCs of the turbine building health physics room auxiliary equipment potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.77.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.77 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 FSAR 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).

2.3.3.77.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the turbine building health physics room auxiliary equipment 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).

2.3.3.78 Polar Crane Auxiliary Equipment

2.3.3.78.1 Summary of Technical Information in the Application

LRA Section 2.3.3.78 describes the polar crane auxiliary equipment (*e.g.*, lighting fixtures, floor drains, sump pumps, discharge piping, and valves) for the structure. These items may be within the scope of license renewal because they have components that perform one or more license renewal intended functions. The applicant has evaluated this equipment for components that support license renewal intended functions. The circular bridge containment polar crane located in the containment building is for the movement of equipment on the containment operating floor. The polar crane auxiliary equipment consists of mechanical and electrical components (*e.g.*, drive mechanism, reduction gear, breakers, alarms, cables, switches, lighting, fuses, motors, rectifiers, resistors, and transformers) conservatively assumed to meet

10 CFR 54.4(a)(2) criteria based on their quality class and therefore included within the scope of license renewal.

The failure of nonsafety-related SSCs of the polar crane auxiliary equipment potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.78.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.78 and FSAR Section 9.1.4.3.2 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 FSAR 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).

2.3.3.78.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the polar crane auxiliary equipment 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).

2.3.3.79 Elevator System

2.3.3.79.1 Summary of Technical Information in the Application

LRA Section 2.3.3.79 describes the elevator system, which consists of the following elevators:

- containment building elevator
- FHB elevator
- K-building elevator located in the outside power block structure
- RAB elevator
- turbine building elevator
- WPB elevator #1
- WPB elevator #2

Elevators outside the containment serve as escape routes and may be used as access routes for fire fighting. These elevators are located throughout the plant along with electrical switches, circuit breakers, and supporting enclosures. The applicant evaluates elevator system structural components as civil commodities as parts of buildings where they are located. The remaining mechanical and electrical components (*e.g.*, alternating current circuit breakers, motors, gearboxes, and disconnect switches) are evaluated as parts of this system.

The failure of nonsafety-related SSCs in the elevator system potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.79.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.79 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 FSAR 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).

2.3.3.79.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the elevator 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).

2.3.3.80 Technical Support Center HVAC System

2.3.3.80.1 Summary of Technical Information in the Application

LRA Section 2.3.3.80 describes the technical support center HVAC system located in the FHB. The technical support center has radiological and monitoring equipment to protect personnel. The monitoring equipment can indicate dose rates and airborne radioactivity concentrations continuously. Technical support center components are mechanical and electrical (*i.e.*, lighting, switches, breakers, alarms, motors, controllers, transmitters, sensors, air handling units, dampers, fans, ductwork, filters, and heat pumps).

The failure of nonsafety-related SSCs in the technical support center HVAC system potentially could prevent the satisfactory accomplishment of a safety-related function. The system also performs functions that support fire protection.

LRA Table 2.3.3-68 identifies technical support center HVAC system component types within the scope of license renewal and subject to an AMR:

- ducting and components
- ducting closure bolting

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

2.3.3.80.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.80 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 FSAR 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).

2.3.3.80.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the technical support center 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).

2.3.3.81 Mechanical Components in Electrical Systems

2.3.3.81.1 Summary of Technical Information in the Application

LRA Section 2.3.3.81 describes the mechanical components in electrical systems. Specifically, the 230kV switchyard system and the gross failed fuel detection system have been assigned to the electrical and I&C area; however, they have mechanical components that support system intended functions. The 230kV switchyard system connects the power generated by HNP to the Carolina Power & Light Company system for distribution to its customers and provides a source of dependable offsite power to the plant during startup, emergency, or controlled shutdown operations. The startup transformers within the 230kV switchyard system are supplied power from the switchyard via underground 230kV low-pressure cable filled with oil provided through piping from tanks. The tanks, piping, and piping elements up to the cable connection are mechanical components that support the system intended function.

The mechanical components in electrical systems perform functions that support SBO.

LRA Table 2.3.3-69A identifies mechanical components in electrical systems component types within the scope of license renewal and subject to an AMR:

- piping, piping components, and piping elements
- tanks

LRA Table 2.3.3-69B identifies mechanical components in electrical systems component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

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

2.3.3.81.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.81 and FSAR Section 9.3.6 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 FSAR 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).

2.3.3.81.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the mechanical components in electrical systems 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).

2.3.3.82 Monorail Hoists Equipment

2.3.3.82.1 Summary of Technical Information in the Application

LRA Section 2.3.3.82 describes the monorail hoists equipment, which supports the monorail hoists located throughout the plant and consists of electrical switches, circuit breakers, and supporting enclosures. Structural components like cranes, hoists, and protective enclosures are evaluated as civil components or commodities as parts of buildings where they are located.

Monorail hoists equipment has components conservatively assumed to meet 10 CFR 54.4(a)(2) criteria based on their quality class designation and, therefore, included within the scope of license renewal.

The failure of nonsafety-related SSCs of monorail hoists equipment potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.3.82.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.82 and FSAR Section 9.1.4.2.2.4 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 FSAR 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).

2.3.3.82.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the monorail hoists equipment 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).

2.3.3.83 Post-Accident Hydrogen System

2.3.3.83.1 Summary of Technical Information in the Application

LRA Section 2.3.3.83 describes the post-accident hydrogen system, which consists of the hydrogen recombiners and hydrogen monitoring components. The hydrogen purge function is a backup for the recombiners and not relied upon for safety. The post-accident hydrogen system ensures that hydrogen gas generated inside the containment following a LOCA does not exceed the RG 1.7 limit of 4 percent by volume. The system has an RG 1.97 Category 1 requirement to monitor post-accident hydrogen concentration in containment and has components required for containment isolation. CIV position indication is an RG 1.97 Category 1 requirement.

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

LRA Table 2.3.3-70 identifies post-accident hydrogen system component types within the scope of license renewal and subject to an AMR:

- hydrogen analyzer tubing and valves
- hydrogen recombiners
- remote sample dilution panel pump
- remote sample dilution panel refrigeration unit
- remote sample dilution panel sample cooler
- remote sample dilution panel sample cooler tubes
- remote sample dilution panel tubing and valves
- closure bolting
- containment isolation piping and components
- piping insulation
- piping, piping components, and piping elements

The intended functions of the post-accident hydrogen system component types within the scope of license renewal include:

- pressure-retaining boundary
- thermal insulation

2.3.3.83.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.83 and FSAR 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 FSAR 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).

2.3.3.83.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the post-accident hydrogen 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 Steam Generator Blowdown System
- 2.3.4.2 Steam Generator Chemical Addition System
- 2.3.4.3 Main Steam Supply System
- 2.3.4.4 Steam Dump System
- 2.3.4.5 Auxiliary Boiler/steam System
- 2.3.4.6 Feedwater System
- 2.3.4.7 Feedwater Heater Drains & Vents System
- 2.3.4.8 Afw System
- 2.3.4.9 Auxiliary Steam Condensate System
- 2.3.4.10 Condensate System
- 2.3.4.11 Condensate Storage System
- 2.3.4.12 Secondary Sampling System
- 2.3.4.13 Steam Generator Wet Lay up System
- 2.3.4.14 Turbine System
- 2.3.4.15 Digital-electric Hydraulic System
- 2.3.4.16 Turbine-generator Lube Oil System

The staff's findings on review of LRA Sections 2.3.4.1 – 2.3.4.16 are in SER Sections 2.3.4.1 – 2.3.4.16, respectively.

2.3.4.1 Steam Generator Blowdown System

2.3.4.1.1 Summary of Technical Information in the Application

LRA Section 2.3.4.1 describes the steam generator blowdown system, which removes contaminants and corrosion product accumulations from the steam generators to maintain secondary water chemistry within prescribed limits. The steam generator blowdown system includes CIVs, a blowdown flash tank, a blowdown drain tank, a heat exchanger, pre-filter, three demineralizers, resin traps, blowdown flow instrumentation, control valves, thermowells, venturis, nozzles, and piping; however, not all of these components are within the scope of license renewal. The steam generator blowdown system constitutes a potential radioactivity release path even with two barriers between the fission products and the environment. The system portion from the steam generator to and including the CIVs extends the steam generator boundary. These valves and piping also constitute part of the containment boundary. The isolation valves close automatically on an AFW actuation signal or an safety-injection signal. The system includes components required for containment isolation. CIV position indication is an RG 1.97 Category 1 function.

The steam generator blowdown system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs 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 fire protection, SBO, and EQ.

LRA Table 2.3.4-1 identifies steam generator blowdown system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- piping, piping components, and piping elements

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

2.3.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.1 and FSAR 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 FSAR 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 2.3.4.1 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 2.3.4.1-1 dated August 20, 2007, the staff noted that in LRA Section 2.3.4.1, the applicant identifies the steam generator blowdown system as within the scope of license renewal; because, in part, it contains components that are relied on during postulated fires and SBO events, and components that are part of the EQ Program. In FSAR Section 10.4.8, the applicant describes the steam generator blowdown system, but does not identify how the system is credited in fire protection, SBO, and EQ.

The staff asked the applicant to provide a list of all the components and their intended function(s) within this system that are within the scope of license renewal and are relied on during postulated fires, SBO events, or part of the EQ Program.

In its response dated September 18, 2007, the applicant stated that the steam generator blowdown system components relied on during postulated fires and SBO events consist of components associated with CIVs. The applicant stated that those containment isolation components are depicted on license renewal scoping drawing 5-G-0051-LR near containment penetrations M-51, M-52, and M-53. The applicant identified that the intended function for the component/commodity type containment isolation piping and components in LRA Table 2.3.4-1 was listed as M-1, "Pressure Boundary."

The applicant further explained that the steam generator blowdown system contains certain electrical equipment (e.g., CIV position switches, required to be environmentally qualified to mitigate a design basis accident). The applicant explained that this electrical equipment is part of the EQ Program, electrical equipment is maintained on the EQML, and that electrical equipment on the EQML satisfies the scoping requirements of 10 CFR 54.4(a)(3).

Based on its review, the staff finds the applicant's response to RAI 2.3.4.1-1 acceptable because the applicant clarified those components in the steam generator blowdown system that are credited by fire protection, SBO, and EQ. Therefore, the staff's concern described in RAI 2.3.4.1-1 is resolved.

2.3.4.1.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance 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).

2.3.4.2 Steam Generator Chemical Addition System

2.3.4.2.1 Summary of Technical Information in the Application

LRA Section 2.3.4.2 describes the steam generator chemical addition system, which supplies various chemical additives to the steam and power conversion systems. The addition of these chemicals controls oxygen concentration and maintains proper pH limits to minimize corrosion. Chemical feed to secondary water is based on all-volatile treatment involving injection of an amine and hydrazine or equivalent solutions to the effluent header of the condensate polishing demineralizer. An added amine solution establishes and maintains alkaline pH conditions throughout the secondary cycle. Hydrazine or equivalent solution added to scavenge dissolved oxygen in the cycle and maintain adequate residual concentration ensures that a minimal amount of dissolved oxygen enters the steam generator. The all-volatile treatment method reduces general corrosion and minimizes the transport of corrosion products to the steam generator. The steam generator chemical addition system has tanks, heaters, mixers, metering pumps, valves, piping (safety-related) and level alarms necessary for chemical delivery. Not all of these components are within the scope of license renewal. The system has piping segments conservatively assumed to meet 10 CFR 54.4(a)(1) criteria based on their historical quality class designation.

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

LRA Table 2.3.4-2 identifies steam generator chemical addition system component types within the scope of license renewal and subject to an AMR:

- closure bolting

- piping, piping components, and piping elements

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

2.3.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.2 and FSAR Section 10.3.5 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 FSAR 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).

2.3.4.2.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the steam generator chemical addition 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).

2.3.4.3 Main Steam Supply System

2.3.4.3.1 Summary of Technical Information in the Application

LRA Section 2.3.4.3 describes the main steam supply system designed for the following functions:

- Deliver steam from the secondary side of the steam generators to the turbine generator stop valves at the required steam conditions
- Dissipate heat generated by the reactor by use of the steam dump system when the turbine generator is not in service
- Provide steam for turbine gland seals, reheaters, and other plant auxiliary components
- Dissipate heat to atmosphere through the main steam safety or main steam PORVs when the main condenser is not available
- Isolate the steam generators from the remainder of the main steam supply system and from each other as described in the plant accident analysis
- Provide adequate overpressure protection for the steam generators and main steam supply system

- Supply steam to the AFW pump turbine

Steam flow from each steam generator is measured across a flow limiter in the steam generator steam outlet nozzle to restrict the steam flow from the affected steam generator in an MSLB. Each steam line from an steam generator has five main steam safety valves, one electrohydraulic PORV, and one main steam isolation valve. The steam supply to the AFW pump turbine drive is from two of the three steam supply pipes upstream of the main steam isolation valves. The system also supplies steam to the moisture separator reheaters. The PORVs are controlled automatically by main steam pressure. The valves are designed to fail closed on loss of power and are connected to safety buses for maximum reliability. The system has components required for containment isolation. CIV position indication is an RG 1.97 Category 1 function. The system also has RG 1.97 Category 1 steam line pressure transmitters.

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

LRA Table 2.3.4-3 identifies main steam supply system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- flow-restricting elements
- piping insulation
- piping, piping components, and piping elements

The intended functions of the main steam supply system component types within the scope of license renewal include:

- pressure-retaining boundary
- thermal insulation
- flow regulation

2.3.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.3 and FSAR Sections 7.4.1.7 and 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 FSAR 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, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the main steam supply 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 Steam Dump System

2.3.4.4.1 Summary of Technical Information in the Application

LRA Section 2.3.4.4 describes the steam dump system, which reduces the magnitude of transients on the NSSS following large load reductions. The system performs the following functions:

- permits the plant to accept sudden load rejections
- removes stored energy and residual heat from the primary system following a turbine or reactor trip
- maintains the plant in hot standby condition
- permits manually-controlled cool-down of the plant to the point where the RHR system can be placed in service

The steam dump system can accommodate an abnormal load rejection and reduce the effects of the transient imposed upon the RCS. Bypassing main steam directly to the condenser or the atmosphere or both maintains an artificial load on the RCS. The RCS then can reduce the reactor temperature to a new equilibrium value without causing overtemperature, overpressure conditions, or both. The system consists of eight atmospheric steam dump valves which dump steam directly to atmosphere and six condenser steam dump valves which allow steam to bypass the turbine and dump to the condenser. Steam dump valves are connected to the main steam piping downstream of the main steam isolation valves. Isolation of the steam dump valves is permissible as the steam dump system is not essential to safe plant operation. The system has no safety-related function and is designed to nonnuclear safety standards; however, the system has control switches conservatively assumed to meet 10 CFR 54.4(a)(1) criteria based on their historical quality class designation. In addition, failure of the steam dump system high-energy lines has no detrimental effect on safety-related systems.

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

LRA Table 2.3.4-4 identifies steam dump system component types within the scope of license renewal and subject to an AMR:

- closure bolting

- piping, piping components, and piping elements

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

2.3.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.4 and FSAR Section 10.4.4 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 FSAR 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).

2.3.4.4.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the steam dump 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 Boiler/Steam System

2.3.4.5.1 Summary of Technical Information in the Application

LRA Section 2.3.4.5 describes the auxiliary boiler/steam system, which supplies saturated steam for nonsafety-related use in various balance of plant and reactor support systems mainly during plant start-ups, shutdowns, and refueling outages. The system includes Auxiliary Boiler B located in the yard, normally maintained in a shutdown condition, and manually started by an operator. When online, the auxiliary boiler operates automatically. The auxiliary boiler/steam system is not safety-related and is not required to operate during or following design-basis accidents; however, it can be the sole source of steam supply to the plant during certain conditions and its reliability can be important to certain plant recovery operations. The auxiliary steam supply system normally is supplied by the main steam supply or the extraction steam system and, when these systems are unavailable, by the auxiliary boiler.

The auxiliary condensate system is designed to receive the condensed steam from the process equipment supplied with auxiliary steam. The auxiliary boiler fuel oil system is designed to receive and store fuel for the auxiliary boiler. System mechanical components include a boiler, chemical tanks, chemical feed pumps, piping, valves, and steam traps. Other components include instrumentation, breakers, transmitters, and controllers required to operate the system.

Two excess-flow check valves in the turbine building isolate steam to the RAB in an RAB piping failure.

The failure of nonsafety-related SSCs in the auxiliary boiler/steam system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.4-5 identifies auxiliary boiler/steam system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

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

2.3.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.5 and FSAR Section 10.3.1 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 FSAR 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).

2.3.4.5.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the auxiliary boiler/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).

2.3.4.6 Feedwater System

2.3.4.6.1 Summary of Technical Information in the Application

LRA Section 2.3.4.6 describes the feedwater system, which provides feedwater at the proper flow rate, temperature, and pressure to the steam generators as required by the NSSS to generate steam during normal plant operating conditions. The principal components of the feedwater system are the feedwater pumps, two high-pressure feedwater heaters, feedwater regulating valves, feedwater regulating bypass valves, MFIVs, piping, valves, and electrical components required to support the system. Each MFIV is equipped with a pneumatic actuator using an accumulator with a stored source of nitrogen as the motive force for operation of the valves. The MFIVs are CIVs. A main feedwater isolation signal will close MFIVs and trip the feedwater pumps. The feedwater regulating and regulating bypass valves close in response to a main feedwater isolation signal upon a loss of power signal from the reactor protection system or upon loss of control air or loss of direct current to the solenoid valves.

At HNP this system serves no safety function other than containment isolation integrity and is therefore nonsafety-related. The safety-related system portion is from the feedwater header check valves to the steam generators.

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

LRA Table 2.3.4-6 identifies feedwater system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- MFIV accumulators
- piping, piping components, and piping elements

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

2.3.4.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.6 and FSAR Section 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, the staff evaluated the system functions described in the LRA and FSAR 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 LRA Section 2.3.4.6, Feedwater System, the applicant did not identify the feedwater isolation function, in the event of a main steamline break, in the scope for license renewal under 10 CFR 54.4 (a)(1). In Section 15.1.5 of the applicants FSAR, it states that the feedwater isolation valves and regulating valves provide a safety-related function, isolation of feedwater in the event of a main steam line break. The staff's position is that the FSAR description of the feedwater isolation and regulating valves meet the criteria defined by 10 CFR 54.4(a)(1). In response to RAI 2.1.1.2-1, the applicant stated that based on their evaluation the feedwater regulating and bypass valves, these valves do not meet the license renewal definition of safety-related as stated in 10 CFR 54.4(a)(1); however, the components are included within the scope of license renewal for 10 CFR 54.4(a)(2). The staff found the applicants answer to RAI response 2.1.1.2-1 inconsistent with 10 CFR 54.4 (a)(1).

In RAI 2.3.4.6-2 the staff asked the applicant to further evaluate the classification of this equipment and justify their position. The applicant's response, dated January 22, 2008, maintains that these valves are important to safety, but are not safety-related; therefore, they only meet the criteria of 10 CFR 54.4(a)(2). The staff's position was that the main feedwater regulating and bypass valves, by definition, fulfill a safety-related function; therefore, they should be included in scope under 10 CFR 54.4(a)(1). In addition, the function to provide main feedwater isolation should be included in scope under 10 CFR 54.4(a)(1) for Section 2.3.4.6, to include the main feedwater isolation valves and the regulating and bypass valves. This was open item (OI) 2.2.

By letter dated May 30, 2008, the applicant responded to open item 2.2. The discussion and resolution is discussed in Section 1.5 of this Safety Evaluation Report. Based on that discussion open item 2.2 is closed.

2.3.4.6.3 Conclusion

The staff reviewed the LRA, FSAR, RAI responses, open item responses and drawings to determine whether the applicant failed to identify any SSCs 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. With the resolution to OI-2.2, the staff finds no such omissions. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the CSS 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).

2.3.4.7 Feedwater Heater Drains & Vents System

2.3.4.7.1 Summary of Technical Information in the Application

LRA Section 2.3.4.7 describes the feedwater heater drains & vents system, which improves overall plant efficiency by preheating condensate and feedwater pumped from the condenser hotwell to the steam generators. The feedwater heater drains & vents system functions:

- To maintain a proper water level in the feedwater heaters and drain tanks of the moisture separator reheaters (MSRs)
- To provide an alternate drain path directly to the main condenser from each MSR feedwater heater and drain tank
- To improve steam cycle thermal efficiency by either cascading feedwater heater drains to the next lower heater or, in the case of Feedwater Heater 4, by pumping drains forward into the feedwater pump suction
- To remove noncondensable gases during start-up and normal operation from each feedwater heater and MSR
- To provide operational and start-up venting of the feedwater heaters and MSRs
- To drain feedwater heater shells and MSRs during start-up and shutdown

The system equipment includes two heater drain pumps, level control instrumentation, MSR drain tanks, piping, valves, breakers, controllers, and transmitters. The feedwater heater drains & vents system has components conservatively assumed to meet 10 CFR 54.4(a)(2) criteria based on their quality class designation and, therefore, included within the scope of license renewal. These are nonsafety-related civil and electrical components.

The failure of nonsafety-related SSCs in the feedwater heater drains & vents system potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.4.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.7 and FSAR Section 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, the staff evaluated the system functions described in the LRA and FSAR 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).

2.3.4.7.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the feedwater heater drains & vents 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).

2.3.4.8 Auxiliary Feedwater System

2.3.4.8.1 Summary of Technical Information in the Application

LRA Section 2.3.4.8 describes the AFW system, a backup for supplying feedwater to the secondary side of the steam generators when the normal feedwater system is not available to maintain steam generator heat sink capabilities. The system is an alternative to the feedwater system during start-up, hot standby, and cool-down and also functions as an engineered safeguards system. In the latter function, the AFW system is directly relied upon to prevent core damage in transients like loss of normal feedwater or a secondary system pipe rupture. The AFW system has one turbine-driven and two motor-driven pumps with valves, piping, controls, electrical components, and instrumentation. The system components are located in the RAB except a portion of the supply piping to the steam generators in the containment building.

The AFW system I&Cs are designed for automatic operation during emergency situations (*e.g.*, steam line rupture, loss of normal feedwater, loss of offsite power) and manual operation as parts of the safe shutdown systems. The motor-driven AFW pumps are started automatically by any one of the following signals: safety injection signal, low-low water level in any steam generator, loss of power (undervoltage) on the emergency bus, loss of both feedwater pumps, or ATWS mitigating system actuation circuitry. The turbine-driven AFW Pump is started automatically by any one of the following signals: loss of power (undervoltage) on the emergency bus, low-low water level in two of three steam generators, or ATWS mitigating system actuation circuitry.

The AFW system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs 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 2.3.4-7 identifies AFW system component types within the scope of license renewal and subject to an AMR:

- AFW pump turbine
- AFW pump turbine lube oil cooler components
- AFW pump turbine lube oil cooler tubes
- AFW pump turbine lube oil pump
- AFW pump turbine lube oil tank
- AFW pumps
- closure bolting
- containment isolation piping and components
- flow-restricting elements
- piping, piping components, and piping elements

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

- heat transfer
- pressure-boundary
- throttle

2.3.4.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.8 and FSAR 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 FSAR 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).

2.3.4.8.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the AFW 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).

2.3.4.9 Auxiliary Steam Condensate System

2.3.4.9.1 Summary of Technical Information in the Application

LRA Section 2.3.4.9 describes the auxiliary steam condensate system designed to receive the condensed steam from the process equipment supplied with auxiliary steam. The system consists of two condensate tanks in the WPB, each with one condensate pump, and one condensate tank in the RAB with two condensate pumps. The pumps discharge to the auxiliary boiler deaerator or, if the boiler is not in operation, to the main condenser. The auxiliary steam condensate tanks are maintained at approximately atmospheric pressure by a vent header connected to the main condenser. The demineralized water system provides to the system makeup water which the system mixes with condensate from the auxiliary steam CSTs, deaerates, heats, and then pumps into the auxiliary boiler. To detect radioactivity leakage from other systems, the system has radiation monitors. Receipt of a high radiation alarm alerts the operator to the presence of leakage so additional radiation surveys, sampling, and equipment isolation can locate and repair the leakage source. The auxiliary steam condensate system performs no safety-related function, has no impact on plant power production, and is not required to operate during or following design-basis accidents.

The failure of nonsafety-related SSCs in the auxiliary steam condensate system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.4-8 identifies auxiliary steam condensate system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

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

2.3.4.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.9 and FSAR Section 10.4.1.2 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 FSAR 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).

2.3.4.9.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the auxiliary steam condensate 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).

2.3.4.10 Condensate System

2.3.4.10.1 Summary of Technical Information in the Application

LRA Section 2.3.4.10 describes the condensate system, which by two 50-percent capacity motor-driven condensate pumps returns water from the main condenser hotwell to the feedwater system through the gland seal steam condenser and the full-flow condensate demineralizer to the suction of two 50-percent condensate booster pumps. The condensate system has a bypass between the condensate demineralizer inlet and outlet headers. The condensate booster pumps discharge through two trains of four low-pressure feedwater heaters to the feedwater pumps. The condenser hotwell has a storage capacity of approximately five minutes of full-load operation, sufficient to allow condensate supply for the make-up of steam generator inventory during a full external electrical load rejection. Condensate make-up is supplied to the condenser hotwell from the CST through a level control valve. Excess condensate is discharged to the CST through a level control valve from the discharge of either the condensate pumps or the condensate booster pumps. Condensate pumps, condensate booster pumps, and main feedwater pumps are protected against flashing at the pump suction by electrical interlocks which trip the respective pumps on low-suction pressure. System equipment includes condensate pumps, condensate booster pumps, level and flow instrumentation, piping, valves, breakers, transmitters, and controllers.

The failure of nonsafety-related SSCs in the condensate system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.4-9 identifies condensate system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

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

2.3.4.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.10 and FSAR Section 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, the staff evaluated the system functions described in the LRA and FSAR 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).

2.3.4.10.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the condensate 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).

2.3.4.11 Condensate Storage System

2.3.4.11.1 Summary of Technical Information in the Application

LRA Section 2.3.4.11 describes the condensate storage system, which supplies condensate to the condenser hotwell from the CST through a level control valve from the discharge of either the condensate pumps or the condensate booster pumps. The CST is designed:

- To provide makeup and surge capacity for secondary system inventory changes due to various plant conditions
- To store sufficient water for reactor shutdown decay heat removal by the AFW system
- To provide flush water for radwaste treatment equipment

During initial fill of the condensate system, the condensate transfer pump discharges into the condenser hotwell. During normal plant operation, condensate flows by gravity and differential pressure from the CST to the condenser hotwell. Two level control valves maintain the water level in the hotwell automatically. To preserve the minimum CST inventory for operation of the AFW system, all nonseismic piping connections are above the minimum water level required for AFW supply. Water is added to the tank by a control valve in the CST makeup line. Safety-related CST water level indicators and alarms are in the control room. CST level transmitters are RG 1.97 Category 1 components. The condensate storage system consists of one 100-percent capacity condensate transfer pump, one safety-related, stainless steel CST, piping, valves, and instrumentation.

The CST below the elevation of the condensate transfer pump suction nozzle and the supply piping between the tank and the AFW pumps are Safety Class 3 and seismic Category I. A concrete enclosure protects the tank from tornado, hurricane, and missile damage and from postulated pipe breaks. The CLB dictates that in a loss of offsite power sufficient CST usable inventory must be available to bring the plant from full-power to hot standby conditions, maintain the plant at hot standby conditions for six hours, and then cool the RCS to 325 °F in six hours. The condensate storage system has nonsafety-related components that could cause an adverse physical interaction with safety-related equipment, nonsafety-related piping components connected to and supporting the safety-related functional boundary of the system, or both. These components are within the scope of license renewal as determined by the 10 CFR 54.4(a)(2) review. The system also has components conservatively assumed to meet 10 CFR 54.4(a)(2) criteria based on their quality class and, therefore, included within the scope of license renewal.

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

LRA Table 2.3.4-10 identifies condensate storage system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- CST
- piping, piping components, and piping elements

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

2.3.4.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.11 and FSAR Sections 9.2.6 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, the staff evaluated the system functions described in the LRA and FSAR 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).

2.3.4.11.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the condensate 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).

2.3.4.12 Secondary Sampling System

2.3.4.12.1 Summary of Technical Information in the Application

LRA Section 2.3.4.12 describes the secondary sampling system, which continuously monitors liquid and steam purity in the steam cycle systems, including the condensate, heater drains and vents, feedwater, steam generator blowdown, and main steam systems, and the CST. The secondary sampling system sets the sample temperature and pressure to allow proper sample parameter analysis, maintains the sample flow at proper velocity, signals alarms when required, continuously displays and records selected parameters, and provides grab sampling. The secondary sampling system is designed to analyze most sample points continuously for specific chemical parameters and record the results for trending purposes.

The system provides a central location to obtain samples from the secondary cycle during startup, power operation, and plant shutdown operations for chemical and radiochemical analyses. Chemical analyses are the bases for proper secondary chemistry control to eliminate loss of turbine capacity, to detect steam generator, feedwater heater, and condenser tube failures, and to treat corrosion problems. The secondary sampling system is not essential for safe plant shutdown and serves no safety function as it is not required to achieve safe shutdown or mitigate the consequences of an accident.

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

LRA Table 2.3.4-11 identifies secondary sampling system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- containment isolation piping and components
- heat exchanger shell side components
- piping, piping components, and piping elements

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

2.3.4.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.12 and FSAR 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 FSAR 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).

2.3.4.12.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the secondary 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).

2.3.4.13 Steam Generator Wet Lay Up System

2.3.4.13.1 Summary of Technical Information in the Application

LRA Section 2.3.4.13 describes the steam generator wet lay up system, which maintains chemistry conditions only during wet lay up of the steam generators to reduce steam generator corrosion during inactive periods. The system is nonsafety; however, several instrument valves for level transmitters have a safety-related quality classification. The steam generator wet lay up system consists of three centrifugal pumps in the RAB, piping and valves, a wet lay up grab sample panel, and a local control panel. System crossties to the feedwater, AFW, and steam generator blowdown systems allow the steam generator wet lay up system to circulate water through the steam generator. The steam generator chemical addition system in conjunction with the steam generator wet lay up system maintains wet lay up chemistry. As use of the steam generator wet lay up system during shutdown conditions only involves several unusual system connections, piping spool pieces connect to other systems for positive isolation before normal steam generator operation commences.

The steam generator wet lay up system contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs in the steam generator wet lay up system potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.3.4-12 identifies steam generator wet lay up system component types within the scope of license renewal and subject to an AMR:

- closure bolting
- piping, piping components, and piping elements

The intended function of the steam generator wet lay up system component types within the scope of license renewal is to provide a pressure-retaining boundary.

2.3.4.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.13 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 FSAR 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).

2.3.4.13.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the steam generator wet lay up 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).

2.3.4.14 Turbine System

2.3.4.14.1 Summary of Technical Information in the Application

LRA Section 2.3.4.14 describes the turbine system, which includes the tandem compound, four-flow exhaust, 1800-rpm turbine unit. The steam produced in the steam generators passes first through the high-pressure turbine, which is a double-flow design where steam from the four governor valves enters the turbine through four inlet pipes that feed four double-flow nozzle chambers. Steam passes through the single control stage and flows through reaction blading where it is expanded and then exhausted to the moisture separator reheaters located alongside the low-pressure turbines on the turbine building operating floor. The MSRs remove the moisture content and superheat the steam before it enters the low-pressure turbines, taking steam for reheating from the main steam system header. From the low-pressure turbines the steam is exhausted to the main condenser.

The turbine system includes turbine bearings, rupture diaphragms, covers, glands, turning gear, electrical components, and supervisory instrumentation. The system has pressure instrumentation valves with a safety-related quality classification for steam supply to the AFW pump turbine.

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

LRA Table 2.3.4-13 identifies turbine system component types within the scope of license renewal and subject to an AMR:

- piping, piping components, and piping elements

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

2.3.4.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.14 and FSAR Section 10.2 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 FSAR 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).

2.3.4.14.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the turbine 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).

2.3.4.15 Digital-Electric Hydraulic System

2.3.4.15.1 Summary of Technical Information in the Application

LRA Section 2.3.4.15 describes the digital-electric hydraulic (DEH) system, which positions the turbine steam inlet valves to regulate the flow of steam through the turbine. The DEH system is divided into three subsystems, the fluid subsystem, the emergency trip subsystem, and a control subsystem. The function of the DEH fluid supply subsystem is to provide high-pressure fluid as a motive force to the turbine steam inlet valve actuators. The actuators position 16 turbine steam valves in response to electric commands from the DEH electronic controller. The fluid subsystem consists of a reservoir assembly with controls, pumps, motors, filters, and heat exchangers. The DEH control fluid is triarylphosphate ester selected for its fire resistance and stability. The main function of the DEH control subsystem is to position the turbine inlet valves to control turbine speed or output. The system has valves, filters, heat exchangers, valve operators, pumps, strainer, reservoir, power supplies, motors, and switches.

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

2.3.4.15.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.15 and FSAR Section 10.2.2.4 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 FSAR 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).

2.3.4.15.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the DEH 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).

2.3.4.16 Turbine-Generator Lube Oil System

2.3.4.16.1 Summary of Technical Information in the Application

LRA Section 2.3.4.16 describes the turbine-generator lube oil system, which supplies clean oil lubrication to the turbine, generator, and turning gear bearings and seal backup oil to the seal oil system. It also interacts with the DEH system high-pressure emergency trip header. The turbine-generator lube oil system includes a main oil pump, seal oil pump, normal bearing oil pump, emergency bearing oil pump, vapor extractors, a lube oil reservoir, a lube oil conditioner, piping, filters, valves, electrical components, and instrumentation. The main oil pump is shaft-driven by the turbine; with the unit online, this pump supplies all required lubricating oil. The lube oil conditioner removes free water, particulate matter, and other contaminants from the lubrication oil. Lube oil exits an ejector where part of the flow goes back to the main oil pump suction and the remainder goes through a lube oil cooler, which uses service water for cooling. The turbine-generator lube oil system has components conservatively assumed to meet 10 CFR 54.4(a)(2) criteria based on their quality class designation and, therefore, included within the scope of license renewal. These are electrical components; no mechanical components meet the scoping requirements for license renewal.

The failure of nonsafety-related SSCs in the turbine-generator lube oil system potentially could prevent the satisfactory accomplishment of a safety-related function.

2.3.4.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.16 and FSAR Section 10.2 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 FSAR 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).

2.3.4.16.3 Conclusion

The staff reviewed the LRA, FSAR, and drawings to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the turbine-generator lube oil 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 building
- other Class I and in-scope structures

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 approach allowed the staff to confirm that there were no omissions of SCs 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 structures. The objective was to determine whether the applicant has identified, in accordance with 10 CFR 54.4, components and supporting structures for 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 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 FSAR, 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 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.

2.4.1 Containment Building

LRA Section 2.4.1 identifies the containment building SCs subject to an AMR for license renewal.

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

- 2.4.1.1 containment structure
- 2.4.1.2 containment internal structures
- 2.4.1.3 containment building functions

The staff's findings on review of LRA Sections 2.4.1.1 – 2.4.1.3 are in SER Sections 2.4.1.1 – 2.4.1.3, respectively.

2.4.1.1 Containment Structure

2.4.1.1.1 Summary of Technical Information in the Application

LRA Section 2.4.1.1 describes the containment structure. The Unit 1 containment structure consists of a steel-lined, reinforced concrete structure in the form of a vertical right cylinder with a hemispherical dome and a flat base with a recess beneath the reactor vessel. The structure is not post-tensioned. The 4.5-ft. thick cylindrical wall measures 160 ft. in height from the liner on the base to the spring line of the dome and has an inside diameter of 130 ft. The inside radius of the 2-ft., 6-in. thick dome is equal to that of the cylinder so the discontinuity at the spring line due to the change in thickness is on the outer surface. The circular base mat is a conventionally-reinforced structural concrete slab of 12 ft. uniform thickness. The top of the mat is 44 ft. below finished grade. The entire mat is structurally independent of adjacent seismic Category I foundations. The mat has recesses in the central portion (*i.e.*, the reactor cavity) to house the reactor pressure vessel and containment sump and in the ESF areas to form the ESF system sumps.

The foundation mat inside the containment and including the reactor cavity and containment sump is covered with carbon steel liner plate. A 5-ft. thick concrete internal mat over the liner protects and supports internal primary and secondary shield walls. The base mat is supported on a concrete working slab supported on a concrete seal mat which is supported on rock and is covered by a waterproofing membrane. The continuous welded steel liner plate functions primarily as a leak-tight membrane to limit the release of radioactive materials into the environment. The nominal liner plate is 3/8 in. thick in the cylinder, 1/4 in. thick on the bottom, ½ in. thick in the dome, and 1 in. thick near the crane girder brackets. Ring collars up to 2 in. thick around penetrations are welded to the penetration sleeves. The liner is anchored to the concrete shell by anchor studs fusion welded to the liner plate to form part of the containment structure.

The one-inch liner plate at the crane girder brackets area is anchored into the concrete wall with shear lugs, anchor bolts connected to embedded plates, special anchorages, and studs. A waterproofing membrane located below the base mat and working slab terminates at water stops at the joints with adjacent structures. The seismic gaps between adjacent structures are cut off from groundwater by double rows of horizontal water stops to prevent intrusion of moisture against the inaccessible portions of the containment structure liner below the base slab and a moisture barrier seal inside containment prevents the intrusion of moisture between the containment liner plate and the concrete floor foundation mat. Piping through penetrations is insulated. Type I mechanical piping hot penetrations have insulation to prevent high-temperature conditions in the concrete surrounding them. Several Type II cold penetrations have insulation not within the scope of license renewal because the concrete surrounding them always will be below the maximum local area temperature of 200°F.

The containment structure performs functions that support fire protection.

2.4.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1.1 and FSAR Sections 3.8.2, 3.8.2.1.3, and 3.8.2.1.4.1 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, the staff evaluated the structural component functions described in the LRA and FSAR 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).

The staff's review of LRA Section 2.4.1.1 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 2.4-1 dated August 7,2007, the staff noted that LRA Section 2.4.1.1 "Containment Structure" refers to:

> The welded attachments to the metallic liner (e.g., floor beams, seismic restraints, leak channels, equipment/pipe supports, etc.) do not perform a pressure retaining function associated with the containment vessel. For this reason, the welded attachments are not included with the liner components. These welded attachments are evaluated with the specific commodity groups.

From LRA Table 2.4.1-1, it was not clear to the staff what specific commodity groups the applicant referred to. Therefore, the staff requested that the applicant identify these "specific component commodity groups," as well as their intended functions, for the welded attachments.

In its response dated September 5, 2007, the applicant provided a table including the component/commodity groups from LRA Table 2.4.1-1 and the specific component and their intended functions for the welded attachments to the metallic liner.

Based on its review, the staff finds the applicant's response to RAI 2.4-1 acceptable because it adequately identified the "specific component commodity groups" and their intended functions for the welded attachments to the metallic liner. Therefore, the staff's concern described in RAI 2.4-1 is resolved.

In RAI 2.4-2 dated August 7, 2007, the staff noted that LRA Section 2.4.1.1 states that the insulation for Type II cold penetrations is not within the scope of license renewal because the concrete surrounding the penetration will always be below the maximum local area temperature of 200 °F. The staff requested that the applicant state the criteria employed for determining the inclusion of insulation within the scope of license renewal.

In its response dated September 5, 2007, the applicant stated:

> The criteria employed for determining the inclusion of insulation within the scope of License Renewal was based on ensuring HNP concrete temperatures did not exceed 150 °F in general areas or 200 °F local areas in order to align with the guidance of NUREG-1801, Item II.AI-1. The review for the Containment Structure determined that insulation was required on the hot piping (>200 °F) in the Type I hot pipe penetrations to maintain the concrete structure cylinder wall temperature below 200 °F (for a License Renewal "C-3" protection intended function) as discussed in FSAR Sections 3.8.1.1.3.3 and Section 3.8.2.1.3. The review for the Containment Structure determined the Type II cold penetrations were provided for low temperature lines (<200 °F) and on some HVAC penetrations and groups of small diameter lines (e.g., instrument and sampling) based on FSAR Sections 3.8.1.1.3.3 and Section 3.8.2.1.4.1. Insulation that was installed on several of these lines was not credited with maintaining the concrete cylinder wall temperature below 200 °F and was therefore not included in the scope of License Renewal. However, after further review of design documents, the operating temperature of several of these small diameter lines in Type II cold penetrations was determined to exceed 200 °F. Therefore, the insulation on these hot small diameter lines in Type II penetrations will be included in the scope of License Renewal within the Component/Commodity group Insulation (Hot Pipe Penetrations) in LRA Table 2.4.1-1. LRA Subsection 2.4.1.1, Page 2.4-7, will be revised to include the insulation on these hot, small diameter lines in Type II penetrations in the scope of License Renewal. LRA Section 3.5 will be revised as required to include the insulation on these hot small diameter lines in Type II cold penetrations. Also, Plant-Specific Note 509 will be revised to include the small diameter lines in Type II penetrations.

By letter dated September 24, 2007, the applicant responded further:

> Revise the final paragraph in LRA Subsection 2.4.1.1 on Page 2.4-7 to read:
>
> Insulation is provided on various piping going through pipe penetrations. Type I mechanical piping hot penetrations and several Type II mechanical penetrations with small diameter lines have insulation installed to prevent high temperature conditions in the concrete surrounding the penetrations.
>
> Also revise LRA Subsection 3.5.2.2.1.3 on Page 3.5-31 by deleting the word "hot" from the fourth sentence (two places). In addition, revise Plant-Specific Note 509 to read:

509 The HNP AMR methodology concluded that the insulation for penetrations in the Containment air environment has no aging effects.

Based on its review, the staff finds the applicant's response to RAI 2.4-2 acceptable because the applicant adequately explained the criteria employed for determining the inclusion of insulation within the scope of license renewal. The applicant further reviewed the design documents, and the operating temperature of several of small diameter lines in Type II cold penetrations which were determined to exceed 200 °F. The applicant decided to include the insulation on these hot, small diameter lines in Type II penetrations within the scope of license renewal. The applicant also provided a corresponding revision to the LRA. Therefore, the staff's concern described in RAI 2.4-2 is resolved.

2.4.1.1.3 Conclusion

The staff reviewed the LRA, FSAR, RAI responses, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the containment structure 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).

2.4.1.2 Containment Internal Structures

2.4.1.2.1 Summary of Technical Information in the Application

LRA Section 2.4.1.2 describes the containment internal structures, the concrete and structural steel components of which are enclosed by the containment structure. The containment internal structures support NSSS equipment during all operational phases. In the unlikely event of an accident, these structures mitigate its effects by protecting safety-related equipment. The containment internal structures have masonry walls for radiation shielding and equipment shelter/protection. Main floors in the containment are linked by stairs and one service elevator. Except in equipment laydown areas, floors and stairs are of grating construction to minimize the effects of pressure differentials across their boundaries in a sudden change in pressure. Structural steel framing is supported by the secondary shield wall and by steel columns. The structural steel commodity group includes the structural steel which supports the main grating floors and the concrete areas, the bolting, exposed portions of anchorages, the monorails that support monorail hoists and polar crane support girders and brackets, and the support steel and monorail for the integrated reactor vessel head cable bridge hoist on the operating floor. Other steel commodity groups include the following commodities and supports: cable tray and conduit, HVAC ducts, racks, panels, cabinets, floor drains, fire hose stations, fuel transfer tube bellows assembly, refueling pool liner, nonfire doors, support members and anchorages, the integrated reactor vessel head steel assemblies, and HVAC damper mountings.

2.4.1.2.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1.2 and FSAR Section 5.4.14 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 FSAR 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).

2.4.1.2.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the containment internal 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).

2.4.1.3 Containment Building Functions

2.4.1.3.1 Summary of Technical Information in the Application

LRA Section 2.4.1.3 describes the containment building functions of shelter and support for plant equipment within the scope of license renewal and, for the containment structure and containment internal structures, a passive heat sink in containment pressure-temperature analyses. The containment building is a barrier to fission product release following postulated design-basis accidents. Containment building structures are barriers to fire, flooding, water spray, high-energy fluid release, and potential missiles.

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

LRA Table 2.4.1-1 identifies containment building function component types within the scope of license renewal and subject to an AMR:

- anchorage and embedment
- cable tray, conduit HVAC ducts., tube track
- concrete: above grade - dome, wall, ring girder, basement
- concrete: below grade - wall, basement
- concrete: containment internal
- concrete: foundation
- concrete: foundation, subfoundation
- damper mountings

- expansion bellows
- fire hose stations
- floor drains
- insulation (hot pipeline penetrations)
- integrated reactor vessel head steel assemblies
- jib cranes
- masonry walls
- nonfire doors
- penetration bellows
- penetration sleeves
- personnel airlock; equipment hatch; personnel emergency airlock (includes passive components)
- platforms, pipe-whip restraints, jet impingement shields, masonry wall supports, and other miscellaneous structures
- polar crane
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- reactor cavity manipulator crane
- seals and gaskets
- seals, gaskets, and moisture barriers
- steel components: all structural steel
- steel components: fuel pool liner (including attachments)
- steel elements: liner, liner anchors, integral attachments
- sump screens
- supports for ASME Classes 1, 2, and 3 piping and components
- supports for non-ASME piping and components
- supports for RCS primary components (includes reactor vessel, steam generator, pressurizer, RCP)

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

- spray shield or curbs for directing flow
- thermal expansion, seismic separation, or both
- rated fire barrier to confine or retard plant fire from spreading
- flood protection barrier

- SBO or design-basis accident heat sink
- missile barrier
- pipe whip restraint/high-energy line break shielding
- safety-related component shelter/protection
- radiation shielding
- pressure boundary or essentially leak-tight barrier to protect public health and safety in postulated design-basis events
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.1.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1.3 and FSAR Sections 3.8.1, 3.8.2. 3.8.3, and 6.2.1 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 FSAR 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).

2.4.1.3.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the containment building function 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 Other Class I and In-Scope Structures

LRA Section 2.4.2 identifies the other Class I and in-scope structure SCs subject to an AMR for license renewal.

The applicant described the supporting SCs of the other Class I and in-scope structures in the following LRA sections:

- 2.4.2.1 RAB
- 2.4.2.2 auxiliary reservoir channel
- 2.4.2.3 auxiliary dam and spillway
- 2.4.2.4 auxiliary reservoir

- 2.4.2.5 auxiliary reservoir separating dike
- 2.4.2.6 cooling tower
- 2.4.2.7 CTMU water intake channel
- 2.4.2.8 circulating water intake structure
- 2.4.2.9 diesel generator building
- 2.4.2.10 main dam and spillway
- 2.4.2.11 diesel fuel oil storage tank building
- 2.4.2.12 ESW & CTMU intake structure
- 2.4.2.13 ESW discharge channel
- 2.4.2.14 ESW discharge structure
- 2.4.2.15 ESW intake channel
- 2.4.2.16 FHB
- 2.4.2.17 HVAC equipment room
- 2.4.2.18 outside the power block structures
- 2.4.2.19 main reservoir
- 2.4.2.20 security building
- 2.4.2.21 ESW screening structure
- 2.4.2.22 NSW intake structure
- 2.4.2.23 switchyard relay building
- 2.4.2.24 transformer and switchyard structures
- 2.4.2.25 turbine building
- 2.4.2.26 tank area/building
- 2.4.2.27 WPB
- 2.4.2.28 yard structures

The staff's findings on review of LRA Sections 2.4.2.1 – 2.4.2.28 are in SER Sections 2.4.2.1 – 2.4.2.28, respectively.

2.4.2.1 Reactor Auxiliary Building

2.4.2.1.1 Summary of Technical Information in the Application

LRA Section 2.4.2.1 describes the RAB, which consists of the Unit 1 RAB (RAB-1), the common building (RAB-Common), and the completed part of the Unit 2 RAB (RAB-2). The RAB-Common building includes the control room at floor elevation 305 ft. designed as an envelope with positive pressure and minimum air leakage during normal plant operation and design-basis accidents. Control room openings (*i.e.*, doors and penetrations) have a low-leakage design. An access to RAB-Common from the RAB-2 area was provided at elevation 236 ft. via an access bay. The access bay structure and the retaining walls are seismically designed. Seismic analysis of the as-built RAB-2 was performed to obtain seismic response spectra for the structure to verify the design of safety-related piping and systems within the structure. An ESW pipe tunnel is at elevation 216 ft. and runs within RAB-1 and RAB-Common through RAB-2. A steam tunnel approximately 40 ft. wide with a pipe restraint steel frame and a steel platform houses main steam, feedwater, and AFW system piping and runs from the containment penetration area through the RAB-1 roof slab. RAB-1, RAB-2, and RAB-Common are independent and separated by sufficient gaps to preclude any interaction due to seismic events. The buildings are also separated by gaps from adjacent structures except where the containment building mat and the RAB mat at elevation 190 ft. are against each other to prevent movement of the containment building mat vertical cantilevered leg. There are no adjacent non-Category I buildings to impair the integrity of the seismic Category I RAB.

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

LRA Table 2.4.2-1 identifies RAB component types within the scope of license renewal and subject to an AMR:

- anchorage and embedment
- battery rack
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- control room ceiling
- damper mountings
- fire barrier assemblies
- fire barrier penetration seals
- fire hose stations
- fire-rated doors
- floor drains
- masonry walls
- nonfire doors
- phase bus enclosure assemblies
- platforms, pipe-whip restraints, jet impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- raised floor
- roof: membrane/built-up
- seals and gaskets
- seismic joint filler

- steel components: all structural steel
- supports for ASME Classes 1, 2, and 3 piping and components
- supports for non-ASME piping and components

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

- spray shield or curbs for directing flow
- rated fire barrier to confine or retard plant fire from spreading
- flood protection barrier
- SBO or design-basis accident heat sink
- heat transfer
- missile barrier
- pipe whip restraint/high-energy line break shielding
- pressure-retaining boundary
- safety-related component shelter/protection
- radiation shielding
- pressure boundary or essentially leak-tight barrier to protect public health and safety in postulated design-basis events
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.1 and FSAR Sections 3.8.4.1.2 and 3.8.4.9 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 FSAR 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).

2.4.2.1.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the

RAB 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).

2.4.2.2 Auxiliary Reservoir Channel

2.4.2.2.1 Summary of Technical Information in the Application

LRA Section 2.4.2.2 describes the approximately 1,570-ft. long and 140-ft. wide auxiliary reservoir channel located northwest of the plant within the auxiliary reservoir with a wall slope of two horizontal to one vertical in soil and one horizontal to four vertical in rock. The auxiliary reservoir channel connects the east and west arms of the auxiliary reservoir so ESW discharge can flow from the east to the west before circulating back to the intake area for a longer flow path and more cooling for the water. The auxiliary reservoir channel, designed and constructed to seismic Category I criteria, is included in the flow path for water circulating in the auxiliary reservoir and has the same functions as the auxiliary reservoir, which supplies water for the fire protection system and is the primary source of cooling water during emergency operation and the ultimate heat sink to dissipate the ESW system heat load.

The auxiliary reservoir channel contains safety-related components relied upon to remain functional during and following DBEs. In addition, the auxiliary reservoir channel performs functions that support fire protection.

LRA Table 2.4.2-2 identifies auxiliary reservoir channel component types within the scope of license renewal and subject to an AMR:

- earthen water-control structures: dams, embankments, reservoirs, channels, canals, and ponds

The intended functions of the auxiliary reservoir channel component types within the scope of license renewal include:

- SBO or design-basis accident heat sink
- cooling water source for plant shutdown
- structural support, functional support, or both to safety-related components

2.4.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.2 and FSAR Sections 2.4.8, 2.5.0.6, and 9.2.5 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 FSAR 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).

2.4.2.2.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the auxiliary reservoir channel 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).

2.4.2.3 Auxiliary Dam and Spillway

2.4.2.3.1 Summary of Technical Information in the Application

LRA Section 2.4.2.3 describes the auxiliary dam and spillway located across the Tom Jack Creek arm of the main reservoir adjacent to the southwest boundary of the plant site. The auxiliary dam impounds a reservoir with a minimum normal water level at elevation 250 ft. and a surface area of approximately 317 acres. A random rockfill dam approximately 3,903 ft. long with a maximum structural height of approximately 72 ft. and a crest at elevation 260 ft., the auxiliary dam has a core of compacted silty clay and clayey silt material protected on each side by a transition filter zone and a random rockfill shell. The downstream shell has two horizontal drainage blankets, each 3 ft. thick, connected to the transition filter zone adjacent to the core of the dam and a 200-ft. wide, 3-ft. thick drainage layer under the shell in each of two areas where pre-existing creeks had been located. The spillway is an uncontrolled concrete ogee section with a crest length of 170 ft. and crest at elevation 252 ft. The ogee crest of the spillway is joined to the stilling basin by a sloping apron. The auxiliary reservoir serves the ESW system and supplies water for the fire protection system. The auxiliary reservoir must remain operational under the safe shutdown earthquake condition; consequently, the auxiliary dam is a seismic Category I structure.

The auxiliary dam and spillway contains safety-related components relied upon to remain functional during and following DBEs. In addition, the auxiliary dam and spillway performs functions that support fire protection.

LRA Table 2.4.2-3 identifies auxiliary dam and spillway component types within the scope of license renewal and subject to an AMR:

- concrete: exterior above grade
- concrete: exterior below grade
- earthen water-control structure: dams, embankments, reservoirs, channels, canals, and ponds

The intended functions of the auxiliary dam and spillway component types within the scope of license renewal include:

- SBO or design-basis accident heat sink
- cooling water source for plant shutdown

- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.3 and FSAR Sections 2.5.0.6, 2.5.6, and 9.2.5 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 FSAR 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).

2.4.2.3.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the auxiliary dam and spillway 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).

2.4.2.4 Auxiliary Reservoir

2.4.2.4.1 Summary of Technical Information in the Application

LRA Section 2.4.2.4 describes the auxiliary reservoir, which is impounded by the auxiliary dam across the Tom Jack Creek basin and is located to the west of the plant site. It has a minimum normal water level at elevation 250 ft. and a surface area of approximately 317 acres. An auxiliary separating dike across the east arm of this reservoir acts as a barrier to prevent discharged ESW from flowing directly back to the ESW intake area. The auxiliary reservoir channel conveys ESW from the east arm into the west arm of the reservoir so that maximum cooling can be attained before the discharged water circulates back to the intake area. The auxiliary reservoir must remain operative under the safe shutdown earthquake condition. The auxiliary reservoir is the primary sources of cooling water during emergency operation to dissipate the ESW system heat load and serves as the UHS for the plant.

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

LRA Table 2.4.2-4 identifies auxiliary reservoir component types within the scope of license renewal and subject to an AMR:

- earthen water-control structures: dams, embankments, reservoirs, channels, canals and ponds

The intended functions of the auxiliary reservoir component types within the scope of license renewal include:

- SBO or design-basis accident heat sink
- cooling water source for plant shutdown
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.4 and FSAR Sections 2.4.8, 2.5.0.6, and 2.5.6 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 FSAR 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).

2.4.2.4.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the auxiliary reservoir 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).

2.4.2.5 Auxiliary Reservoir Separating Dike

2.4.2.5.1 Summary of Technical Information in the Application

LRA Section 2.4.2.5 describes the auxiliary reservoir separating dike located west of the power plant within the auxiliary reservoir and about 1,700 ft. north of the auxiliary dam between the ESW intake area and the ESW discharge area. The auxiliary reservoir separating dike is approximately 1,200 ft. long with a maximum height of approximately 55 ft. and outside slopes of 2.5 horizontal to one vertical. The dike has a core of compacted silty clay and clayey silt material protected by a random rockfill shell graded near the core with adjacent finer materials. The auxiliary reservoir separating dike along with the auxiliary reservoir channel control the flow of discharged ESW through the east and west arms of the auxiliary reservoir. The dike, designed and constructed across the east arm of the reservoir to seismic Category I criteria, prevents discharged ESW from flowing directly back to the ESW intake area. The auxiliary reservoir separating dike is in the flow path of water circulating in the auxiliary reservoir and has the same functions as the auxiliary reservoir.

The auxiliary reservoir separating dike contains safety-related components relied upon to remain functional during and following DBEs. In addition, the auxiliary reservoir separating dike performs functions that support fire protection.

LRA Table 2.4.2-5 identifies auxiliary reservoir separating dike component types within the scope of license renewal and subject to an AMR:

- earthen water-control structures: dams, embankments, reservoirs, channels, canals, and ponds

The intended functions of the auxiliary reservoir separating dike component types within the scope of license renewal include:

- SBO or design-basis accident heat sink
- cooling water source for plant shutdown
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.5 and FSAR Sections 2.5.0.6 and 2.5.6 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 FSAR 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).

2.4.2.5.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the auxiliary reservoir separating dike 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).

2.4.2.6 Cooling Tower

2.4.2.6.1 Summary of Technical Information in the Application

LRA Section 2.4.2.6 describes the cooling tower located east of the turbine building and approximately 550 ft. from the closest seismic Category I structure, the diesel generator building. The cooling tower is a 523-ft. tall, hyperbolic, natural draft, counterflow, evaporative-type tower. Its basin has an internal diameter of 405 ft., is constructed of 10-in. thick concrete, and has a working capacity of approximately 5,400,000 gallons. The maximum depth, approximately 7.5 ft, is at the basin walls. Normal water level is approximately one foot below the top of the basin side walls.

The cooling tower is a heat sink for the CWS and the NSW system. Heated circulating water and service water are cooled by the counterflow, natural-draft, hyperbolic cooling tower. The cooling tower makeup water pumps deliver water from the main reservoir to restore losses due to drift, evaporation, and blowdown. The cooling tower is a major CWS component. Cooling water is routed from the cooling tower basin to the circulating water pump intake structure. The NSW pumps also take suction from the cooling tower basin via a concrete intake box. The cooling tower is not a Class I structure and supports no safety-related functions.

The cooling tower also performs functions that support fire protection.

LRA Table 2.4.2-6 identifies cooling tower component types within the scope of license renewal and subject to an AMR:

- anchorage and embedment
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- pipe
- supports for non-ASME piping and components

The intended functions of the cooling tower component types within the scope of license renewal are structural support, functional support, or both for nonsafety-related components.

2.4.2.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.6 and FSAR Section 10.4.5 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 FSAR 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).

2.4.2.6.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the cooling tower 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).

2.4.2.7 Cooling Tower Makeup Water Intake Channel

2.4.2.7.1 Summary of Technical Information in the Application

LRA Section 2.4.2.7 describes the CTMU water intake channel, which extends from the main reservoir to the ESW & CTMU intake structure located southeast of the plant. The CTMU water intake channel is approximately 2,500 ft. long and 45 ft. wide. Its walls have a slope of two horizontal to one vertical in soil and one horizontal to four vertical in rock on the north side and two horizontal to one vertical in rock on the south side. The CTMU water intake channel is a Class I structure. During normal operation, the main reservoir is a storage reservoir primarily as the source for CTMU water and an alternative source of ESW supply.

The CTMU water intake channel contains safety-related components relied upon to remain functional during and following DBEs.

LRA Table 2.4.2-7 identifies CTMU water intake channel component types within the scope of license renewal and subject to an AMR:

- earthen water-control structures: dams, embankments, reservoirs, channels, canals, and ponds

The intended functions of the CTMU water intake channel component types within the scope of license renewal include:

- SBO or design-basis accident heat sink
- cooling water source for plant shutdown
- structural support, functional support, or both for safety-related components

2.4.2.7.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.7 and FSAR Sections 2.5.6 and 3.8.4.1.12 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 FSAR 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).

2.4.2.7.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the CTMU water intake channel 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).

2.4.2.8 Circulating Water Intake Structure

2.4.2.8.1 Summary of Technical Information in the Application

LRA Section 2.4.2.8 describes the circulating water intake structure located east of the power block and attached to the cooling tower basin. Constructed of reinforced concrete, the structure includes the reinforced concrete canal that extends to it from the cooling tower basin. The canal is approximately 104 feet wide at the basin and narrows to 66 ft. wide at the structure. The structure supports the circulating water pumps and includes the reinforced concrete slab and containment wall for the sodium hypochlorite tank and dispersant tank adjoining the outside of the south wall of the canal. The circulating water intake structure is not Class I and supports no safety-related functions.

The circulating water intake structure also performs functions that support fire protection.

LRA Table 2.4.2-8 identifies circulating water intake structure component types within the scope of license renewal and subject to an AMR:

- anchorage and embedment
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation

The intended functions of the circulating water intake structure component types within the scope of license renewal are structural support, functional support, or both for nonsafety-related components.

2.4.2.8.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.8 and FSAR Section 10.4.5 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 FSAR 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).

2.4.2.8.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the circulating water intake structure 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).

2.4.2.9 Diesel Generator Building

2.4.2.9.1 Summary of Technical Information in the Application

LRA Section 2.4.2.9 describes the diesel generator building located east of the turbine building as a reinforced concrete structure approximately 153 ft. long and 114 ft. wide and constructed on concrete fill founded on suitable rock. The diesel generator building is constructed of concrete cast in place with reinforced concrete exterior and interior shear walls and floors. Nonshear interior walls of reinforced concrete or concrete masonry (block) are not load-bearing. The diesel generator building houses the two stand-by diesel generators, day tanks, silencers, and associated equipment.

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

LRA Table 2.4.2-9 identifies diesel generator building component types within the scope of license renewal and subject to an AMR:

- anchorage and embedment
- battery rack
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- damper mountings
- fire barrier penetration seals
- fire hose stations
- fire-rated doors

- floor drains
- masonry walls
- nonfire doors
- phase bus enclosure assemblies
- platforms, pipe-whip restraints, jet impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- roof: membrane/built-up
- seals and gaskets
- steel components: all structural steel
- supports for ASME Classes 1, 2, and 3 piping and components
- supports for EDG, HVAC system components, and other miscellaneous mechanical equipment
- supports for non-ASME piping and components

The intended functions of the diesel generator building component types within the scope of license renewal include:

- spray shield or curbs for directing flow
- rated fire barrier to confine or retard plant fire from spreading
- flood protection barrier
- missile barrier
- safety-related component shelter/protection
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.9.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.9 and FSAR Section 3.8.4.1.5 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 FSAR 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).

2.4.2.9.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the diesel generator 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).

2.4.2.10 Main Dam and Spillway

2.4.2.10.1 Summary of Technical Information in the Application

LRA Section 2.4.2.10 describes the main dam and spillway located on Buckhorn Creek approximately 0.7 miles south of its confluence with White Oak Creek, 4.5 miles south of the plant site, and about 2.5 miles north of the Cape Fear River. The dam is a seismic Category I, zone embankment, rockfill structure. The main dam is approximately 1,550 ft. long, founded on rock, and has a maximum height of approximately 108 ft. and a core of compacted silty clay and clayey silt material protected on each side by two 8-ft. thick fine and coarse filter zones and a rockfill shell. The primary purpose of the main dam is to impound water for the CWS and NSW systems. The main dam impounds a reservoir with a normal water level at elevation 220 ft. and a water surface area of approximately 4,000 acres. During normal operation, the main reservoir functions as a storage reservoir, the source of CTMU water, and an alternative source of ESW supply.

The main dam and spillway contain safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs in the main dam and spillway potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.4.2-10 identifies main dam and spillway component types within the scope of license renewal and subject to an AMR:

- anchorage and embedment
- concrete: exterior above grade
- concrete: exterior below grade
- earthen water-control structures: dams, embankments, reservoirs, channels, canals, and ponds
- platforms, pipe-whip restraints, jet impingement shields, masonry wall supports, and other miscellaneous structures
- structural steel (water control structures)

The intended functions of the main dam and spillway component types within the scope of license renewal include:

- SBO or design-basis accident heat sink
- cooling water source for plant shutdown
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.10.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.10 and FSAR Sections 2.5.0.6 and 2.5.6 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 FSAR 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 identified as being 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).

2.4.2.10.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the main dam and spillway 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).

2.4.2.11 Diesel Fuel Oil Storage Tank Building

2.4.2.11.1 Summary of Technical Information in the Application

LRA Section 2.4.2.11 describes the diesel fuel oil storage tank building located north of the FHB and consisting of a below-grade reinforced concrete structure with two reinforced concrete diesel oil tanks (or compartments) and two transfer pumps. The structure is 94 ft. long, 86 ft. wide, and 24 ft. high including the foundation mat; the top slab is at elevation 263 ft. Access to the pumps is by two stairwells located at each corner of one end of the building. The building is supported on a reinforced concrete foundation mat founded on sound rock.

The diesel fuel oil storage tank building contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs in the diesel fuel oil storage tank building potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the diesel fuel oil storage tank building performs functions that support fire protection.

LRA Table 2.4.2-11 identifies diesel fuel oil storage tank building component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade

- concrete: foundation
- concrete: interior
- concrete: roof slab
- damper mountings
- fire barrier penetration seals
- fire-rated doors
- platforms, pipe-whip restraints, jet-impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- roof: membrane/built-up
- supports for ASME Classes 1, 2, and 3 piping and components
- supports for non-ASME piping and components

The intended functions of the diesel fuel oil storage tank building component types within the scope of license renewal include:

- rated fire barrier to confine or retard plant fire from spreading
- missile barrier
- safety-related component shelter/protection
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.11.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.11 and FSAR Sections 3.8.4.1 and 3.8.4.9 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 FSAR 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).

2.4.2.11.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the diesel fuel oil storage tank 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).

2.4.2.12 Emergency Service Water and Cooling Tower Makeup Intake Structure

2.4.2.12.1 Summary of Technical Information in the Application

LRA Section 2.4.2.12 describes the ESW & CTMU intake structure located at the northern end of the CTMU water intake channel. Cooling water may be drawn from either the auxiliary or the main reservoir to the ESW & CTMU intake structure. The ESW & CTMU intake structure extends to include the retaining walls at its south end but not the electrical manholes at its east and west ends or the CTMU strainer pit at its northeast end.

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

LRA Table 2.4.2-12 identifies ESW & CTMU intake structure component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- damper mountings
- fire barrier penetration seals
- nonfire doors
- platforms, pipe-whip restraints, jet-impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- seals and gaskets
- supports for ASME Classes 1, 2, and 3 piping and components
- supports for non-ASME piping and components

The intended functions of the ESW & CTMU intake structure component types within the scope of license renewal include:

- rated fire barrier to confine or retard plant fire from spreading
- flood protection barrier

- missile barrier
- safety-related component shelter/protection
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.12.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.12 and FSAR Section 3.8.4.1.12 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 FSAR 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).

The staff's review of LRA Section 2.4.2.12 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 2.4-3 dated August 7, 2007, the staff noted that LRA Table 2.4.2-12 does not include screens and stop logs. Therefore, the staff requested that the applicant clarify whether screens and stop logs are within the scope of license renewal. If screens and stop logs are not within the scope of license renewal, the staff further requested that the applicant provide justification for their exclusion from within the scope of license renewal.

In its response dated September 5, 2007, the applicant stated:

> Stop logs are not in the scope of License Renewal. Stop logs have a non-safety related classification and are not normally installed unless there is a need to dewater one of the bays during an outage. They have no License Renewal intended function.
>
> Traveling screens which are installed in four of the bays in the Emergency Service Water and Cooling Tower Makeup Intake Structure were reviewed as mechanical components. Refer to response to RAI 2.3.3.31-4.
>
> Coarse screens (or trash racks) are installed in each of the bays in the Emergency Service Water and Cooling Tower Makeup Intake Structure. The coarse screens are included in the scope of License Renewal as "Other Miscellaneous Structure" in the commodity/component group "Platforms, Pipe Whip Restraints, Jet Impingement Shields, Masonry Wall Supports, and Other Miscellaneous Structures (includes support members, welds, bolted connections, support anchorage to building structure)" in LRA Table 2.4.2-12 with a C-7 intended function.
>
> The Fine screens are not in the scope of License Renewal. The Fine screens have a non-safety related classification, are installed only for limited time periods during out of structure maintenance of the traveling screens, and have no License Renewal intended function.

As additional information, the Emergency Service Water Screening Structure also has stop logs and fine screens which are not in the scope of License Renewal and coarse screens which are in the scope of License Renewal. The traveling screens were reviewed as mechanical components.

As a result of this RAI, a revision to the LRA is required to incorporate a line item into the AMR tables for the Emergency Service Water and Cooling Tower Makeup Intake Structure and the Emergency Service Water Screening Structure to address the coarse screens in a raw water environment.

In its response dated September 27, 2007, the applicant responded further:

Revise LRA Table 3.5.2-13 and 3.5.2-22 to add for component/commodity "Platforms, Pipe Whip Restraints, Jet Impingement Shields, Masonry Wall Supports, and Other Miscellaneous Structures (includes support members, welds, bolted connections, support anchorage to building structure)" a new material/environment for carbon steel in a raw water environment as follows:

Raw Water	Loss of Material	Structures Monitoring	III.A6-11 (T-21)	3.5.1-47	E, 515, 575

Add new Plant-Specific Note 575 to read:

575 HNP utilizes the Structures Monitoring Program instead of the RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants Program for inspections of the coarse screens in a Raw Water environment.

Add the following after the first sentence in the discussion column of LRA Table 3.5.1, Item 3.5.1-47:

However, HNP uses the Structures Monitoring Program for the coarse screens in raw water at the Emergency Service Water and Cooling Tower Makeup Intake Structure and Emergency Service Water Screening Structure.

Based on its review, the staff finds the applicant's response to RAI 2.4-3 acceptable because the applicant adequately identified screens and stop logs in the ESW and CTMU intake structure. The applicant also provided a revision to the LRA as a result of RAI 2.4-3. Therefore, the staff's concerns described in RAI 2.4-3 are resolved.

2.4.2.12.3 Conclusion

The staff reviewed the LRA, FSAR, RAI responses, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the ESW & CTMU intake structure 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).

2.4.2.13 Emergency Service Water Discharge Channel

2.4.2.13.1 Summary of Technical Information in the Application

LRA Section 2.4.2.13 describes the ESW discharge channel located northwest of the plant. The ESW discharge channel is approximately 2,170 ft. long and varies in width from 50 to 80 ft. The channel walls have a slope of two horizontal to one vertical in soil and one horizontal to four vertical in rock. The ESW discharge channel is designed conservatively to carry the service flow required for normal and emergency shutdown of the plant. Water is returned to the auxiliary reservoir through the ESW discharge channel over a weir located in the ESW discharge structure. The ESW discharge channel is designed and constructed to seismic Category I criteria and included in the flow path for water circulating back to the auxiliary reservoir; therefore, it has some of the same cooling water functions as the auxiliary reservoir.

The ESW discharge channel contains safety-related components relied upon to remain functional during and following DBEs. In addition, the ESW discharge channel performs functions that support fire protection.

LRA Table 2.4.2-13 identifies ESW discharge channel component types within the scope of license renewal and subject to an AMR:

- earthen water-control structures: dams, embankments, reservoirs, channels, canals, and ponds

The intended functions of the ESW discharge channel component types within the scope of license renewal include:

- SBO or design-basis accident heat sink
- cooling water source for plant shutdown
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.13.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.13 and FSAR Sections 2.4.8, 2.5.0.6, 2.5.6, and 3.8.4.1.12 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 FSAR 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).

2.4.2.13.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the ESW discharge channel 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).

2.4.2.14 Emergency Service Water Discharge Structure

2.4.2.14.1 Summary of Technical Information in the Application

LRA Section 2.4.2.14 describes the ESW discharge structure located at the east end of the ESW discharge channel. The seismic Category I, missile-proof, reinforced concrete ESW discharge structure is founded on sound rock. The structure is as designed with four bays; however, only two bays are in use for the single-unit plant. The pipe penetrations in the east wall for the other bays are closed off. The bottom mat is at elevation 240 ft. with a concrete curb to elevation 242 ft. and a concrete wall or weir to elevation 256 ft. The walls extend to elevation 262 ft. The overall dimensions are approximately 26.5 ft. by 51 ft. Cooling water from the plant is returned to the auxiliary reservoir over a weir in the ESW discharge structure through the ESW discharge channel. The ESW discharge structure is included in the flow path for water circulating back to the auxiliary reservoir and, therefore, has some of the same cooling water functions as the auxiliary reservoir.

The ESW discharge structure contains safety-related components relied upon to remain functional during and following DBEs. In addition, the ESW discharge structure performs functions that support fire protection.

LRA Table 2.4.2-14 identifies ESW discharge structure component types within the scope of license renewal and subject to an AMR:

- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation

The intended functions of the ESW discharge structure component types within the scope of license renewal include:

- flood protection barrier
- SBO or design-basis accident heat sink
- missile barrier
- cooling water source for plant shutdown
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.14.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.14 and FSAR Sections 3.8.4.1.12 and 3.8.4.9 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 FSAR 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).

2.4.2.14.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the ESW discharge structure 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).

2.4.2.15 Emergency Service Water Intake Channel

2.4.2.15.1 Summary of Technical Information in the Application

LRA Section 2.4.2.15 describes the ESW intake channel located southwest of the plant and extending from the auxiliary reservoir to the ESW screening structure. The intake channel is approximately 3,580 ft. long and 50 ft. wide. The channel bottom slopes down to elevation 231 ft at the intake screening structure. The channel walls have a slope of two horizontal to one vertical in soil and one horizontal to four vertical in rock. Designed and constructed to seismic Category I criteria, the ESW intake channel also is designed conservatively to carry the water flow required for normal and emergency shutdown of the plant. The channel is included in the flow path for water circulating from the auxiliary reservoir to the ESW screening structure and has the same cooling water functions as the auxiliary reservoir. The auxiliary reservoir functions as the plant UHS and as the primary source of cooling water during emergency operation to dissipate the ESW system heat load.

The ESW intake channel contains safety-related components relied upon to remain functional during and following DBEs. In addition, the ESW intake channel performs functions that support fire protection.

LRA Table 2.4.2-15 identifies ESW intake channel component types within the scope of license renewal and subject to an AMR:

- earthen water-control structures: dams, embankments, reservoirs, channels, canals, and ponds

The intended functions of the ESW intake channel component types within the scope of license renewal include:

- SBO or design-basis accident heat sink
- cooling water source for plant shutdown
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.15.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.15 and FSAR Sections 2.4.8, 2.5.0.6, 2.5.6, and 3.8.4.1.12 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 FSAR 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).

2.4.2.15.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the ESW intake channel 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).

2.4.2.16 Fuel Handling Building

2.4.2.16.1 Summary of Technical Information in the Application

LRA Section 2.4.2.16 describes the FHB, a reinforced concrete, seismic Category I structure supported on a 10-ft. thick foundation mat founded on suitable rock. The exterior walls, shear walls, interior columns, and floor slabs are reinforced concrete structures cast in place. Nonshear interior shielding or partition walls of either reinforced concrete or concrete block are not load-bearing. Changes to plant configuration as results of the cancellation of Units 2, 3, and 4 were as described in FSAR Section 3.8.4.9. To retain the seismic characteristics and to maintain the structural integrity of the building, its major structural components, namely foundation mat, floor slabs, and shear and load bearing walls, were constructed as designed for four units. Only the internal nonload-bearing walls and some penetrations and openings in the slabs and walls have been modified in the area reserved for Units 2, 3 and 4. As RABs and containment buildings for Units 2, 3, and 4 have been cancelled, the FHB has been isolated from the plant grade fill by a retaining wall on the west side and a series of retaining walls on the east side where required. The building stability and structural design have been reviewed for additional wind and tornado loads to satisfy design criteria. The retaining walls west and east of the FHB are designed seismically.

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

LRA Table 2.4.2-16 identifies FHB component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- battery rack
- cable tray, conduit, HVAC ducts, tube track
- canal and pool gates
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- damper mountings
- expansion bellows
- fire barrier assemblies
- fire barrier penetration seals
- fire hose stations
- fire-rated doors
- floor drains

- fuel cask handling crane
- fuel handling bridge crane
- FHB auxiliary crane
- masonry walls
- new fuel storage rack
- nonfire doors
- platforms, pipe-whip restraints, jet-impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- roof: membrane/built-up
- seals and gaskets
- seismic joint filler
- spent fuel storage racks
- steel components: fuel pool liner (including attachments)
- supports for ASME Classes 1, 2, and 3 piping and components
- supports for non-ASME piping and components

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

- neutron absorption
- thermal expansion, seismic separation, or both
- rated fire barrier to confine or retard plant fire from spreading
- missile barrier
- safety-related component shelter/protection
- radiation shielding
- pressure boundary or essentially leak-tight barrier to protect public health and safety in postulated design-basis events
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.16.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.16 and FSAR Sections 3.8.4.1.3, 3.8.4.9, and 3.8.5.1.3 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 FSAR 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).

The staff's review of LRA Section 2.4.2.16 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 2.4-4 dated August 7, 2007, the staff noted that LRA Section 2.4.2.16 "Fuel Handling Building" states:

> Design criteria have been used to assure that the collapse of adjacent non-seismic Category I structures would not impair the integrity of the seismic Category I structures or components should an earthquake occur.

The staff requested that the applicant specify what design criteria have been used and explain how these design criteria can assure that the collapse of adjacent non-seismic Category I structures would not impair the integrity of the seismic Category I structures or components.

In its response dated September 5, 2007, the applicant stated:

> As stated in FSAR Section 3.7.2.8A, The following criteria were used to assure that the collapse of non-Seismic Category I structures would not impair the integrity of adjacent Seismic Category I structures or components:
>
> a) Sufficient separation has been maintained between Seismic Category I and non-Seismic Category I structures, or
>
> b) The partial or complete collapse of these structures will not impair the integrity of any of the neighboring Seismic Category I structures or components, or
>
> c) The failure or collapse of non-Seismic Category I structures is prevented under SSE conditions.
>
> As discussed in FSAR Section 3.7.2.8A, the plant arrangement provides for sufficient distance between Seismic Category I structures, systems, and components and non-Seismic Category I structures, except for the Turbine Building, the retaining wall west of the Fuel Handling Building, and the retaining wall east of the Fuel Handling Building by the Unit 2 Reactor Auxiliary Building. The Turbine Building, the retaining wall west of the Fuel Handling Building, and the retaining wall east of the Fuel Handling Building are seismically designed in accordance with Regulatory Guide 1.29, Positions C.2 and C.4. More detail is provided in FSAR Sections 3.7.2.8A and 3.8.4.9.

Based on its review, the staff finds the applicant's response to RAI 2.4-4 acceptable because it adequately explained the design criteria used to assure that the collapse of non-Seismic Category I structures would not impair the integrity of adjacent Seismic Category I structures or components. Therefore, the staff's concern described in RAI 2.4-4 is resolved.

2.4.2.16.3 Conclusion

The staff reviewed the LRA, FSAR, RAI response, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the FHB 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).

2.4.2.17 HVAC Equipment Room

2.4.2.17.1 Summary of Technical Information in the Application

LRA Section 2.4.2.17 describes the HVAC equipment room located on the roof of the RAB-Common structure. The HVAC equipment room is a pre-engineered metal siding building housing HVAC equipment for the computer and communications rooms and for the emergency response facility information system. Battery racks and batteries are located within a masonry enclosure in the building. The steel framing is anchored to the roof slab at elevation 324 ft. on the RAB Common area roof. There is a fire protection hose rack inside; however, the HVAC equipment room is supported on a fire barrier slab which isolates it from the control room area. The building is not a Class I structure and supports no safety-related functions. The collapse of any nonseismic Category I structure like the HVAC equipment room would not impair the integrity of adjacent seismic Category I structures or components.

The HVAC equipment room performs functions that support fire protection and SBO.

LRA Table 2.4.2-17 identifies HVAC equipment room component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- battery rack
- cable tray, conduit, HVAC ducts, tube track
- concrete: interior
- fire hose stations
- masonry walls
- nonfire doors
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- roof: membrane/built-up
- siding

- steel components: all structural steel
- supports for non-ASME piping and components

The intended functions of the HVAC equipment room component types within the scope of license renewal are structural support, functional support, or both for nonsafety-related components.

2.4.2.17.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.17 and FSAR Section 9.4.9 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 FSAR 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).

2.4.2.17.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the HVAC equipment room 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).

2.4.2.18 Outside the Power Block Structures

2.4.2.18.1 Summary of Technical Information in the Application

LRA Section 2.4.2.18 describes the OPB structures created during the license renewal review to refer to safety-related main plant structure portions that have no safety-related components in them. OPB structures are defined as power block structure portions west of column line N between column lines 27 and 73 and east of column line L between column lines 45 and 73. The common N, L, and 45 line walls between the OPB and the FHB are included and scoped as part of the FHB in LRA Section 2.4.2.16. No safety-related equipment is located west of the N line wall or east of the L line wall north of column line 45. The OPB structures have no safety-related components within their boundaries but OPB structural components are required to maintain the structural design conditions of the FHB, the RAB, and the WPB.

In addition, the failure of nonsafety-related SCs in the OPB structures potentially could prevent the satisfactory accomplishment of a safety-related function.

LRA Table 2.4.2-18 identifies OPB structure component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- platforms, pipe-whip restraints, jet-impingement shields, masonry wall supports, and other miscellaneous structures; this commodity group includes only the tie rods on the west retaining wall

The intended functions of the OPB structures component types within the scope of license renewal include:

- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.18.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.18 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 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).

2.4.2.18.3 Conclusion

The staff reviewed the LRA and related structural components 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 there is reasonable assurance that the applicant has adequately identified the OPB structure 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).

2.4.2.19 Main Reservoir

2.4.2.19.1 Summary of Technical Information in the Application

LRA Section 2.4.2.19 describes the main reservoir formed by the construction of a seismic Category I dam and spillway on Buckhorn Creek to form a lake of approximately 4,000 acres at the normal water level of 220 ft. During normal operation, the main reservoir is a storage reservoir in use primarily as the source for CTMU water and as the alternative source of ESW supply or UHS cooling water. The technical specification minimum main reservoir level is 215 ft. to meet water requirements for safety-related heat exchangers cooled by the ESW system. The unit is shut down if the main reservoir water level falls below 215 ft.

The main reservoir contains safety-related components relied upon to remain functional during and following DBEs.

LRA Table 2.4.2-19 identifies main reservoir component types within the scope of license renewal and subject to an AMR:

- earthen water-control structures: dams, embankments, reservoirs, channels, canals, and ponds

The intended functions of the main reservoir component types within the scope of license renewal include:

- SBO or design-basis accident heat sink
- cooling water source for plant shutdown
- structural support, functional support, or both for safety-related components

2.4.2.19.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.19 and FSAR Sections 2.4.8, 2.5.0.6, 2.5.6 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 FSAR 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).

2.4.2.19.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the main reservoir 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).

2.4.2.20 Security Building

2.4.2.20.1 Summary of Technical Information in the Application

LRA Section 2.4.2.20 describes the security building, a nonseismic Category I structure located southeast of the turbine building and the entrance to the protected area. The building is approximately 72 ft. wide by 246 ft. long, constructed on a concrete footing and a concrete slab, and has masonry walls, a structural steel support system, and a combination of stone and metal siding as the fascia. The building houses the security metal detection, explosive detection, x-ray equipment, turnstiles for processing personnel into the protected area, the personnel and security systems for protecting the plant, and self-survey personnel monitoring equipment for health physics. The east portion of the building is built over an electrical cable trench that supports and protects cables required for restoration from an SBO.

The security building also performs functions that support fire protection.

LRA Table 2.4.2-20 identifies security building component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- battery rack
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- masonry walls
- platforms, pipe-whip restraints, jet-impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- steel components: all structural steel
- supports for EDG, HVAC system components, and other miscellaneous mechanical equipment
- supports for non-ASME piping and components

The intended functions of the security building component types within the scope of license renewal are structural support, functional support, or both for nonsafety-related components.

2.4.2.20.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.20 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 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).

2.4.2.20.3 Conclusion

The staff reviewed the LRA and related structural components 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 there is reasonable assurance that the applicant has adequately identified the security 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).

2.4.2.21 Emergency Service Water Screening Structure

2.4.2.21.1 Summary of Technical Information in the Application

LRA Section 2.4.2.21 describes the ESW screening structure located at the eastern end of the ESW intake channel and constructed of reinforced concrete. It contains eight bays separated by reinforced concrete walls. Only two bays are used for the ESW system. Each ESW bay is 8 ft. 2 in. wide and sized for a 7-ft. wide traveling screen. In addition to a traveling screen, each bay contains one coarse screen, one stop log guide, two fine screen guides, and access manholes. A valve pit with butterfly valves and expansion joints is at the rear of the structure. A reinforced concrete enclosure covers the deck to protect the traveling screens and valve pit from tornado missiles. A reinforced concrete skimmer wall at the front of the intake structure extends to elevation 247.5 ft. and prevents ice and floating trash from entering the intake structure. Water drawn from the ESW intake channel through the ESW screening structure is transported by gravity through steel pipes to the ESW & CTMU intake structure.

The pipe penetrations against yard fill in the other bays are closed off. One electric motor-driven fire pump and one diesel engine-driven fire pump suitable for outdoor operation are installed outdoors at opposite ends of the ESW screening structure. Two fire service screen wash pumps installed on the ESW screening structure take suction from the auxiliary reservoir. Two fire protection jockey pumps are located on the structure. Also included in this structure are (1) the concrete foundation, slab, and dike for the diesel engine-driven fire pump and its diesel oil storage tank located south of the ESW screening structure, (2) the foundation and wall for the motor-driven fire pump and valve pit north of the ESW screening structure, and (3) the retaining walls at each end of the ESW screening structure. The dike around the diesel fuel oil storage tank is designed to contain fuel oil and direct the flow to a sump.

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

LRA Table 2.4.2-21 identifies ESW screening structure component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- fire barrier penetration seals
- platforms, pipe-whip restraints, jet-impingement shields, masonry wall supports, and racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- seals and gaskets
- supports for ASME Classes 1, 2, and 3 piping and components
- supports for non-ASME piping and components

The intended functions of the ESW screening structure component types within the scope of license renewal include:

- spray shield or curbs for directing flow
- rated fire barrier to confine or retard plant fire from spreading
- flood protection barrier
- missile barrier
- safety-related component shelter/protection
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.21.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.21 and FSAR Section 3.8.4.1.12 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 FSAR 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).

2.4.2.21.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the ESW screening structure 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).

2.4.2.22 Normal Service Water Intake Structure

2.4.2.22.1 Summary of Technical Information in the Application

LRA Section 2.4.2.22 describes the reinforced concrete NSW intake structure located east of the diesel generator building and north of the cooling tower. The NSW intake structure is approximately 50 ft. by 44 ft. with four bays and supports two NSW pumps. Water is drawn from the cooling tower basin to the NSW intake structure via a 6-ft. diameter underground concrete pipe that in the vicinity of the NSW intake structure branches into three separate lines, two of which are routed to the NSW intake structure via 6 ft. by 10 ft. connections. The third pipe, which would have connected to HNP Unit 2, terminates at a concrete plug and block.

The normal service water intake structure also performs functions that support fire protection.

LRA Table 2.4.2-22 identifies NSW intake structure component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- supports for non-ASME piping and components

The intended function of the NSW intake structure component types within the scope of license renewal is to provide structural support, functional support, or both for nonsafety-related components.

2.4.2.22.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.22 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 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).

2.4.2.22.3 Conclusion

The staff reviewed the LRA and related structural components 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 there is reasonable assurance that the applicant has adequately identified the NSW intake structure 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).

2.4.2.23 Switchyard Relay Building

2.4.2.23.1 Summary of Technical Information in the Application

LRA Section 2.4.2.23 describes the prefabricated metal switchyard relay building located on a concrete slab southeast of the turbine building inside the fenced 230kV switchyard and supporting, housing, and protecting electrical equipment. Supervisory control systems in the 230kV switchyard relay building continuously transmit 230kV parameters to the Progress Energy Carolinas Control Center. The control of all 230kV circuit breakers for the generator and start-up transformers is administered from the plant control room. The switchyard has in the switchyard relay building two 125-volt direct current systems independent of the plant direct current systems, each with a 125-volt battery and battery charger to furnish the control power for the circuit breakers, and one additional battery charger as a spare.

The switchyard relay building also performs functions that could be relied on during postulated SBO events.

LRA Table 2.4.2-23 identifies switchyard relay building component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- battery rack
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: foundation
- concrete: interior
- nonfire doors
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation

- roof: membrane/built-up
- siding
- steel components: all structural steel

The intended function of the switchyard relay building component types within the scope of license renewal is structural support, functional support, or both for nonsafety-related components.

2.4.2.23.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.23 and FSAR Section 8.2 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 FSAR 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).

2.4.2.23.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the switchyard relay 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).

2.4.2.24 Transformer and Switchyard Structures

2.4.2.24.1 Summary of Technical Information in the Application

LRA Section 2.4.2.24 describes the transformer and switchyard structures, which include the 230kV switchyard and transformer structures, the isolated phase bus system support structures, and the 6.9kV nonsegregated phase bus support structures. The transformer yard structures located east of the turbine building include the foundations for the main, start-up, and unit auxiliary transformers and the foundations and miscellaneous structural steel for supporting high-voltage insulators, the 230kV low-pressure oil-filled cables, and the isolated phase bus system between the transformers and the turbine building. The transformer and switchyard structures include the concrete trenches for the 230kV low-pressure oil-filled cable from the start-up transformers to the 230kV switchyard.

The failure of nonsafety-related SCs in the transformer and switchyard structures potentially could prevent the satisfactory accomplishment of a safety-related function. The transformer and switchyard structures also perform functions that support fire protection and SBO events.

LRA Table 2.4.2-24 identifies transformer and switchyard structure component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- phase bus enclosure assemblies
- platforms, pipe-whip restraints, jet impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- steel components: all structural steel

The intended functions of the transformer and switchyard structures component types within the scope of license renewal include:

- rated fire barrier to confine or retard plant fire from spreading
- structural support, functional support, or both for nonsafety-related components

2.4.2.24.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.24 and FSAR Sections 8.1 and 8.2 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 FSAR 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).

2.4.2.24.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the transformer and switchyard structure 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).

2.4.2.25 Turbine Building

2.4.2.25.1 Summary of Technical Information in the Application

LRA Section 2.4.2.25 describes the turbine building, which is approximately 400 ft. long, 166 ft. wide, and 74 ft. high from the top of the foundation mat. Below elevation 261 ft., the structure is of reinforced concrete slab and wall construction. Above elevation 261 ft. the building is constructed of steel and concrete slab on steel frame and metal decking and has no walls or roof. The reinforced concrete turbine pedestal is the dominant structural feature of the building. The turbine building has a 215-ton gantry crane with a 50-ton auxiliary hoist. The gantry crane with auxiliary hoist is classified as nonsafety-related, augmented-quality equipment not within the scope of license renewal.

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

LRA Table 2.4.2-25 identifies turbine building component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- battery rack
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- damper mountings
- fire barrier penetration seals
- fire hose stations
- fire-rated doors
- floor drains
- masonry walls
- nonfire doors
- phase bus enclosure assemblies
- platforms, pipe-whip restraints, jet-impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- steel components: all structural steel

- supports for ASME Classes 1, 2, and 3 piping and components
- supports for non-ASME piping and components

The intended functions of the turbine building component types within the scope of license renewal include:

- spray shield or curbs for directing flow
- rated fire barrier to confine or retard plant fire from spreading
- missile barrier
- pipe whip restraint/high-energy line break shielding
- safety-related component shelter/protection
- radiation shielding
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.25.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.25 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 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).

2.4.2.25.3 Conclusion

The staff reviewed the LRA and related structural components 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 there is reasonable assurance 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).

2.4.2.26 Tank Area/Building

2.4.2.26.1 Summary of Technical Information in the Application

LRA Section 2.4.2.26 describes the tank area/building, which includes the Unit 1 and Unit 2 tank area/buildings. The Unit 1 tank area/building, a reinforced concrete seismic Category I structure approximately 142 ft. long by 63 ft. wide, and 83 ft. high, is adjacent to and south of the RAB-1 and east of the WPB. The top of the roof, which protects against missiles, is at approximately elevation 319 ft. The foundation mat is 8 ft. thick, founded on suitable rock, and located 24 ft. below the finished grade elevation of 260 ft. The Unit 1 tank area/building has cast-in-place reinforced concrete exterior walls, interior shear walls, and floors supported on shear walls, beams, and columns. Nonshear interior shielding or partition walls of either reinforced concrete or concrete block walls are not load-bearing.

The exterior walls are waterproofed on the backfill face from the top of the mat to one foot below grade level; the waterproofing membrane terminates in reglets. All construction joints in exterior walls in contact with backfill have water stops. The tank area/building structures are separated from other buildings by sufficient gaps to preclude any interaction due to seismic events. There are no adjacent non-seismic Category I buildings to impair the integrity of the seismic Category I tank area/building structures or components.

The tank area/building contains safety-related components relied upon to remain functional during and following DBEs. The failure of nonsafety-related SSCs in the tank area/building potentially could prevent the satisfactory accomplishment of a safety-related function. In addition, the tank area/building performs functions that support fire protection and SBO and has component parts of the EQ program.

LRA Table 2.4.2-26 identifies tank area/building component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- fire barrier penetration seals
- fire hose stations
- fire-rated doors
- masonry walls
- platforms, pipe-whip restraints, jet impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- roof: membrane/built-up
- supports for ASME Classes 1, 2, and 3 piping and components
- supports for non-ASME piping and components

The intended functions of the tank area/building component types within the scope of license renewal include:

- rated fire barrier to confine or retard plant fire from spreading

- missile barrier
- safety-related component shelter/protection
- radiation shielding
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.26.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.26 and FSAR Sections 3.8.4.1.6 and 3.8.4.9 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 FSAR 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).

2.4.2.26.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the tank area/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).

2.4.2.27 Waste Processing Building

2.4.2.27.1 Summary of Technical Information in the Application

LRA Section 2.4.2.27 describes the WPB, a reinforced concrete, seismic Category I structure with reinforced concrete exterior walls and interior shear walls cast in place. Nonshear interior shielding or partition walls of either reinforced concrete or concrete block are not load-bearing. The WPB is 289 ft. long, 191 ft. wide, and 110 ft. high. Reinforced concrete floors are at elevations 236 ft., 261 ft., 276 ft., and 291 ft. and the roof at 321 ft. The building is supported on a 10-ft. thick reinforced concrete foundation mat founded on suitable rock. The exterior walls below grade are waterproofed on the backfilled faces. Construction joints in exterior walls in contact with backfill except for a portion of the northwest corner of the building are waterproofed with water stops. The WPB provides barriers to fire, flooding, water spray, high-energy fluid release, and potential missile barriers.

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

LRA Table 2.4.2-27 identifies WPB component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- concrete: roof slab
- damper mountings
- fire barrier penetration seals
- fire hose stations
- fire-rated doors
- masonry walls
- nonfire doors
- platforms, pipe-whip restraints, jet-impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- roof: membrane/built-up
- seals and gaskets
- seismic joint filler
- steel components: all structural steel
- supports for non-ASME piping and components

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

- spray shield or curbs for directing flow
- rated fire barrier to confine or retard plant fire from spreading
- missile barrier
- radiation shielding
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.27.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.27 and FSAR Sections 3.8.4.1.4 and 3.8.4.9 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 FSAR 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).

2.4.2.27.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the WPB 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).

2.4.2.28 Yard Structures

2.4.2.28.1 Summary of Technical Information in the Application

LRA Section 2.4.2.28 describes the yard structures, which comprise the civil structures and structural components within the scope of license renewal identified by review of the HNP FSAR, drawings, and equipment database and by onsite walkdowns resulting in a list of structures evaluated for license renewal as either yard structures or miscellaneous structures. The yard structures include:

- underground electrical duct banks, protective mats, and manholes
- yard lighting poles, electrical duct banks, and manholes
- the oil separator area
- the diesel fuel unloading area
- fire hose cabinet support structures
- NSW gate structure
- NSW concrete pipe
- cooling tower blowdown system weir structure
- CWS concrete pipe
- CWS discharge block

With the exception of the Class I duct banks, manholes, and protective mats, the yard structures listed are not Class I or seismic Category I structures and support no safety-related functions. There is sufficient distance between them that collapse of any of the listed nonseismic Category I structures would not impair the integrity of adjacent seismic Category I structures or components.

The yard structures contain safety-related components relied upon to remain functional during and following DBEs. In addition, the yard structures perform functions that support fire protection.

LRA Table 2.4.2-28 identifies yard structure component types within the scope of license renewal and subject to an AMR:

- anchorage and embedments
- cable tray, conduit, HVAC ducts, tube track
- concrete: exterior above grade
- concrete: exterior below grade
- concrete: foundation
- concrete: interior
- fire hose stations
- lighting poles
- pipe
- platforms, pipe-whip restraints, jet-impingement shields, masonry wall supports, and other miscellaneous structures
- racks, panels, cabinets, and enclosures for electrical equipment and instrumentation
- seals and gaskets
- siding
- steel components: all structural steel
- supports for non-ASME piping and components

The intended functions of the yard structure component types within the scope of license renewal include:

- missile barrier
- safety-related component shelter/protection
- structural support, functional support, or both for safety-related components
- structural support, functional support, or both for nonsafety-related components

2.4.2.28.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.28 and FSAR Section 3.8.4.1.11 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 FSAR 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).

2.4.2.28.3 Conclusion

The staff reviewed the LRA, FSAR, and related structural components 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 there is reasonable assurance that the applicant has adequately identified the yard structure 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 (I&C) Systems

This section documents the staff's review of the applicant's scoping and screening results for electrical and I&C systems. Specifically, this section discusses:

- electrical and I&C component commodity groups

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 FSAR, 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).

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).

2.5.1 Electrical and I&C Component Commodity Groups

2.5.1.1 Summary of Technical Information in the Application

LRA Section 2.5.1 describes the electrical and I&C component commodity groups, which include:

- non-EQ insulated cables and connections
- metal enclosed bus and connections
- high-voltage insulators
- switchyard buses and connections
- transmission conductors and connections
- uninsulated ground conductors and connections

An insulated cable is an assembly of an electrical conductor (*e.g.*, wire) with an insulation covering or a combination of conductors insulated from one another with overall coverings. Connections or terminations connect the cable conductors to other cables or electrical devices. Connections include connectors, splices, and terminal blocks. Fuse holders are a type of electrical connection similar to a terminal block. Insulated cables and connections inside the enclosure of an active device (*e.g.*, motor leads and connections and cables and connections internal to relays, chargers, switchgear, transformers, power supplies, etc.) maintained along with the other subcomponents and piece-parts inside the enclosure are not included in the non-EQ insulated cables and connections commodity group.

Metal enclosed buses and their connections connect two or more elements (*e.g.*, electrical equipment like switchgear and transformers) of an electrical circuit. The metal enclosed buses and connections commodity group includes iso-phase and nonsegregated 6.9 kV and 480 V phase buses. An iso-phase bus is an electrical bus in which each phase conductor is enclosed by an individual metal housing separated from adjacent conductor housings by an air space. Nonsegregated bus is an electrical bus constructed with all phase conductors in a common enclosure without barriers (only air space) between the phases.

High-voltage insulators on the circuits supply power from the switchyard to plant buses during recovery from an SBO. The function of high-voltage insulators is to insulate and support electrical conductors. High-voltage insulators are passive, long-lived components.

The switchyard bus provides a portion of the circuits supplying power from the switchyard to plant buses during recovery from an SBO. The function of the switchyard bus is to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals. The switchyard bus is a passive, long-lived component.

Transmission conductors provide a portion of the circuits that supply power from the switchyard to plant buses during recovery from an SBO. The function of transmission conductors is to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals. Transmission conductors are passive, long-lived components.

Uninsulated ground conductors in lightning protection applications protect structures and equipment from lightning strikes by providing a low-resistance path to ground. Uninsulated ground conductors consist of air terminals, ground rods, stranded uninsulated (bare) electrical cable, and connections. Common connections are by welds or mechanical-type connectors (*e.g.*, compression, bolted, and wedge-type devices). The function of uninsulated ground conductors is to provide electrical connection to specified sections of an electrical circuit to deliver current to ground. The lightning protection and site grounding systems are credited for compliance with a fire protection function of lightning protection. The uninsulated ground conductors commodity consists of passive, long-lived components

The electrical and I&C component commodity groups perform functions that include supporting fire protection and SBO. LRA Table 2.5.1-1 identifies electrical and I&C component commodity groups within the scope of license renewal and subject to an AMR:

- non-EQ insulated cables and connections
- metal enclosed buses and connections
- high-voltage insulators
- switchyard buses and connections
- transmission conductors and connections
- uninsulated ground conductors and connections

The intended functions of the electrical and I&C component commodity groups within the scope of license renewal include:

- electrical connections for voltage, current, or signal delivery to specified electrical circuit sections
- electrical conductor insulation and support

2.5.1.2 Staff Evaluation

The staff reviewed LRA Section 2.5 and the FSAR using the evaluation methodology described in SER Section 2.5 and 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 FSAR 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, "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))," dated April 1, 2002, 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 aging management review will assure that the bases underlying the SBO requirements are maintained over the period of extended license.

LRA Section 2.1.1.3.4 indicates that the preferred path of offsite power when recovering from a SBO is through the two start-up transformers (SUTs) from the power grid via the 230 kV switchyard, and the 230 kV power circuit breakers represent the scoping boundary. Figure 2.1-2, "Power Path for Recovery of Offsite Power Following a Station Blackout Event" shows that 230 kV circuit breakers 52-2 and 52-3 for SUT 1A and for SUT 1B, circuit breakers 52-13 and 52-14 represent the boundary. This drawing did not specify the offsite lines but the audit team, while onsite (documented in the Audit Report), verified that drawing No. PD-5165-B-C-0001 provides the connections (i.e. offsite lines) past the circuit breakers. In terms of SBO paths, for SUT 1A, the associated offsite line is Cape Fear North, and for SUT 1B, it is Apex US #1. Additionally, the control circuits and structures associated with the 230 kV circuit breakers are included within the scope of license renewal. Therefore, the scoping boundary is in accordance with ISG-2, and the staff finds this acceptable.

2.5.1.3 Conclusion

The staff reviewed the LRA and FSAR to determine whether the applicant failed to identify any SSCs 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 there is reasonable assurance that the applicant has adequately identified the electrical and I&C component commodity groups 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).

2.6 Conclusion for Scoping and Screening

The staff reviewed the information in LRA Section 2, "Scoping and Screening Methodology for Identifying Structures and Components Subject to Aging Management Review and Implementation Results," and determined that the applicant's scoping and screening methodology was consistent with 10 CFR 54.21(a)(1) and the staff's positions on the treatment of safety-related and nonsafety-related SSCs within the scope of license renewal and on SCs subject to 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 those 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).