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NUREG-1958

Safety Evaluation Report

Related to the License Renewal of Kewaunee Power Station

Docket No. 50-305

Dominion Energy Kewaunee, Inc.

Office of Nuclear Reactor Regulation

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ABSTRACT

This safety evaluation report (SER) documents the technical review of the Kewaunee Power Station (KPS) license renewal application (LRA) by the U.S. Nuclear Regulatory Commission (NRC) staff (the staff). By letter dated August 12, 2008, Dominion Energy Kewaunee, Inc. (Dominion, DEK, or the applicant) submitted the LRA in accordance with Title 10, Part 54, of the *Code of Federal Regulations*, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." Dominion requests renewal of the KPS operating license (Facility Operating License Number DPR-43) for a period of 20 years beyond the current expiration at midnight on December 21, 2013.

KPS is located in the Town of Carlton, Wisconsin, in the southeast corner of Kewaunee County, Wisconsin, on the western shore of Lake Michigan. The staff issued the original construction permit for KPS on August 6, 1968, and the operating license on December 21, 1973. The plant's nuclear steam supply system consists of a 2-loop pressurized water reactor with a dry, ambient containment (PWR-DRYAMB). The nuclear steam supply system was supplied by Westinghouse. The balance of the plant was originally designed and constructed by Pioneer Service and Engineer Company. KPS operates at a licensed power output of 1,772 megawatt-thermal (MWt), with a gross electrical output of approximately 590 megawatt-electric (MWe).

Unless otherwise indicated, this SER presents the status of the staff's review of information submitted through October 20, 2010, the cutoff date for consideration in the SER. The four open items previously identified by the staff for the SER with open items have been closed (see SER Section 1.5); therefore, no open items remain to be resolved before the final determination is reached by the staff on the LRA.

TABLE OF CONTENTS

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

ACI	American Concrete Institute
ACRS	Advisory Committee on Reactor Safeguards
ACSR	aluminum conductor steel reinforced
ACU	air compressor unit
ADAMS	Agencywide Document Access and Management System
AERM	aging effect requiring management
AFW	auxiliary feedwater
AMP	aging management program
AMR	aging management review
ANSI	American National Standards Institute
APCSB	Auxiliary and Power Conversion Systems Branch
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATF	administration training facility
ATP	adenosine triphosphate
ATWS	anticipated transient without scram
B&PV	boiler and pressure vessel
B&W	Babcock & Wilcox Co.
BMI	bottom-mounted instrumentation
BTP	branch technical position
BWR	boiling water reactor
CASS	cast austenitic stainless steel
CBF	cycle-based fatigue
CFR	*Code of Federal Regulations*
CLB	current licensing basis
CMAA	Crane Manufacturers Association of America
CO_2	carbon dioxide

CRD	control rod drive
CRDM	control rod drive mechanism
CRPA	control room post-accident
Cu	copper
CUF	cumulative usage factor
CVCS	chemical and volume control system
DBA	design-basis accident
DBD	design-basis document
DBE	design-basis event
DCI	Division of Component Integrity
DEK	Dominion Energy Kewaunee, Inc.
DO	dissolved oxygen
EAF	environmentally-assisted fatigue
ECCS	emergency core cooling system
EDG	emergency diesel generator
EFPY	effective full-power year
EMPAC	enterprise maintenance planning and control
EOCI	Electric Overhead Crane Institute
EPRI	Electric Power Research Institute
EQ	environmental qualification
ER	environmental report (applicant's environmental report operating license renewal stage)
ESF	engineered safety features
F_{en}	environmental fatigue life correction factor
FERC	Federal Energy Regulatory Commission
FR	*Federal Register*
FRN	*Federal Register* notice
FSAR	final safety analysis report

ft-lb	foot-pound
GALL	Generic Aging Lessons Learned Report
GEIS	generic environmental impact statement
GL	generic letter
gm/cm^2	grams per square centimeter
GSI	generic safety issue
HELB	high-energy line break
HEPA	high-efficiency particulate air
HPSI	high-pressure safety injection
HVAC	heating, ventilation, and air conditioning
I&C	instrumentation and control
IA	instrument air
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 or kV	kilovolt
KPS	Kewaunee Power Station
ksi	kilopounds per square inch
LBB	leak-before-break
LCO	limiting condition for operation
LOCA	loss of coolant accident

LRA	license renewal application
LTOP	low-temperature overpressure protection
µm	micrometer
M/C	measured-to-calculated
MCM	thousands of circular mils
MEA	material, environment, and aging effect
MEB	metal-enclosed bus
MeV	million electron volts
MIC	microbiologically-influenced corrosion
MPa	megapascal
MWe	megawatt-electric
MWt	megawatt-thermal
n/cm^2	neutrons per square centimeter
NACE	National Association of Corrosion Engineers
NDE	nondestructive examination
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
Ni	nickel
NPS	nominal pipe size
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NSSS	nuclear steam supply system
ODSCC	outside-diameter stress-corrosion cracking
OE	operating experience
OI	open item
OTSG	once-through steam generator

P&ID	piping and instrumentation diagram
PDI	performance demonstration initiative
pH	potential of hydrogen
ppb	parts per billion
ppm	parts per million
psi	pounds per square inch
psig	pounds per square inch gauge
P-T	pressure-temperature
PTS	pressurized thermal shock
PVC	polyvinyl chloride
PWR	pressurized water reactor
PWR-DRYAMB	pressurized water reactor with a dry, ambient containment
PWSCC	primary water stress-corrosion cracking
QA	quality assurance
QAP	quality assurance program
RAI	request for additional information
RAT	reserve auxiliary transformer
RCCA	rod cluster control assembly
RCIC	reactor core isolation cooling
RCP	reactor coolant pump
RCPB	reactor coolant pressure boundary
RCS	reactor coolant system
RCV	reactor containment vessel
RG	regulatory guide
RHR	residual heat removal
RIS	regulatory issue summary
RPV	reactor pressure vessel
RT_{NDT}	reference temperature nil ductility transition

RT_{PTS}	reference temperature for pressurized thermal shock
RVI	reactor vessel internal
RVID	Reactor Vessel Integrity Database
RVLIS	reactor vessel level instrumentation system
SAMA	severe accident mitigation alternatives
SAW	submerged arc welds
SBF	stress-based fatigue
SBO	station blackout
SC	structure and component
SCC	stress-corrosion cracking
SER	safety evaluation report
SFP	spent fuel pool
SG	steam generator
SGBD	steam generator blowdown
SGMP	Steam Generator Management Program
SI	safety injection
SOC	statement of consideration
SOER	significant operating experience report
SRP-LR	Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants
SSC	system, structure, and component
SW	service water
TAT	tertiary auxiliary transformer
TLAA	time-limited aging analysis
TS	technical specification
TSC	technical support center
TT	thermally treated

ULSD	ultra-low-sulfur diesel
USAR	updated safety analysis report
USAS	United States of America Standards
USE	upper-shelf energy
UT	ultrasonic testing
UV	ultraviolet
V	volt
VT	visual testing
W	Westinghouse
WCP	work control process
WOG	Westinghouse Owner's Group
yr	year
Zn	zinc
1/4 T	one-fourth of the way through the vessel wall measured from the internal surface of the vessel

SECTION 1

INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

This document is a safety evaluation report (SER) on the license renewal application (LRA) for Kewaunee Power Station Unit 1 (KPS or Kewaunee), as filed by Dominion Energy Kewaunee, Inc. (Dominion, DEK, or the applicant). By letter dated August 12, 2008, Dominion submitted its application to the U.S. Nuclear Regulatory Commission (NRC) for renewal of the KPS operating license for an additional 20 years. The NRC staff (the staff) prepared this report, which summarizes the results of its safety review of the renewal application for compliance with the requirements of Title 10, Part 54, of the *Code of Federal Regulations* (10 CFR Part 54), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." The NRC license renewal project manager for the KPS license renewal review is John Daily. Mr. Daily can be contacted by telephone at 301-415-3873 or by email at John.Daily@nrc.gov. Alternatively, written correspondence may be sent to:

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of License Renewal
Washington, D.C. 20555-0001
Attention: John Daily, Mail Stop 0-11F1

In its August 12, 2008, submission letter, the applicant requested renewal of the operating license issued under Section 104b (Operating License No. DPR-43) of the Atomic Energy Act of 1954, as amended, for KPS, for a period of 20 years beyond the current license expiration at midnight, December 21, 2013. KPS is located in the Town of Carlton, Wisconsin, in the southeast corner of Kewaunee County, Wisconsin, on the western shore of Lake Michigan. The staff issued the original construction permit for KPS on August 6, 1968, and the operating license on December 21, 1973. The plant's nuclear steam supply system consists of a 2-loop, Westinghouse (W) pressurized water reactor (PWR). The primary containment is of the dry ambient type. The balance of the plant was originally designed and constructed by Pioneer Service and Engineer Company. KPS operates at a licensed power output of 1,772 megawatt-thermal (MWt), with a gross electrical output of approximately 590 megawatt-electric (MWe). The updated safety analysis report (USAR) contains 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 KPS license renewal is based on the applicant's LRA and responses to the staff's requests for additional information (RAIs). The applicant supplemented the LRA and provided clarifications through its responses to the staff's RAIs in audits, meetings, and docketed correspondence. Unless otherwise noted, the staff reviewed and considered information submitted through October 20, 2010. The staff reviewed information received after this 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 USAR, at

the NRC Public Document Room located on the first floor of One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852-2738 (301-415-4737 / 800-397-4209), and at the Kewaunee Public Library, 822 Juneau Street, Kewaunee, Wisconsin 54216. In addition, the public may find the LRA, as well as materials related to the license renewal review, on the NRC website 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 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 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 KPS. The staff issued plant-specific GEIS Supplement 40, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Kewaunee Power Station," on August 19, 2010.

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. These licenses can be renewed for up to 20 additional years. The original 40-year license term was selected on the basis of economic and antitrust considerations, rather than on technical limitations; however, some individual plant and equipment designs may have been engineered based on 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 staff to establish a comprehensive program plan for nuclear plant aging research. On the basis of the results of that research, a technical review group concluded that many aging phenomena are readily manageable and pose no technical issues that would preclude 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 the license renewal rule in 10 CFR Part 54 (the Rule). The staff participated in an industry-sponsored demonstration program to apply the Rule to a pilot plant and to gain experience necessary to develop implementation guidance. To establish a scope of review for license renewal, the Rule defined age-related degradation unique to license renewal; however, during the demonstration program, the staff found that many aging mechanisms occur to plant systems and components with effects managed during the initial license period. In addition, the staff found that the scope of the review did not allow sufficient credit for existing programs, particularly the implementation of the Maintenance Rule, which also manages plant-aging phenomena.

As a result, the staff amended the Rule in 1995. As amended, 10 CFR Part 54 established a regulatory process that is simpler, more stable, and more predictable than the previous Rule. In particular, as amended, 10 CFR Part 54 focused on management of adverse aging effects rather than on identification of age-related degradation unique to license renewal. The staff initiated these rule changes to ensure that important systems, structures, and components (SSCs) will continue to perform their intended functions during the period of extended operation. In addition, the revised Rule clarified and simplified the integrated plant assessment (IPA) process for consistency with the revised focus on passive, long-lived structures and components (SCs).

In parallel with these efforts, in a separate rulemaking effort, the staff amended 10 CFR Part 51 to focus the scope of the review of environmental impacts of license renewal and fulfill the staff's responsibilities under the National Environmental Policy Act of 1969 (NEPA).

1.2.1 Safety Review

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

(1) The regulatory process is adequate to ensure that the licensing bases of all currently operating plants maintain an acceptable level of safety, with the possible exception of the detrimental aging effects on the function 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 defines the scope of license renewal as including SSCs: (1) that are safety-related, (2) whose failure could affect safety-related functions, and (3) that are relied on to demonstrate compliance with NRC 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), an applicant for a renewed license must review all SSCs within the scope of the Rule to identify SCs subject to an aging management review (AMR). SCs subject to an AMR are those which perform an intended function without moving parts or without a change in configuration or properties (i.e., are "passive"), and are not subject to replacement based on a qualified life or specified time period (i.e., are "long-lived"). As required by 10 CFR 54.21(a), an applicant for a renewed license must demonstrate that aging effects will be managed in such a way that the intended functions of those SSCs will be maintained, consistent

with the current licensing basis (CLB), for the period of extended operation; however, active equipment is considered adequately monitored and maintained by existing programs. In other words, detrimental aging effects that may affect active equipment are readily detectable and can be 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), each LRA is required to include an USAR supplement that must have a summary description of the applicant's programs and activities for managing aging effects and the 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 are made about the length of time the plant can operate. These assumptions are incorporated into design calculations for several plant SSCs. In accordance with 10 CFR 54.21(c)(1), the applicant must 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 effects of aging on these SSCs can be adequately managed for the period of extended operation.

In 2001, the staff developed and issued 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 3, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," issued in March 2001 by the NEI. NEI 95-10 details an acceptable method of implementing the Rule. The staff also used the SRP-LR to review this application.

In its LRA, the applicant stated that it utilized the overall outline and approach as described in NEI 95-10, Revision 6 (issued June 2005), along with NUREG-1800, "Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants," and NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," as revised in September 2005. The GALL Report provides a summary of staff-approved aging management programs (AMPs) for the aging of many SCs subject to an AMR. If an applicant commits to implementing these staff-approved AMPs, the time, effort, and resources to review an applicant's LRA can be greatly reduced, thereby improving the efficiency and effectiveness of the license renewal review process. The GALL Report summarizes the aging management evaluations, programs, and activities credited for managing aging for most SCs used throughout the industry. The report is also a reference for both applicants and staff reviewers to quickly identify AMPs and activities that can provide adequate aging management during the period of extended operation.

1.2.2 Environmental Review

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

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

In accordance with NEPA and 10 CFR Part 51, the staff reviewed the plant-specific environmental impacts of license renewal, including any new and significant information not considered in the GEIS. As part of its scoping process, the staff held a public meeting on October 22, 2008, in the Town of Carlton, Wisconsin, to identify plant-specific environmental issues. The staff's draft plant-specific GEIS Supplement 40, issued in January of 2010, documents the results of the environmental review and includes a preliminary recommendation for license renewal action. Another public meeting was held on March 24, 2010, in the Town of Carlton, Wisconsin, to discuss the draft GEIS Supplement. After considering comments on the draft, the staff issued GEIS Supplement 40, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Kewaunee Power Station," on August 19, 2010.

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 the following in LRA Section 1.3.8:

> ...10 CFR 54.19(b) requires that license renewal applications include, "...conforming changes to the standard indemnity agreement, 10 CFR 140.92, Appendix B, to account for the expiration term of the proposed renewed license." The current indemnity agreement for the unit does not contain a specific expiration term for the operating license. Therefore, conforming changes to account for the expiration term of the proposed renewed license are not necessary, unless the license number is changed upon issuance of the renewed license.

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 four portions:

- an integrated plant assessment
- a description of any CLB changes during the staff's review of the LRA
- an evaluation of TLAAs
- a USAR 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 3 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 USAR supplement. The applicant has submitted two annual updates, as follows:

- By letter dated July 27, 2009, the applicant submitted its first LRA update, which summarizes the CLB changes that occurred since submittal of the LRA through the update's issue date (Agencywide Document Access and Management System (ADAMS) Accession No. ML092090314). This submission is in accordance with 10 CFR 54.21(b) requirements and states that no changes were identified for the KPS LRA.

- By letter dated August 9, 2010, the applicant submitted its second LRA update (ADAMS Accession No. ML1022901411), which summarizes the CLB changes that occurred since issuance of the first update. This submission is in accordance with 10 CFR 54.21(b) requirements and states that one change was identified for the KPS LRA, involving modifications made to the substation and switchyard as part of a plan to improve the reliability and maintainability of the offsite power supply and to increase grid reliability.

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 KPS 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 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.

In accordance with 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 the GALL Report.

Table 1.4-1 shows the current set of approved ISGs as well as the SER sections to which the ISG may apply.

Table 1.4-1 Current Interim Staff Guidance

ISG Issue (Approved ISG Number)	Purpose	SER Section
Corrosion of drywell shell in Mark I containments (LR-ISG-2006-01)	Addresses concerns related to corrosion of drywell shell in Mark I containments (for BWRs)	Not applicable for Kewaunee; Kewaunee is a PWR.
Preparing Severe Accident Mitigation Alternatives (SAMA) Analyses (LR-ISG-2006-03)	Staff Guidance for Preparing SAMA Analyses.	Not applicable to SERs; applies to supplemental environmental impact statements (SEIS).
License Renewal Interim Staff Guidance Process (LR-ISG-2007-01)	License Renewal Interim Staff Guidance Process, Revision 1. This LR-ISG issues a revised process for guiding the development and implementation of LR–ISGs.	Not applicable for Kewaunee; this is administrative only.
Changes to the GALL Report AMP XI.E6 (LR-ISG-2007-02)	Provides interim guidance to one approach acceptable to the staff for managing effects of aging for certain electrical cable connections within the scope of the license renewal rule, but which are not subject to EQ	Section 3.0.3.1.6
Staff Guidance Regarding Plant-Specific AMR and AMP for Neutron-Absorbing Material in Spent Fuel Pools (LR-ISG-2009-01)	Proposes to revise SRP-LR and NUREG-1801 to provide guidance to address potential loss of material and loss of neutron-absorbing capability in spent fuel pools during the period of extended operation. Also proposes an AMP that can address this issue. This LR-ISG does not apply to Boraflex	Section 3.3.2.2.6

1.5 Summary of Open Items

As a result of its review of the LRA, including additional information submitted through October 20, 2010, the staff closed the four open items (OIs) previously identified in the "Safety Evaluation Report With Open Items – Related to the License Renewal of Kewaunee Power Station" (ADAMS Accession No. ML101190345). The staff has identified no other open items. An item is considered open if, in the staff's judgment, it does not meet all applicable regulatory requirements at the time of the issuance of this SER.

The summary of the closed OIs is as follows:

Open Item 3.0.3.2.20-1 (SER Sections 3.0.3.2.20 and 4.3 – Use of the Nonconforming Software FatiguePro™)

The staff noted that the applicant's Metal Fatigue of Reactor Coolant Pressure Boundary Program relies on nonconforming software, FatiguePro™, to perform fatigue usage calculations. LRA Section B3.2 states that its fatigue managing program utilizes all three modules of the Electric Power Research Institute (EPRI) software, FatiguePro™, to perform several fatigue monitoring-related calculations. However, the staff noted that in FatiguePro's™ stress-based fatigue (SBF) monitoring module, the application does not use all six components of a transient stress tensor to perform fatigue analysis in accordance with ASME Code Section III NB-3200. NRC Regulatory Issue Summary (RIS) 2008-30 recommends that the license renewal applicants that have used this simplified methodology to calculate fatigue usage perform confirmatory analyses to demonstrate that the simplified analyses provide acceptable results.

By letter dated July 13, 2009, the staff issued RAI B3.2-2 requesting that the applicant: (a) make appropriate adjustments and corrections regarding the use of the "stress-based monitoring" and "SBF" terminologies, and reliance on the SBF monitoring methodology for fatigue usage calculations; and (b) re-evaluate the cumulative usage factor (CUF), in accordance with the guidelines described in ASME Code Section III NB-3200 guidance, for those components whose CUFs were calculated using the FatiguePro™ SBF monitoring methodology.

In its response dated August 17, 2009, the applicant stated that the reanalysis of locations subject to evaluation of the environmental effects on fatigue usage in accordance with NUREG/CR-6260, "Application of NUREG/CR-5999 Interim Fatigue Curves to Selected Nuclear Power Plant Components," that were initially evaluated using SBF monitoring methods, is currently in progress. The applicant further stated that the response to RAI B3.2-2 will be provided following completion of the reanalysis.

This item impacts SER Sections 3.0.3.2.20, "Metal Fatigue of Reactor Coolant Pressure Boundary"; 4.3.1.4, "Pressurizer Lower Head and Surge Line [TLAA]"; and 4.3.1.5, "Effects of Reactor Coolant Environment on Fatigue Life of ASME Code Class 1 Piping and Components [TLAA]."

The staff identified this as **Open Item 3.0.3.2.20-1**.

The staff's evaluation and closure of Open Item 3.0.3.2.20-1 is documented in LRA Section 3.0.3.2.20.

Open Item B2.1.32-1 (SER Section 3.0.3.2.19 – Work Control Process Program)

In a letter dated September 25, 2009, the applicant changed the Work Control Process (WCP) Program from a plant-specific program to a new AMP that, when enhanced, will be consistent with the program elements recommended in GALL AMP XI.M32, "One-Time Inspection," and GALL AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components," under defined circumstances. During its review of the WCP Program, the staff identified several issues with the submittal and issued RAI B2.1.32-5:

- The staff noted that the applicant credited a methodology in EPRI TR-107514 as the basis for selecting sample sizes for component-material-effect combinations that will be managed, yet did not fully specify minimum percentage(s) of various populations being used to establish the sample sizes for the one-time examinations, nor when the one-time inspections for the WCP would be completed.

- The staff noted that the applicant's basis does not establish minimum sample size(s) that will be used for the material-environment-aging effect populations being managed on a periodic basis, nor minimum inspection frequencies.

- The staff noted that, in regard to operating experience (OE) examples that were provided, the OE discussions create uncertainties on whether the implementation of the WCP will be capable of detecting the aging effects for which it is credited, prior to a loss of component intended function.

- The staff could not determine the precise nature of Commitment No. 25: whether it reflects a simple need for implementing the WCP during the period of extended operation without any enhancements, or that it reflects that certain criteria of the WCP need to be enhanced to make them consistent with the GALL Report.

The staff identified this as **Open Item B2.1.32-1.**

The staff's evaluation and closure of RAI B2.1.32-5 and Open Item B2.1.32-1 are documented in LRA Section 3.0.3.2.19.

Open Item 3.1.2.1.7-1 (Nickel-Alloy Steam Generator Divider Plate Cracking Due to Primary Water Stress-Corrosion Cracking)

LRA Table 3.1.1, item 3.1.1-81 addresses cracking due to primary water stress-corrosion cracking (PWSCC) for nickel alloy or nickel-alloy clad steam generator divider plate exposed to reactor coolant. The staff noted that, from recent foreign OE in steam generators with a similar design to that of the applicant, extensive cracking due to PWSCC has been identified in steam generator divider plates, even with proper primary water chemistry; specifically, cracks have been detected in the stub runner, very close to the tubesheet/stub runner weld and with depths of almost a third of the divider plate thickness. Therefore, the staff noted that the Primary Water Chemistry Program alone may not be effective in managing aging effects of cracking due to PWSCC in the steam generator divider plate.

By letter dated March 11, 2010, the staff issued RAI 3.1.2.2.13-1 requesting that the applicant: (1) discuss the materials of construction of the steam generator divider plate assembly; and (2) if these materials are susceptible to cracking (e.g., Alloy 600 or the associated Alloy 600

weld materials), discuss the potential that cracking in the divider plate might propagate into other components (e.g., tubesheet cladding). Finally, the staff requested that if propagation into these other components cannot be ruled out, the applicant should describe an inspection program for ensuring that there are no cracks propagating into other items that could challenge the integrity of those other items.

The staff identified this as **Open Item 3.1.2.1.7-1.**

The staff's evaluation and closure of RAI 3.1.2.2.13-1 and Open Item 3.1.2.1.7-1 are documented in LRA Section 3.1.2.1.7.

Open Item 3.0.3.2.4-1 (RAI concerning recent OE for buried and underground piping and tanks)

The staff has noted a number of recent industry events involving radioactive fluid leakage from buried and underground piping and tanks. In light of this recent industry OE, the staff is concerned about the continued susceptibility to failure of buried and/or underground piping that are within the scope of 10 CFR 54.4 and subject to aging management for license renewal. In reviewing the applicant's Buried Piping and Tanks Inspection and the External Surfaces Monitoring programs along with the applicable AMR items associated with them, the staff is not clear whether: (1) the components addressed by these AMPs clearly include both buried and underground piping (piping which is below grade and contained in a vault or other structure where it is exposed to air and where access is limited), and (2) whether such programs are being updated to incorporate lessons learned from these recent events as well as any OE from the applicant's own history.

In a letter dated May 27, 2010, the staff issued RAI B2.1.7-3 and requested that the applicant address these issues.

The staff identified this as **Open Item 3.0.3.2.4-1.**

The staff's evaluation and closure of RAI B2.1.7-3 and Open Item 3.0.3.2.4-1 are documented in LRA Section 3.0.3.2.4.

1.6 Summary of Confirmatory Items

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 assigns a unique identifying number to each confirmatory item. The staff has identified no confirmatory items for this SER.

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

- The second license condition requires the applicant to complete the commitments in the USAR supplement in accordance with Appendix A of this SER, and to notify the staff in writing when implementation of those activities required prior to the period of extended operation are complete and can be verified by NRC inspection.

- The third license condition requires: (1) adherence to requirements of American Society of Testing and Materials (ASTM) E 185-82 for all capsules in the reactor vessel that are removed and tested, (2) that changes to capsule withdrawal schedules or to storage requirements must receive prior approval of the staff, and (3) that all capsules placed in storage must be maintained for future insertion.

SECTION 2

STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW

2.1 Scoping and Screening Methodology

2.1.1 Introduction

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

LRA Section 2.1, "Scoping and Screening Methodology," describes the scoping and screening methodology used to identify the SSCs at the Kewaunee Power Station (KPS) within the scope of license renewal and the SCs subject to an AMR. The staff reviewed the scoping and screening methodology of Dominion Energy Kewaunee, Inc. (Dominion, DEK, or the applicant) to determine whether or not it meets the scoping requirements of 10 CFR 54.4(a) and the screening requirements of 10 CFR 54.21.

In developing its scoping and screening methodology for the LRA, the applicant stated the following in Section 2.1.1:

> Scoping and screening were performed consistent with the guidelines presented in NEI [Nuclear Energy Institute] 95-10, with the following clarifications:
>
> - Scoping was performed at the system/structure level. Screening was performed on a component level basis and the scoping results (intended functions, applicable scoping criteria, etc.) were then reviewed and revised as required to be consistent with the screening results.
>
> - The screening process identified in-scope passive components. The short-lived passive components that could be excluded from an AMR on the basis of a qualified life or a specified replacement time period were identified and removed from any further aging evaluation consideration.

2.1.2 Summary of Technical Information in the Application

In LRA Sections 2 and 3, the applicant provided the technical information required by 10 CFR 54.4, "Scope," and 10 CFR 54.21(a). Throughout this safety evaluation report (SER), sections are provided entitled "Summary of Technical Information in the Application," which contain summaries of information provided by the applicant in the LRA.

In LRA Section 2.1, the applicant described the process used to identify the SSCs that meet the license renewal scoping criteria under 10 CFR 54.4(a), and the process used to identify the SCs

that are subject to an AMR, as required by 10 CFR 54.21(a)(1). The applicant provided the results of the process used for identifying the SCs subject to an AMR in the following LRA sections:

(a) LRA Section 2.2, "Plant Level Scoping Results"

(b) LRA Section 2.3, "Scoping and Screening Results: Mechanical Systems"

(c) LRA Section 2.4, "Scoping and Screening Results: Structures"

(d) LRA Section 2.5, "Scoping and Screening Results: Electrical and Instrumentation and Controls Systems"

In LRA Section 3.0, "Aging Management Review Results," the applicant described its aging management results as follows:

(a) LRA Section 3.1, "Aging Management of Reactor Vessel, Internals, and Reactor Coolant System"

(b) LRA Section 3.2, "Aging Management of Engineered Safety Features Systems"

(c) LRA Section 3.3, "Aging Management of Auxiliary Systems"

(d) LRA Section 3.4, "Aging Management of Steam and Power Conversion System"

(e) LRA Section 3.5, "Aging Management of Containment, Structures, and Component Supports"

(f) LRA Section 3.6, "Aging Management of Electrical and Instrumentation and Controls"

LRA Section 4.0, "Time-Limited Aging Analyses," contains the applicant's identification and evaluation of time-limited aging analyses (TLAAs).

2.1.3 Scoping and Screening Program Review

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

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

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

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

In addition, the staff conducted a scoping and screening methodology audit at KPS, located in the Town of Carlton, Wisconsin, during the week of March 10–13, 2009. The audit focused on ensuring that the applicant had developed and implemented adequate guidance to conduct the scoping and screening of SSCs in accordance with the methodologies described in the LRA and the requirements of the Rule. The staff reviewed implementation of the project-level guidelines and reports describing the applicant's scoping and screening methodology. The staff conducted detailed discussions with the applicant on the implementation and control of the license renewal program and reviewed the administrative control documentation used by the applicant during the scoping and screening process, the quality practices used by the applicant to develop the LRA, and the training and qualification of the LRA development team.

The staff evaluated the quality attributes of the applicant's aging management program (AMP) activities described in LRA Appendix A, "USAR Supplement," and LRA Appendix B, "Aging Management Programs." On a sampling basis, the staff performed a system review of the auxiliary feedwater, safety injection, spent fuel pool cooling, and the turbine building, including a review of the scoping and screening results reports and supporting design documentation used to develop the reports. The purpose of the staff's review was to ensure that the applicant had appropriately implemented the methodology outlined in the administrative controls and to verify that the results are consistent with the current licensing basis (CLB) documentation.

2.1.3.1 Implementing Procedures and Documentation Sources Used for Scoping and Screening

The staff reviewed the applicant's scoping and screening implementing procedures as documented in the scoping and screening methodology audit trip report, dated July 13, 2009 (Agencywide Document Access and Management System (ADAMS) Accession No. ML091900081), to verify that the process used to identify SCs subject to an AMR was consistent with the SRP-LR. Additionally, the staff reviewed the scope of CLB documentation sources and the process used by the applicant to ensure that the applicant's commitments, as documented in the CLB and relative to the requirements of 10 CFR 54.4 and 10 CFR 54.21, were appropriately considered and that the applicant adequately implemented its 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, the applicant addressed the following information sources for the license renewal scoping and screening process:

- updated safety analysis report (USAR)
- maintenance rule program documentation
- enterprise maintenance planning and control (EMPAC) equipment database
- system descriptions
- design-basis documents (DBDs)
- 10 CFR 54.4(a)(2) report
- 10 CFR 54.4(a)(3) reports
- drawings
- project design manual
- design change documentation
- technical reports
- engineering correspondence

2.1.3.1.2 Staff Evaluation

Scoping and Screening Implementing Procedures. The staff reviewed the applicant's scoping and screening methodology implementing procedures, including license renewal guidelines, documents, and reports, as documented in the audit report, to ensure the guidance is consistent with the requirements of the Rule, the SRP-LR, and NEI 95-10. The staff finds that the overall process used to implement the 10 CFR Part 54 requirements described in the implementing procedures and AMRs is consistent with the Rule, the SRP-LR, and industry guidance.

The applicant's implementing procedures contain guidance for determining plant SSCs within the scope of the Rule, and for determining which SCs within the scope of license renewal are subject to an AMR. During the review of the implementing procedures, the staff focused on the consistency of the detailed procedural guidance with information in the LRA, including the implementation of U.S. Nuclear Regulatory Commission (NRC) staff positions documented in the SRP-LR, and the information in the applicant's responses, dated May 28, 2009, to the staff's requests for additional information (RAIs) dated April 30, 2009.

After reviewing the LRA and supporting documentation, the staff determined that the scoping and screening methodology instructions are consistent with the methodology description provided in LRA Section 2.1. The applicant's methodology is sufficiently detailed to provide concise guidance on the scoping and screening implementation process to be followed during the LRA activities.

Sources of CLB Information. The staff reviewed the scope and depth of the applicant's CLB review to verify that the methodology is sufficiently comprehensive to identify SSCs within the scope of license renewal, as well as SCs requiring an AMR. Pursuant to 10 CFR 54.3(a), the CLB is the set of NRC requirements applicable to a specific plant and a licensee's written commitments for ensuring compliance with, and operation within, applicable NRC requirements and the plant-specific design bases that are docketed and in effect. The CLB includes applicable NRC regulations, orders, license conditions, exemptions, technical specifications, and design-basis information (documented in the most recent USAR). The CLB also includes licensee commitments remaining in effect that were made in docketed licensing

correspondence, such as licensee responses to NRC bulletins, generic letters, and enforcement actions, and licensee commitments documented in NRC safety evaluations or licensee event reports.

During the audit, the staff reviewed pertinent information sources used by the applicant including the USAR, DBDs, maintenance rule information, and license renewal drawings. In addition, the applicant's license renewal process identified additional sources of plant information pertinent to the scoping and screening process, including the EMPAC equipment database, system descriptions, the 10 CFR 54.4(a)(2) report, 10 CFR 54.4(a)(3) reports, plant drawings, project design manual, design change documentation, technical reports, and engineering correspondence. The staff confirmed that the applicant's detailed license renewal program guidelines specified the use of the CLB source information in developing scoping evaluations.

The EMPAC equipment database, USAR, and DBDs were the applicant's primary repository for system identification and component safety classification information. During the audit, the staff reviewed the applicant's administrative controls for the EMPAC equipment database, DBDs, and other information sources used to verify system information. These controls are described and implementation is governed by plant administrative procedures. Based on a review of the administrative controls, and a sample of the system classification information contained in the applicable KPS documentation, the staff concludes that the applicant has established adequate measures to control the integrity and reliability of KPS system identification and safety classification data and, therefore, the staff concludes that the information sources used by KPS during the scoping and screening process provided a sufficiently controlled source of system and component data to support scoping and screening evaluations.

During the staff's review of the applicant's CLB evaluation process, the applicant explained the incorporation of updates to the CLB and the process used to ensure those updates are adequately incorporated into the license renewal process. The staff 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 guidance contained in the SRP-LR.

In addition, the staff reviewed the implementing procedures and results reports used to support identification of SSCs that the applicant relied on to demonstrate compliance with the safety-related criteria, nonsafety-related criteria, and the regulated events criteria pursuant to 10 CFR 54.4(a). The applicant's license renewal program guidelines provided a listing of documents used to support scoping and screening evaluations. The staff finds these design documentation sources to be useful for ensuring that the initial scope of SSCs identified by the applicant was consistent with the plant's CLB.

2.1.3.1.3 Conclusion

Based on its review of LRA Section 2.1, the detailed scoping and screening implementing procedures, and the results from the scoping and screening audit, the staff concludes that the applicant's scoping and screening methodology considers CLB information in a manner consistent with the Rule, the SRP-LR, and NEI 95-10 guidance 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 quality assurance controls used by the applicant to ensure that scoping and screening methodologies used in the LRA were adequately implemented. The applicant applied the following quality assurance processes during the LRA development:

- The applicant developed written plans and procedures to direct implementation of the scoping and screening methodology, control LRA development, and describe training requirements and documentation.
- The applicant considered pertinent issues in previous LRAs and corresponding RAIs to determine the applicability to the KPS LRA.
- The LRA was reviewed by industry peers, Dominion Power internal assessment teams, and the site facility safety review committee prior to submittal to the NRC.
- The applicant addressed comments received through the assessment process and managed them through peer and management review.
- The applicant maintains a document modification request database which tracks requests and changes made to license renewal documents and drawings. Proposed changes were reviewed by a minimum of three personnel prior to the change being made.

The staff reviewed the applicant's written procedures and documentation of assessment activities and determined that the applicant had developed adequate procedures to control the LRA development and assess the results of the activities.

2.1.3.2.2 Conclusion

On the basis of its review of pertinent LRA development guidance, discussion with the applicant's license renewal staff, and a review of the applicant's documentation of the activities performed to assess the quality of the LRA, the staff concludes that the applicant's quality assurance activities meet current regulatory requirements and provide assurance that LRA development activities were performed in accordance with the applicant's license renewal program requirements.

2.1.3.3 Training

2.1.3.3.1 Staff Evaluation

The staff reviewed the applicant's training process to ensure the guidelines and methodology for the scoping and screening activities were applied in a consistent and appropriate manner. As outlined in the implementing procedures, the applicant requires training for all personnel participating in the development of the LRA and uses only trained and qualified personnel to prepare the scoping and screening implementing procedures.

The training included the following activities:

- Required training and documentation for personnel participating in the LRA development was outlined in the applicant's license renewal project guideline.
- Training materials included the applicant's project guidelines; pertinent industry documents; 10 CFR Part 54 and its statement of considerations; NEI 95-10; Regulatory Guide (RG) 1.188; SRP-LR; and NUREG-1801, "Generic Aging Lessons Learned (GALL) Report."
- License renewal staff was required to attend an orientation session on license renewal.
- Applicant personnel were required to complete and actively participate in industry operating experience (OE) training while participating in LRA related activities for KPS.
- Qualification and training records and a checklist served as documentation for each individual's completed license renewal training.

The staff reviewed the applicant's written procedures and, on a sampling basis, reviewed completed qualification and training records and completed checklists for some of the applicant's license renewal personnel. The staff determined that the applicant had developed and implemented adequate procedures to control the training of personnel performing LRA activities.

2.1.3.3.2 Conclusion

On the basis of discussions with the applicant's license renewal project personnel responsible for the scoping and screening process and its review of selected documentation in support of the process, the staff concludes that the applicant's personnel are adequately trained to implement the scoping and screening methodology described in the applicant's implementing procedures and the LRA.

2.1.3.4 Scoping and Screening Program Review Conclusion

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

2.1.4 Plant Systems, Structures, and Components Scoping Methodology

LRA Section 2.1 described the applicant's methodology used to scope SSCs pursuant to the requirements of the 10 CFR 54.4(a) criteria. The LRA states that the scoping process categorized the entire plant in terms of SSCs and commodity groups with respect to license renewal. According to the LRA, SSC and commodity group functions were identified and evaluated against criteria provided in 10 CFR 54.4(a)(1), (2), and (3) to determine whether or not the item should be considered within the scope of license renewal. The applicant asserted that the scoping process identified SSCs that: (1) are safety-related and perform or support an

intended function for responding to a design-basis event (DBE); (2) are nonsafety-related but their failure could prevent accomplishment of a safety-related function; or (3) support a specific requirement for one of the five regulated events applicable to license renewal. LRA Section 2.1.1, "Introduction," states that the scoping methodology used by KPS is consistent with the guidance by the industry in NEI 95-10.

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 2.1.2.1, "10 CFR 54.4(a)(1) – Safety-Related," states:

> 10 CFR 54.4(a)(1) requires that plant SSCs within the scope of license renewal include safety-related SSCs, which are those relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49 (b)(1)) to ensure the following functions:
>
> (i) The integrity of the reactor coolant pressure boundary;
>
> (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
>
> (iii) The capability to prevent or mitigate the consequences of accidents which could result in potential off-site exposures comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11, as applicable.
>
> Safety-related components at Kewaunee are designated QA [quality assurance] Type 1. The mechanical and electrical components classified as QA Type 1 on the station drawings and/or in the Asset Management module of the EMPAC equipment database were included in the scope of license renewal under 10 CFR 54.4(a)(1). The structures (or portions of structures) identified as Nuclear Safety Design Class I in the USAR Appendix B, Table B2.1 were also included within the scope of license renewal under 10 CFR 54.4(a)(1). However, because of the vintage of the plant, it was recognized that nonsafety-related SSCs had been credited for mitigating design-basis events that were not required to be considered in the original plant design basis. Therefore, to ensure the scoping criteria of 10 CFR54.4(a) were met, these nonsafety-related components were included in-scope under 10 CFR 54.4(a)(2) or (a)(3) as appropriate.

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 DBE to ensure the following functions: (1) the integrity of the reactor coolant pressure boundary, (2) the ability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to those referred to in 10 CFR Parts 50.34(a)(1), 50.67(b)(2), or 100.11.

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

> The set of DBEs as defined in the Rule is not limited to Chapter 15 (or equivalent) of the USAR. 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 [HELB]. Information regarding DBEs as defined in 10 CFR 50.49(b)(1) may be found in any chapter of the facility USAR, the Commission's regulations, NRC orders, exemptions, or license conditions within the CLB. These sources should also be reviewed to identify SSCs relied upon to remain functional during and following DBEs (as defined in 10 CFR 50.49(b)(1)) to ensure the functions described in 10 CFR 54.4(a)(1).

During the audit, the applicant stated that it evaluated the types of events listed in NEI 95-10 (i.e., anticipated operational occurrences, design-basis accidents (DBAs), external events, and natural phenomena) that were applicable to KPS. The staff reviewed the applicant's basis documents which described all design-basis conditions in the KPS CLB and addressed all events defined by 10 CFR 50.49(b)(1) and 10 CFR 54.4(a)(1). The KPS USAR and basis documents discussed events such as internal and external flooding, tornados, and missiles. The staff concludes that the applicant's evaluation of DBEs was consistent with the SRP-LR.

The applicant performed scoping of SSCs for the 10 CFR 54.4(a)(1) criterion in accordance with the license renewal implementing procedures, which provide guidance for the preparation, review, verification, and approval of the scoping evaluations to ensure the adequacy of the results of the scoping process. The staff reviewed the implementing procedures governing the applicant's evaluation of safety-related SSCs, and sampled the applicant's reports of the scoping results to ensure that the applicant applied the methodology in accordance with the implementing procedures. In addition, the staff discussed the methodology and results with the applicant's personnel who were responsible for these evaluations.

The staff reviewed the applicant's evaluation of the Rule and CLB definitions pertaining to 10 CFR 54.4(a)(1) and determined that the KPS CLB definition quality assurance (QA) Class 1 met the definition of safety-related specified in the Rule. The staff reviewed a sample of the license renewal scoping results for the: (1) auxiliary feedwater, (2) safety injection, (3) spent fuel pool cooling, and (4) turbine building, to provide additional assurance that the applicant adequately implemented its scoping methodology with respect to 10 CFR 54.4(a)(1). The staff verified that the applicant developed the scoping results for each of the sampled systems consistently with the methodology, identified the SSCs credited for performing intended functions, and adequately described the basis for the results, as well as the intended functions. The staff also confirmed that the applicant had identified and used pertinent engineering and licensing information to identify the SSCs required to be within the scope of license renewal in accordance with the 10 CFR 54.4(a)(1) criteria.

2.1.4.1.3 Conclusion

On the basis of its review of systems (on a sampling basis), discussions with the applicant, and review of the applicant's scoping process, the staff concludes that the applicant's methodology for identifying systems and structures is consistent with the SRP-LR and 10 CFR 54.4(a)(1) and, 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 2.1.2.2, "10 CFR 54.4(a)(2) – Nonsafety-Related Affecting Safety-Related," states:

> 10 CFR 54.4(a)(2) requires that plant SSCs within the scope of license renewal include non-safety-related SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified for 10 CFR 54.4(a)(1). A review of the USAR, OE, and CLB documentation was performed to develop the guidelines and provide the sources of information to be used as input to scoping and screening. This information was augmented by plant walkdowns. The results, discussed in Section 2.1.3.6, 10 CFR 54.4(a)(2) Report, identified nonsafety-related SSCs for inclusion within the scope of license renewal for 10 CFR 54.4(a)(2).

LRA Section 2.1.3.6, "10 CFR 54.4(a)(2) Report," states:

> A review of the USAR, operating experience, and documents indicated in Section 2.1.3.1 through Section 2.1.3.5, was performed to identify the nonsafety-related SSCs whose failure could prevent satisfactory accomplishment of the SR [safety-related] functions identified in 10 CFR 54.4(a)(1). The review encompassed the design-basis events and hypothetical failures considered within these documents, and included the nonsafety-related SSCs that have been credited for mitigating design-basis events as defined in 10 CFR 50.49(b)(1). The NS [nonsafety-related] SSCs already included within the scope of license renewal for 10 CFR 54.4(a)(3) were not identified for inclusion under 10 CFR 54.4(a)(2). The results of the review were incorporated into a 10 CFR 54.4(a)(2) Report, which was used as input to scoping and screening. The report identified the following general categories of NS SSCs for inclusion within the scope of license renewal for 10 CFR 54.4(a)(2):
>
> (1) NS components containing liquids or steam that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC.
>
> (2) NS piping that is attached to SR piping and that is seismically designed and supported up to the first equivalent anchor point beyond the SR/NS boundary.
>
> (3) Supports for NS SSCs that are in close proximity to SR SSCs such that support system failure during a seismic event could result in adverse interaction with SR SSCs. (Seismic (II/I).
>
> (4) Other evaluated design-basis events [HELBs, internal flooding, external flooding, and missiles]

LRA Section 2.1.3.6.1, "Spatially Oriented NS-SSCs Not Directly Attached to SR-SSCs," states:

> There are two options for scoping spatially oriented components in NEI 95-10: a mitigative option or a preventative option. The components for both options have been included in scope for 10 CFR 54.4(a)(2). Non-safety-related mitigative features consist of jet impingement shields, spray shields, pipe whip restraints, seismic supports, and flood barriers. They are evaluated as commodities in Section 3.5, Aging Management of Containment, Structures and Component Supports. NS SSCs are included in-scope if they were spatially oriented such that their failure could prevent the satisfactory accomplishment of a SR-function of SR-SSC, even if a mitigative feature did exist.
>
> Non-safety-related fluid-containing components (e.g., piping, valves, heat exchangers, relief valves discharge piping, etc.) contain or have the potential to contain liquid or steam. These fluid-containing components may spray, leak or physically impact safety-related components. Additionally, fluid-containing components may contain contaminants, which could result in internal age-related degradation, or reach temperatures below the dew point of the air surrounding the component, which may produce intermittent wetting conditions on the external surfaces and cause age-related degradation. Therefore, NS-fluid-containing components spatially oriented near SR-components were evaluated to determine if they met the criteria defined in 10 CFR 54.4(a)(2). When determining the scoping boundary for NS-components, the following criteria were applied within the buildings that house SR-components:
>
> (1) NS components containing or potentially containing high-energy fluid (i.e., >200°F and >275 psig) were included within the scope of license renewal regardless of their location within the building.
>
> (2) NS-components containing or potentially containing moderate or low energy fluids (i.e., ≤200°F or ≤275 psig) were also included in license renewal scope unless both 2(a) and 2(b) below applied:
>
> (a) The NS component could not directly leak or spray on SR components in the immediate area because one of the following conditions existed:
>
> - The NS component was located in a room, cubicle, enclosure, tunnel, or enclosed corridor, which did not contain any SR mechanical or electrical components.
> - The NS component was located in an open space, but was separated from SR mechanical or electrical components by solid physical barriers such as walls, floors, ceilings and/or major plant equipment (e.g., the main condenser).
> - The NS component was located in an open space, was maintained at or near atmospheric pressure, and there were no SR mechanical or electrical components located within the collapse envelope of the NS component.

(b) The fluid contents of the NS components could not flow from the area through doorways, grating, or floor penetrations, and then drain or drip on or flood SR mechanical or electrical components in adjacent areas, unless an analysis demonstrated that the SR components would not be adversely impacted.

For components included in-scope for spatial orientation, the license renewal boundary would normally extend to:

- A wall or floor of the SR area. If the wall or floor was not shown on the system P&ID [piping and instrumentation diagram], then a note was used to denote the boundary on the license renewal drawing.
- A NS component that was located within the SR area and that was excluded from scope under item 2 above.
- A convenient location (preferably the first valve, tank, etc.) outside the SR area.

LRA Section 2.1.3.6.2, "NS Piping Attached to SR Piping," states:

Section B.7.2 of the USAR states, "All Class I piping was isolated from piping for which Class I analysis was not required by structural anchors. Non-Class I pipe which was connected to Class I pipe was analyzed as Class I pipe up to a structural anchor which provided a means for isolating the Class I piping from the non-Class I piping, or up to an equipment connection when isolation by structural anchor was not practical." A structural anchor is a device that ensures forces and moments are restrained in each of the three orthogonal directions. At Kewaunee, the piping systems were designed and constructed such that structural anchors were primarily used to provide the restraints.

The NS piping up to and including the structural anchors were included in scope per 10 CFR 54.4(a)(2). In the event an equipment connection is credited for providing restraint in one or more of the orthogonal directions, the credited component and its associated supports were included in the scope of license renewal per 10 CFR 54.4(a)(2). The supports were evaluated as a commodity in Section 2.4.3 and the mechanical components were evaluated with their respective system in Section 2.3.

The extent of NS piping included in the scope of license renewal was generally determined from controlled drawings. In the event that a structural anchor used in a seismic analysis for a SR-piping system was not identified on those drawings, the bounding scoping methodology described in Appendix F, Section 4, paragraphs (a) through (f) of NEI 95-10 was applied. In some cases the bounding approach was overly conservative and it was deemed appropriate to limit the additional scope for a piping system by specifically identifying structural anchors via a review of isometric drawings. In a limited number of cases, where isometric drawings were not available, plant walkdowns were performed by experienced personnel to determine the location of the structural anchors. Mechanical components that are included in-scope per these criteria are evaluated with their respective systems and supports that are included in-scope per this criteria are

evaluated as a commodity. Additionally, NS structures in which these NS piping segments and associated pipe supports are located were also included within the scope of license renewal in that they provide structural support and shelter for these components.

2.1.4.2.2 Staff Evaluation

Pursuant to 10 CFR 54.4(a)(2), the applicant must consider all nonsafety-related SSCs whose failure could prevent the satisfactory accomplishment of safety-related functions for SSCs relied on to remain functional during and following a DBE to ensure: (1) the integrity of the reactor coolant pressure boundary, (2) the ability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to those referred to in 10 CFR Parts 50.34(a)(1), 50.67(b)(2), or 100.11.

RG 1.188, Revision 1 endorses the use of NEI 95-10, Revision 6. NEI 95-10 discusses the staff's position on 10 CFR 54.4(a)(2) scoping criteria, including nonsafety-related SSCs typically identified in the CLB; consideration of missiles, cranes, flooding, and HELBs; nonsafety-related SSCs connected to safety-related SSCs; nonsafety-related SSCs in proximity to safety-related SSCs; and mitigative and preventative options related to nonsafety-related and safety-related SSCs interactions.

In addition, the staff's position (as discussed in NEI 95-10, Revision 6) is that applicants should not consider hypothetical failures, but rather should base their evaluation on the plant's CLB, engineering judgment and analyses, and relevant OE. NEI 95-10 further describes OE as all documented plant-specific and industrywide experience that can be used to determine the plausibility of a failure. Documentation would include NRC generic communications and event reports, plant-specific condition reports, industry reports such as safety operational event reports, and engineering evaluations. The staff reviewed LRA Section 2.1.3.6, in which the applicant described the scoping methodology for nonsafety-related SSCs pursuant to 10 CFR 54.4(a)(2). In addition, the staff reviewed the applicant's implementing document and results report which documented the guidance and corresponding results of the applicant's scoping review pursuant to 10 CFR 54.4(a)(2). The applicant stated that it performed the review in accordance with the guidance contained in NEI 95-10, Revision 6, Appendix F.

Nonsafety-Related SSCs Directly Connected to Safety-Related SSCs. The staff confirmed that nonsafety-related SSCs, directly connected to SSCs, had been reviewed by the applicant for inclusion within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). The staff reviewed the evaluating criteria discussed in LRA Section 2.1.3.6.2, "NS Piping Attached to SR Piping," and the applicant's 10 CFR 54.4(a)(2) implementing document. The applicant had reviewed the safety-related to nonsafety-related interfaces for each mechanical system in order to identify the nonsafety-related components located between the safety to nonsafety-related interface and license renewal structural boundary.

The staff determined that, in order to identify the nonsafety-related SSCs connected to safety-related SSCs and required to be structurally sound to maintain the integrity of the safety-related SSCs, the applicant used a combination of the following to identify the portion of nonsafety-related piping systems to include within the scope of license renewal:

- seismic anchors
- equivalent anchors identified by walkdowns
- bounding conditions described in NEI 95-10, Appendix F (base mounted component, flexible connection, or inclusion of the entire piping run)

Nonsafety-Related SSCs with the Potential for Spatial Interaction with Safety-Related SSCs. The staff confirmed that nonsafety-related SSCs with the potential for spatial interaction with safety-related SSCs had been reviewed by the applicant for inclusion within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). The staff reviewed the evaluating criteria discussed in LRA Sections 2.1.3.6.1, "Spatially Oriented NS SSCs Not Directly Attached to SR SSCs," and 2.1.3.6.3, "Seismic II/I," and the applicant's 10 CFR 54.4(a)(2) implementing procedure. The applicant had considered physical impacts (pipe whip, jet impingement), harsh environments, flooding, spray, and leakage when evaluating the potential for spatial interactions between nonsafety-related systems and safety-related SSCs. The staff further confirmed that the applicant used a spaces approach to identify the portions of nonsafety-related systems with the potential for spatial interaction with safety-related SSCs. The spaces approach focused on the interaction between nonsafety-related and safety-related SSCs that are located in the same space, which was defined for the purposes of the review as a structure containing active or passive safety-related SSCs.

LRA Section 2.1.3.6.4, "Other Evaluated Design-Basis Events," and the applicant's implementing document state that the applicant had used a mitigative approach when considering the impact of nonsafety-related SSCs on safety-related SSCs for occurrences discussed in the CLB. The staff reviewed the applicant's CLB information, primarily contained in the USAR, regarding missiles, flooding, and HELBs. The staff determined that the applicant had included the features designed to protect safety-related SSCs from the effects of these occurrences through the use of mitigating features such as walls, curbs, dikes, doors, whip restraints, protective covers, guard pipes, and jet impingement shields. The applicant had also used a mitigative approach to exclude spaces which did not contain safety-related SSCs by including the mitigative features such as walls, floors, doors, and dikes, which would mitigate the interaction of spray, leakage, or flooding on safety-related SSCs located outside of the excluded space. The staff confirmed that the applicant had included the mitigating features within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

LRA Sections 2.1.3.6.1 and 2.1.3.6.3 and the applicant's implementing document state that the applicant had used a preventive approach which considered the impact of nonsafety-related SSCs contained in the same space as safety-related SSCs. The staff determined that the applicant had evaluated all nonsafety-related SSCs containing liquid or steam and located in spaces containing safety-related SSCs. The applicant used a spaces approach to identify the nonsafety-related SSCs which were located within the same space as safety-related SSCs. For the purpose of the scoping review, a space was defined as a structure containing active or passive safety-related SSCs. In addition, the staff determined that, following the identification of the applicable mechanical systems, the applicant identified their corresponding structures for

potential spatial interaction, based on a review of the CLB and plant walkdowns. Nonsafety-related systems and components that contain liquid or steam, and are located inside structures that contain safety-related SSCs, were included within the scope of license renewal, unless it was in an excluded space. The staff also determined that based on plant and industry OE, the applicant excluded the nonsafety-related SSCs containing air or gas from the scope of license renewal, with the exception of portions that are attached to safety-related SSCs and required for structural support. The staff confirmed that those nonsafety-related SSCs determined to contain liquid or steam, and located within a space containing safety-related SSCs, were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

The staff reviewed the implementation of LRA Section 2.1.3.6.1 which states, in part, that nonsafety-related components containing or potentially containing moderate or low-energy fluids (i.e., less than or equal to 200 °F or less than or equal to 275 pounds per square inch (psig)) were also included within the scope of license renewal unless both 2(a) and 2(b) below applied:

(a) The nonsafety-related component could not directly leak or spray on safety-related components in the immediate area because one of the following conditions existed:

- The nonsafety-related component was located in a room, cubicle, enclosure, tunnel, or enclosed corridor, which did not contain any safety-related mechanical or electrical components.
- The nonsafety-related component was located in an open space, but was separated from safety-related mechanical or electrical components by solid physical barriers such as walls, floors, ceilings, and/or major plant equipment (e.g., the main condenser).
- The nonsafety-related component was located in an open space, was maintained at or near atmospheric pressure, and there were no safety-related mechanical or electrical components located within the collapse envelope of the nonsafety-related component.

(b) The fluid contents of the nonsafety-related components could not flow from the area through doorways, grating, or floor penetrations, and then drain, drip on, or flood safety-related mechanical or electrical components in adjacent areas, unless an analysis demonstrated that the safety-related components would not be adversely impacted.

During the scoping and screening methodology audit, the staff performed a walkdown of two nonsafety-related systems in the proximity of safety-related SSCs which were not included within the scope of license renewal based on the concept of the "collapse envelope."

The staff determined that additional information would be required to complete the review of the applicant's scoping methodology. RAI 2.1-1, dated April 30, 2009, states that the staff determined that the term "collapse envelope" is not addressed in NEI 95-10, Appendix F, as a basis for not including fluid-filled nonsafety-related SSCs, in the proximity of safety-related SSCs, within the scope of license renewal. The staff requested that the applicant provide a discussion which states whether or not an exception was taken to the guidance of NEI 95-10 and provide the basis for the use of a "collapse envelope" for not including nonsafety-related SSCs, within the proximity of safety-related SSCs, within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

The applicant responded to RAI 2.1-1 by letter dated May 28, 2009, which states that the concept of the "collapse envelope" was limited to the evaluation of tanks at atmospheric pressure, addressed the area directly beneath and around the tank, and evaluated the effects of spray and leakage due to the failure of the tank pressure boundary. The RAI response states that the "collapse envelope" criterion was established to account for the potential leakage from tanks at atmospheric pressure that could project outward, due to the static head associated with the height of fluid in the tank, and potentially affect safety-related SSCs. The RAI states that the applicant had evaluated each tank and considered the range of leakage or spray that could result from a failure of the tank pressure boundary and that the applicant had determined that SSCs could not be directly impacted by spray from a tank wall failure. In addition, the RAI response states that the applicant had evaluated the potential effects of the flooding of leaked fluid on safety-related SSCs and determined that the effects of flooding would be mitigated by walls, floors, curbing, berms, sumps, and elevated equipment pads, all of which were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) as mitigative features.

The staff determined that the applicant had performed an evaluation to determine that the nonsafety-related tanks, not included within the scope of license renewal on the basis of the concept of a "collapse envelope," would not affect safety-related SSCs due to spray resulting from a tank wall failure. In addition, the staff determined that the applicant had appropriately included features which would mitigate the effects of the flooding of leaked fluids from a tank failure within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). The issue addressed by RAI 2.1-1 is closed.

2.1.4.2.3 Conclusion

On the basis of its review of the applicant's scoping process, discussions with the applicant, and review of the information provided in the response to RAI 2.1-1, the staff concludes that the applicant's methodology for identifying and including nonsafety-related SSCs that could affect the performance of safety-related SSCs within the scope of license renewal is consistent with the scoping criteria of 10 CFR 54.4(a)(2) and, therefore, is acceptable.

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

2.1.4.3.1 Summary of Technical Information in the Application

Scoping for Regulated Events. LRA Section 2.1.2.3, "10 CFR 54.4(a)(3) – Regulated Events," states:

> 10 CFR 54.4(a)(3) requires that plant SSCs within the scope of license renewal include SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63). For each of these regulated events, a report was prepared to provide input into the scoping and screening processes. These reports (1) identified the systems and structures that are relied on for each of the regulated events, and/or (2) either identified specific components, or provided a reference to the documentation to be used as input for screening.

Fire Protection. LRA Section 2.1.3.7.1, "Fire Protection," states:

The Fire Protection Program Plan was developed to maintain compliance with 10 CFR 50.48 and Appendix R to 10 CFR 50 by meeting the following objectives in fire areas important to safety:

- Reduce the likelihood of fires
- Promptly detect and extinguish fires that do occur
- Maintain safe-shutdown capability if a fire does occur
- Prevent release of a significant amount of radioactive material if a fire does occur

A review was performed to identify the specific SSCs that fall within the scope of license renewal for fire protection, including the SSCs relied upon in the Fire Protection Program Plan. As a result of that review, the following features and equipment were included within the scope of license renewal for fire protection:

- Fire detection and suppression equipment
- Passive fire protection features such as reactor coolant pump lube oil collection components, dikes, curbs, and drains
- Fire-rated assemblies such as walls, floors, ceilings, cable tray enclosures, and other fire barriers
- Fire-rated penetrations assemblies (including fire doors, fire dampers, cable, piping, and ventilation duct penetration seals)
- Manual firefighting equipment (hydrants, hose stations, extinguishers, etc.)
- Ventilation equipment (smoke removal)
- Emergency lighting (fire safe shutdown and life safety lighting)
- Communications equipment (fire brigade and fire safe shutdown)
- Safe shutdown equipment

The screening methodology was applied to the post-fire repair equipment that is maintained in storage.

Environmental Qualification (EQ). LRA Section 2.1.3.7.2 states:

> The EQ program was developed to maintain compliance with 10 CFR 50.49. The program applies to the following electrical equipment that is important to safety and is located in a harsh environment:
>
> - Safety-related electrical equipment that is relied on to remain functional during and following a design-basis accident.
> - Nonsafety-related electrical equipment whose failure, under postulated environmental conditions, could prevent accomplishment of safety functions of the safety-related electrical equipment identified above.
> - Category 1 and 2 post-accident monitoring equipment described in response to Regulatory Guide 1.97.
>
> DOR [Division of Operating Reactors] Guidelines delineated in Enclosure 4 of IE Bulletin 79-01B (Reference 2.1-4) and IEEE [Institute of Electrical and Electronics Engineers] 323-1974 (Reference 2.1-5) are the qualification basis.
>
> The electrical components that fall within the scope of the EQ program are identified in the Asset Management module of EMPAC system equipment database (Section 2.1.3.3). Components that provide a barrier between mild and harsh areas of the plant, such as doors, penetrations, seals, dampers, walls, and floors, while not in the EQ program, were also included within the scope of license renewal.

Pressurized Thermal Shock (PTS). LRA Section 2.1.3.7.3, "Pressurized Thermal Shock," states:

> 10 CFR 50.61 requires that each licensee project a value for the reference temperature for PTS for the limiting reactor vessel materials for end-of-life neutron fluence. The licensee is also required to implement those flux reduction programs, plant modifications and/or operational changes that are reasonable to avoid exceeding the pressurized thermal shock screening criteria set forth in 10 CFR 50.61. The evaluation of reactor pressure vessel material RT_{PTS} is provided in Section 4.2, Reactor Vessel Neutron Embrittlement. [Time Limited Aging Analyses]

Anticipated Transient Without Scram (ATWS). LRA Section 2.1.3.7.4, "Anticipated Transient Without Scram," states:

> Plant modifications were implemented in response to 10 CFR 50.62 which require each pressurized water reactor to have equipment, from sensor to final actuation device, that is diverse from the reactor trip system. The ATWS Mitigating System Actuating Circuitry design and the Diverse Scram system, described in USAR Section 14.1.12, fulfills the NRC requirements addressed in 10 CFR 50.62 that provides the following initiations:
>
> 1 Initiation of auxiliary feedwater flow
>
> 2 Initiation of a turbine trip, and

3 Interruption of power to the control rods.

The equipment is required to reduce the likelihood of failure to shut down the reactor following anticipated transients and to mitigate the consequences of an ATWS event. All ATWS equipment/components were included within the scope of license renewal.

Station Blackout. LRA Section 2.1.3.7.5, "Station Blackout," states:

> Plant modifications and procedure changes were implemented in response to 10 CFR 50.63 to enable the station to withstand and recover from a station blackout (SBO) of a specified duration (4 hours based on the Kewaunee parameters). The Kewaunee required functions to cope with an SBO event are described in USAR Section 8.2.4. Recovery includes the ability to achieve and maintain hot shutdown. The SSCs required for compliance with 10 CFR 50.63 were identified in a regulated event report which was used as input to the scoping and screening processes. The in-scope SSCs include the TSC [technical support center] diesel generator, its support systems, the TSC Diesel Generator Room, and other equipment relied upon to mitigate an SBO event.

2.1.4.3.2 Staff Evaluation

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

The staff confirmed that the applicant's implementing procedures describe the process for identifying systems and structures within the scope of license renewal pursuant to 10 CFR 54.4(a)(3). The procedures state that all mechanical systems and structures that perform functions addressed in 10 CFR 54.4(a)(3) are to be included within the scope of license renewal and that the results are to be documented in scoping results reports. The staff determined that the results reports reference the information sources used for determining the systems and structures credited for compliance with the events listed in the specified regulations.

Fire Protection. The staff determined that the applicant's implementing procedures indicated that it had included systems and structures within the scope of license renewal required for post-fire safe shutdown, fire detection suppression, and commitments made to Appendix A to Branch Technical Position (BTP), Auxiliary and Power Conversion Systems Branch (APCSB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976," issued May 1976. The applicant noted that it had considered CLB documents to identify systems and structures within the scope of license renewal. These documents included the USAR, the Appendix R design description and composite flow diagrams, the Fire Protection Program Plan, and other KPS source documents. The staff reviewed, on a sampling basis, the scoping results in conjunction with the LRA and CLB information to validate the methodology for including the proper systems and structures within the scope of license renewal. The sample review showed that the scoping results include systems and structures that perform intended functions to meet 10 CFR 50.48 requirements. Based on its review of the CLB documents and the sample review, the staff determined that the applicant's scoping methodology was adequate

for including SSCs credited in performing fire protection functions within the scope of license renewal.

Environmental Qualification. The staff confirmed that the applicant's implementing procedures required the inclusion of safety-related electrical equipment, nonsafety-related electrical equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions of the safety-related equipment, and certain post-accident monitoring equipment, as defined in 10 CFR 50.49(b)(1), (b)(2), and (b)(3). The staff determined that the applicant used the plant equipment database to identify SCs necessary to meet the requirements of 10 CFR 50.49. The staff reviewed the LRA, implementing procedures, the EQ master list, and scoping results to verify that the applicant had identified SSCs within the scope of license renewal. Based on its review, the staff determined that the applicant's scoping methodology was adequate for identifying EQ SSCs within the scope of license renewal.

Pressurized Thermal Shock. The staff determined that the applicant's scoping methodology required the applicant to review the activities performed to meet 10 CFR 50.61, to identify SSCs within the scope of license renewal pursuant to 10 CFR 54.4(a)(3). The staff reviewed the basis document and the implementing procedure and determined that the methodology was appropriate for identifying SSCs with functions credited for complying with the PTS regulation and within the scope of license renewal. Accordingly, the staff finds that the scoping results included the systems and structures that perform intended functions to meet the requirements of 10 CFR 50.61. The staff determined that the applicant's scoping methodology was adequate for including SSCs credited in meeting PTS requirements within the scope of license renewal.

Anticipated Transient Without Scram. The staff determined that the applicant had identified the plant systems credited for ATWS mitigation based on review of the plant drawings, the USAR, docketed correspondence, modifications, and the plant equipment database. The staff reviewed these documents and the LRA, in conjunction with the scoping results, to validate the methodology for identifying ATWS systems and structures that are within the scope of license renewal. The staff finds that the scoping results included systems and structures that perform intended functions meeting 10 CFR 50.62 requirements. The staff, therefore, determined that the applicant's scoping methodology was adequate for identifying SSCs with functions credited for complying with the ATWS regulation.

Station Blackout. The staff determined that the applicant identified those systems and structures associated with coping and safe shutdown of the plant following an SBO event by reviewing plant-specific SBO calculations, the USAR, drawings, modifications, the plant equipment database, and plant procedures. The staff reviewed, on a sampling basis, these documents and the LRA in conjunction with the scoping results to validate the applicant's methodology. The staff determined, based on its review, that the scoping results included systems and structures that perform intended functions meeting 10 CFR 50.63 requirements. The staff determined that the applicant's scoping methodology was adequate for identifying SSCs credited in complying with the SBO regulation within the scope of license renewal.

2.1.4.3.3 Conclusion

On the basis of the sample reviews, discussion with the applicant, review of the LRA, and review of the implementing procedures and reports, the staff concludes that the applicant's methodology for identifying systems and structures meets the scoping criteria pursuant to 10 CFR 54.4(a)(3) and, therefore, is 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. LRA Section 2.1, "Introduction," states:

> The first step in the Integrated Plant Assessment involved the identification of the plant SSCs that are within the scope of license renewal and that require an aging management review. This section provides the information that meets the requirements of 10 CFR 54.21(a)(1) and (a)(2). Scoping and screening were performed consistent with the guidelines presented in NEI 95-10 (Reference 2.1-1) with the following clarifications:
>
> - Scoping was performed at the system/structure level. Screening was performed on a component level basis and the scoping results (intended functions, applicable scoping criteria, etc.) were then reviewed and revised as required to be consistent with the screening results.
>
> - The screening process identified in-scope passive components. The short-lived passive components, that could be excluded from an AMR on the basis of a qualified life or a specified replacement time period, were identified and removed from any further aging evaluation consideration.

LRA Section 2.1.2, "Application of the Scoping Criteria in 10 CFR 54.4(a)," states:

> 10 CFR 54.4(a)(1), (a)(2) and (a)(3) contain criteria for including systems, structures, and components within the scope of license renewal. The application of these criteria to plant SSCs is discussed in Section 2.1.2.1 [10 CFR 54.4(a)(1) – Safety-Related], Section 2.1.2.2 [10 CFR 54.4(a)(2) – Nonsafety-related Affecting Safety-Related], and Section 2.1.2.3 [10 CFR 54.4(a)(3) – Regulated Events].

LRA Section 2.1.4.1, "System Scoping Methodology," states:

> Mechanical and electrical system scoping was performed by applying the criteria described below. If any of the criteria were met, indicating that a system performed one or more intended functions, the system was listed as potentially within the scope of license renewal.
>
> 1 EMPAC contains data that indicates that the system contains one or more components that have been determined to meet the scoping criteria in 10 CFR 54.4.
>
> 2 The USAR, Maintenance Rule documentation, system descriptions, and/or DBDs list one or more system functions that were determined to meet the scoping criteria in 10 CFR 54.4.
>
> 3 The 10 CFR 54.4(a)(2) Report, and/or one of the 10 CFR 54.4(a)(3) regulated event reports indicate that the system performs an intended function.

4 Controlled station drawings and/or EMPAC data indicate that the system contains one or more NS fluid-containing components located in a Class I (SR) structure or in the non-Class I portion of the turbine building. In these instances, spatial interactions between NS and SR components is a potential concern.

5 Controlled station drawings indicate that the system contains NS piping that is attached to SR piping and is required to be seismically supported.

The preliminary scoping results were used as input to the screening process. The results of the completed screening process were used as input for reviewing and updating the system scoping results (intended functions, applicable scoping criteria, etc.).

LRA Section 2.1.3.8, "Drawings," states:

Mechanical flow (P&ID) drawings were marked-up to show the in-scope mechanical components that support one or more system intended functions. The marked-up drawings were subsequently used to create a set of license renewal drawings identifying the in-scope passive mechanical components. A unique style of highlighting was used to distinguish the in-scope mechanical components for each system. For each unique style of highlighting, the color blue was used to identify components included in-scope for 10 CFR 54.4(a)(1) and (a)(3), and the color orange was used to identify components included within the scope of license renewal for 10 CFR 54.4(a)(2). In addition, seismic anchors were indicated on the drawings when the anchor established the LR boundary.

Consumables. LRA Section 2.1.5.7, "Identification of Short-Lived Components and Consumables," states:

Components subject to periodic replacement, or components found to have an established qualified life (e.g., for EQ purposes), were included within the scope of license renewal, but later screened out as short-lived and did not require an aging management review. Consumables are a special class of short-lived items that can include packing, gaskets, component seals, O-rings, oil, grease, component filters, system filters, fire extinguishers, fire hoses, and air packs. Many types of consumables are part of a component such as a valve or a pump and, therefore, were identified during screening. Items potentially treatable as consumables were evaluated consistent with the information presented in NEI 95-10.

2.1.4.4.2 Staff Evaluation

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

process was completed for all systems and structures to ensure that the entire plant was addressed.

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

2.1.4.4.3 Conclusion

Based on its review of the LRA, site guidance documents, and a sampling of system scoping results reviewed during the audit, the staff concludes that the applicant's methodology for identifying SSCs within the scope of license renewal, and their intended functions, is consistent with the requirements of 10 CFR 54.4 and, therefore, is acceptable.

2.1.4.5 Mechanical Component Scoping

2.1.4.5.1 Summary of Technical Information in the Application

LRA Section 2.1.4.1, "System Scoping Methodology," states:

> Mechanical and electrical system scoping was performed by applying the criteria described below. If any of the criteria were met, indicating that a system performed one or more intended functions, the system was listed as potentially within the scope of license renewal.
>
> 1 EMPAC contains data that indicates that the system contains one or more components that have been determined to meet the scoping criteria in 10 CFR 54.4.
>
> 2 The USAR, Maintenance Rule documentation, system descriptions, and/or DBDs list one or more system functions that were determined to meet the scoping criteria in 10 CFR 54.4.
>
> 3 The 10 CFR 54.4(a)(2) Report, and/or one of the 10 CFR 54.4(a)(3) regulated event reports indicate that the system performs an intended function.
>
> 4 Controlled station drawings and/or EMPAC data indicate that the system contains one or more NS fluid-containing components located in a Class I (SR) structure or in the non-Class I portion of the Turbine Building. In these instances, spatial interactions between NS and SR components is a potential concern.
>
> 5 Controlled station drawings indicates that the system contains NS piping that is attached to SR piping and is required to be seismically supported.

The preliminary scoping results were used as input to the screening process. The results of the completed screening process were used as input for reviewing and updating the system scoping results (intended functions, applicable scoping criteria, etc.).

2.1.4.5.2 Staff Evaluation

The staff evaluated LRA Section 2.1.4.1 and the guidance in the implementing procedures and reports to perform the review of the mechanical scoping process. The project documents and reports provided instructions for identifying the evaluation boundaries. Determination of the mechanical system evaluation boundary required an understanding of system operations in support of intended functions.

The staff determined that the process was based on the review of the USAR, DBDs, the plant equipment database, NRC docketed correspondence and documents, and plant drawings. The evaluation boundaries for mechanical systems were documented on license renewal drawings that were created by marking mechanical P&IDs to indicate the components within the scope of license renewal. The staff determined that components within the evaluation boundary were reviewed to determine whether or not they perform an intended function. Intended functions were established based on whether or not a particular function of a component was necessary to support the system functions that meet the scoping criteria.

The staff reviewed the implementing documents and the CLB documents associated with mechanical system scoping and finds that the guidance and CLB source information noted above were acceptable to identify mechanical components and support structures in mechanical systems that are within the scope of license renewal. The staff conducted detailed discussions with the applicant's license renewal project personnel and reviewed documentation pertinent to the scoping process. The staff assessed whether the applicant had appropriately applied the scoping methodology outlined in the LRA and implementing procedures and whether the scoping results were consistent with CLB requirements. The staff determined that the applicant's procedure was consistent with the description provided in LRA Section 2.1.4.1 and the guidance contained in SRP-LR Section 2.1 and was adequately implemented.

On a sampling basis, the staff reviewed the applicant's scoping reports for the auxiliary feedwater, safety injection, and spent fuel pool cooling systems to ensure they met the scoping criteria of 10 CFR 54.4. The staff also reviewed the implementing procedures and discussed the methodology and results with the applicant. The staff verified that the applicant had identified and used pertinent engineering and licensing information in order to determine the auxiliary feedwater, safety injection, and spent fuel pool cooling mechanical component types required to be within the scope of license renewal. As part of the review process, the staff evaluated each system intended function identified for the auxiliary feedwater, safety injection, and spent fuel pool cooling systems, the basis for inclusion of the intended function, and the process used to identify each of the system component types. The staff verified that the applicant had identified and highlighted system P&IDs to develop the license renewal boundaries in accordance with the procedural guidance. Additionally, the staff determined that the applicant had independently verified the results in accordance with the governing procedures. The staff confirmed that the applicant's license renewal personnel who were knowledgeable about the system had performed independent reviews of the marked-up drawings to ensure accurate identification of system intended functions, and that the applicant had performed additional cross-discipline verification and independent reviews of the resultant highlighted drawings before final approval of the scoping effort.

2.1.4.5.3 Conclusion

On the basis of its review of the LRA and supporting documents, discussion with the applicant, and the sampling system review of mechanical scoping results, the staff concludes that the applicant's methodology for identifying mechanical SSCs within the scope of license renewal is in accordance with the requirements of 10 CFR 54.4 and, therefore, is acceptable.

2.1.4.6 Structural Scoping

2.1.4.6.1 Summary of Technical Information in the Application

LRA Section 2.1.4.2, "Structure Scoping Methodology," states:

> Structure scoping was performed by applying the criteria described below. If any of the criteria were met, indicating that a structure performed one or more intended functions, the structure was listed as potentially within the scope of license renewal.
>
> 1 The Maintenance Rule documentation indicates that the structure performs one or more intended functions that were determined to meet the scoping criteria in 10 CFR 54.4.
>
> 2 The USAR identifies the structure as Class I, I* or III*.
>
> 3 The 10 CFR 54.4(a)(2) Report, and/or one of the 10 CFR 54.4(a)(3) regulated event reports indicate that the structure performs an intended function.
>
> 4 A plant walkdown identifies that the failure of the structure could adversely impact SR-SSCs.
>
> After the screening process for systems and electrical components was completed, the list of in-scope structures was reviewed to (1) ensure that all structures housing in-scope mechanical and/or electrical components were included within the scope of license renewal, and to (2) validate the intended functions for the in-scope structures.

2.1.4.6.2 Staff Evaluation

The staff evaluated LRA Section 2.1.4.2, the guidance contained in the implementing procedures, and applicable reports to perform the review of structural scoping process. The staff reviewed the applicant's approach to identifying structures relied upon to perform the functions described in 10 CFR 54.4(a). As part of this review, the staff discussed the methodology with the applicant, reviewed the documentation developed to support the review, and evaluated the scoping results for a sample of structures that were identified within the scope of license renewal. The staff determined that the applicant had identified and developed a list of plant structures and their intended functions through a review of plant equipment database, USAR, DBDs, drawings, procedures, and walkdowns. Each structure the applicant identified was evaluated against the criteria of 10 CFR 54.4(a)(1), (a)(2), and (a)(3).

The staff reviewed selected portions of the plant equipment database, USAR, DBDs, drawings, procedures, and implementing procedures to verify the adequacy of the methodology. The staff reviewed the applicant's methodology for identifying structures meeting the scoping criteria as defined in the Rule. The staff also reviewed the scoping methodology implementing procedures and discussed the methodology and results with the applicant. In addition, the staff reviewed, on a sampling basis, the applicant's scoping reports including information contained in the source documentation, for the turbine building to verify that application of the methodology would provide the results as documented in the LRA. The staff verified that the applicant had identified and used pertinent engineering and licensing information in order to determine that the turbine building and the screenhouse were required to be included within the scope of license renewal. As part of the review process, the staff evaluated the intended functions identified for the turbine building and the structural components, the basis for inclusion of the intended function, and the process used to identify each of the component types.

2.1.4.6.3 Conclusion

On the basis of its review of information in the LRA and supporting documents, discussions with the applicant, and a sampling review of structural scoping results, the staff concludes that the applicant's methodology for identification of the structural SSCs within the scope of license renewal is in accordance with the requirements of 10 CFR 54.4 and, therefore, is acceptable.

2.1.4.7 Electrical Component Scoping

2.1.4.7.1 Summary of Technical Information in the Application

LRA Section 2.1.4.1, "System Scoping Methodology," states:

> Mechanical and electrical system scoping was performed by applying the criteria described below. If any of the criteria were met, indicating that a system performed one or more intended functions, the system was listed as potentially within the scope of license renewal.
>
> 1 EMPAC contains data that indicates that the system contains one or more components that have been determined to meet the scoping criteria in 10 CFR 54.4.
>
> 2 The USAR, Maintenance Rule documentation, system descriptions, and/or DBDs list one or more system functions that were determined to meet the scoping criteria in 10 CFR 54.4.
>
> 3 The 10 CFR 54.4(a)(2) Report, and/or one of the 10 CFR 54.4(a)(3) regulated event reports indicate that the system performs an intended function.
>
> 4 Controlled station drawings and/or EMPAC data indicate that the system contains one or more NS-fluid-containing components located in a Class I (SR-) structure or in the non-Class I portion of the Turbine Building. In these instances, spatial interactions between NS-and SR-components is a potential concern.

5 Controlled station drawings indicates that the system contains NS-piping that is attached to SR-piping and is required to be seismically supported.

The preliminary scoping results were used as input to the screening process. The results of the completed screening process were used as input for reviewing and updating the system scoping results (intended functions, applicable scoping criteria, etc.).

2.1.4.7.2 Staff Evaluation

The staff evaluated LRA Section 2.1.4.1 and the guidance contained in the implementing procedures and reports to perform the review of the electrical scoping process. The staff reviewed the applicant's approach to identifying electrical and instrumentation and control (I&C) SSCs relied upon to perform the functions described in 10 CFR 54.4(a). The staff reviewed portions of the documentation used by the applicant to perform the electrical scoping process including the USAR, plant equipment database, CLB documentation, DBDs, databases and documents, procedures, drawings, specifications, and codes/standards. As part of this review, the staff discussed the methodology with the applicant, reviewed the implementing procedures developed to support the review, and evaluated the scoping results for a sample of SSCs that were identified within the scope of license renewal. The staff determined that the applicant had included electrical and I&C components, including electrical and I&C components contained in mechanical or structural systems, within the scope of license renewal on a commodity basis.

2.1.4.7.3 Conclusion

On the basis of its review of information contained in the LRA and supporting documents, discussions with the applicant, and a sampling review of electrical scoping results, the staff concludes that the applicant's methodology for the identification of electrical SSCs within the scope of license renewal is in accordance with the requirements of 10 CFR 54.4 and, therefore, is acceptable.

2.1.4.8 Scoping Methodology Conclusion

On the basis of its review of the LRA, scoping implementing procedures, and a sampling review of scoping results, the staff concludes that the applicant's scoping methodology was consistent with the guidance contained in the SRP-LR and identified those SSCs: (1) that are safety-related, (2) whose failure could affect safety-related functions, and (3) that are necessary to demonstrate compliance with the NRC regulations for fire protection, EQ, PTS, ATWS, and SBO. The staff concluded that the applicant's methodology is consistent with the requirements of 10 CFR 54.4(a) and, therefore, is acceptable.

2.1.5 Screening Methodology

2.1.5.1 General Screening Methodology

2.1.5.1.1 Summary of Technical Information in the Application

LRA Section 2.1.5, "Screening Methodology," and subsections, describes the screening process that identifies the SCs within the scope of license renewal that are subject to an AMR. LRA Section 2.1.5 states:

> For each of those systems and structures, screening was performed to identify the passive components, structural members, and commodities that support an intended function. The components that are short-lived (and therefore did not require an AMR) were identified and removed from any further aging evaluation consideration. Screening was divided by engineering discipline into three primary areas: (1) system (mechanical), (2) structural, and (3) electrical/instrumentation and controls (I&C).

LRA Section 2.1.5.6, "Screening of Stored Equipment," states:

> A review was performed to identify equipment that: 1) is maintained in storage, 2) is reserved for installation in the plant in response to a design-basis accident or regulated event, and 3) requires an AMR. The equipment in storage that performs an intended function and is subject to aging management review includes hardware dedicated to mitigate the effects of a fire as identified in the Kewaunee Fire Protection Plans and Appendix R/Fire Safe Shutdown Compliance Reports. Cables and connections are stored equipment identified as requiring an AMR and have been evaluated with Cables and Connections.

2.1.5.1.2 Staff Evaluation

Pursuant to 10 CFR 54.21, each LRA must 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). In addition, the IPA must include 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 identify the mechanical and structural components and electrical commodity groups within the scope of license renewal that 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 2.1.5, and subsections, the applicant discussed these screening activities as they related to the component types and commodity groups within the scope of license renewal.

The staff determined that the screening process evaluated the component types and commodity groups, included within the scope of license renewal, to determine which ones were long-lived and passive and, therefore, subject to an AMR. The staff reviewed LRA Section 2.3, "Scoping

and Screening Results: Mechanical Systems"; LRA Section 2.4, "Scoping and Screening Results: Structures"; and LRA Section 2.5, "Scoping and Screening Results: Electrical and Instrumentation and Control Systems." These sections of the LRA provided the results of the process used to identify component types and commodity groups subject to an AMR. The staff also reviewed, on a sampling basis, the screening results reports for the auxiliary feedwater system, safety injection system, spent fuel pool cooling system, and the turbine building.

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

2.1.5.1.3 Conclusion

On the basis of a review of the LRA, the implementing procedures, and a sampling of screening results, the staff concludes that the applicant's screening methodology was consistent with the guidance contained in the SRP-LR and was capable of identifying passive, long-lived components within the scope of license renewal that are subject to an AMR. The staff concludes that the applicant's process for determining which component types and commodity groups are subject to an AMR is consistent with the requirements of 10 CFR 54.21 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 2.1.5, subsections 2.1.5.1, "Identification of In-Scope Passive Components"; 2.1.5.2, "System (Mechanical) Screening"; 2.1.5.3, "Major Components Screening"; and 2.1.5.7, "Identification of Short-Lived Components and Consumables," discuss the screening process that identifies the passive, long-lived mechanical components within the scope of license renewal that are subject to an AMR.

LRA Section 2.1.5.7 states, "Components subject to periodic replacement, or components found to have an established qualified life (e.g., for EQ purposes), were included within the scope of license renewal, but later screened out as short-lived and did not require an aging management review."

LRA Section 2.1.5.2 states:

> Each system identified during scoping as being within the scope of license renewal was screened to identify the mechanical components (pumps, valves, piping, etc.) that support the system intended functions. The electrical/I&C components (such as heaters) that are in-scope only because they perform a system pressure boundary function, were treated as mechanical components and were also identified during system screening and therefore, the passive components that supported a system intended function were subject to aging management review.

LRA Section 2.1.5.3 states:

> The major components within the Reactor Coolant System, i.e., the reactor vessel, the reactor vessel internals, and the steam generators, were screened separately from the remainder of the Reactor Coolant System components. Detailed screening was performed to identify subcomponents that perform or support intended functions.

2.1.5.2.2 Staff Evaluation

The staff reviewed the mechanical screening methodology discussed and documented in LRA Section 2.1.5 and subsections, the implementing documents, the scoping and screening reports, and the license renewal drawings. The staff determined that the mechanical system screening process began with the results from the scoping process and that the applicant reviewed each system evaluation boundary as illustrated on P&IDs to identify passive and long-lived components. In addition, the staff determined that the applicant had identified all passive, long-lived components that perform or support an intended function within the system evaluation boundaries and determined those components to be subject to an AMR. The results of the review were documented in the scoping and screening reports which contain information such as the information sources reviewed and the component intended functions.

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

The staff reviewed selected portions of the USAR, plant equipment database, CLB documentation, DBDs, databases and documents, procedures, drawings, specifications, codes/standards, and selected scoping and screening reports. The staff conducted detailed discussions with the applicant's license renewal team and reviewed documentation pertinent to the screening process. The staff assessed whether the mechanical screening methodology outlined in the LRA and procedures was appropriately implemented and if the scoping results were consistent with CLB requirements. During the scoping and screening methodology audit, the staff discussed the screening methodology with the applicant and, on a sampling basis, reviewed the applicant's screening reports for the auxiliary feedwater, safety injection, and spent fuel pool cooling systems to verify proper implementation of the screening process. Based on these audit activities, the staff did not identify any discrepancies between the methodology documented and the implementation results.

2.1.5.2.3 Conclusion

On the basis of its review of the LRA, the screening implementing procedures, selected portions of the USAR, plant equipment database, CLB documentation, DBDs, databases and documents, procedures, drawings, specifications, codes/standards, selected scoping and screening reports, and its sample of selected system screening results, the staff concludes that the applicant's methodology for identification of mechanical components within the scope of license renewal and subject to an AMR is in accordance with the requirements of 10 CFR 54.21(a)(1) and, therefore, is acceptable.

2.1.5.3 Structural Component Screening

2.1.5.3.1 Summary of Technical Information in the Application

LRA Sections 2.1.5, 2.1.5.1, 2.1.5.4, "Structural Screening," and 2.1.5.7 discuss the screening process that identifies the passive, long-lived structural components within the scope of license renewal that are subject to an AMR.

LRA Section 2.1.5.7 states, "Components subject to periodic replacement, or components found to have an established qualified life (e.g., for EQ purposes), were included within the scope of license renewal, but later screened out as short-lived and did not require an aging management review."

LRA Section 2.1.5.4 states:

> Screening was performed for each in-scope structure identified during the scoping process... (and) ...Structure screening identified the passive structural members and components (e.g., walls, beams, grating, foundations, barriers, duct banks, equipment pads, sumps, etc.) that support the structure's intended function(s) and, therefore, require an AMR. The structural members that require an AMR were identified based upon a review of the structural detail drawings, the USAR, and any information available in EMPAC.

2.1.5.3.2 Staff Evaluation

The staff reviewed the structural screening methodology discussed and documented in LRA Section 2.1.3.2 and subsections, the implementing procedures, the scoping and screening reports, and the license renewal drawings. The staff reviewed the applicant's methodology for identifying structural components that are subject to an AMR as required by 10 CFR 54.21(a)(1). The staff confirmed that the applicant had reviewed the structures included within the scope of license renewal and identified the passive, long-lived components with component level intended functions and determined those components to be subject to an AMR.

The staff reviewed selected portions of the USAR and scoping and screening reports which the applicant had used to perform the structural scoping and screening activities. The staff also reviewed, on a sampling basis, the civil/structural license renewal drawing to document the SCs within the scope of license renewal. The staff conducted detailed discussions with the applicant's license renewal team and reviewed documentation pertinent to the screening process to assess if the screening methodology outlined in the LRA and implementing procedures was appropriately implemented, and if the scoping results were consistent with CLB requirements. During the scoping and screening methodology audit, the staff reviewed, on a sampling basis, the applicant's screening reports for the turbine building to verify proper implementation of the screening process. Based upon these onsite review activities, the staff did not identify any discrepancies between the methodology documented and the implementation results.

2.1.5.3.3 Conclusion

On the basis of its review of the LRA, implementing procedures, the USAR, DBDs, and scoping and screening reports, and a sampling review of the turbine building screening results, the staff concludes that the applicant's methodology for identification of structural components within the scope of license renewal and subject to an AMR is in accordance with the requirements of 10 CFR 54.21(a)(1) and, therefore, is acceptable.

2.1.5.4 Electrical Component Screening

2.1.5.4.1 Summary of Technical Information in the Application

LRA Sections 2.1.5, 2.1.5.1, 2.1.5.5, "Electrical/I&C Screening," and 2.1.5.7 discuss the screening process that identifies the passive, long-lived electrical and I&C components within the scope of license renewal that are subject to an AMR.

LRA Section 2.1.5.5 states:

> Electrical/I&C components were screened and evaluated as commodities... (and) ...(T)he majority of electrical/I&C components (such as transmitters, switches, breakers, relays, actuators, radiation monitors, recorders, isolators, signal conditioners, meters, batteries, analyzers, chargers, motors, regulators, transformers, and fuses) are active components, in accordance with 10 CFR 54.21(a)(1)(i) and the supplemental guidelines in NEI 95-10, and therefore do not require an AMR.
>
> The electrical/I&C components that are in-scope only because they perform a passive pressure boundary function were treated as mechanical components and identified during the mechanical system screening process.
>
> The following electrical/I&C commodity groups/component types perform a passive function:
>
> - Cables and connections (including splices, terminal blocks, insulation portion of fuse holders, and transmission conductors)
> - Fuse Holder (Metallic portion)
> - Metal Enclosed Bus (includes switchyard buses)
> - Reactor Containment Vessel electrical penetrations

2.1.5.4.2 Staff Evaluation

The staff reviewed the applicant's methodology used for electrical screening in LRA Section 2.1.5 and subsections, implementing procedures, bases documents, and electrical screening report. The staff confirmed that the applicant used the screening process described in these documents along with the information contained in NEI 95-10, Appendix B and the SRP-LR, to identify the electrical and I&C components subject to an AMR.

The staff determined that the applicant had identified commodity groups which were found to meet the passive criteria in accordance with NEI 95-10. In addition, the staff determined that the applicant evaluated the identified, passive commodities to identify whether they were subject to replacement based on a qualified life or specified time period (short-lived), or not subject to replacement based on a qualified life or specified time period (long-lived) and that the remaining passive, long-lived components were determined to be subject to an AMR.

The staff performed a review to determine if the screening methodology outlined in the LRA and implementing procedures was appropriately implemented and if the scoping results were consistent with CLB requirements. During the scoping and screening methodology audit, the staff reviewed selected screening reports and discussed the reports with the applicant to verify proper implementation of the screening process. Based upon these onsite review activities, the staff did not identify any discrepancies between the methodology documented and the implementation results.

2.1.5.4.3 Conclusion

On the basis of its review of the LRA and supporting documents, discussion with the applicant, and a sample of the results of the screening methodology, the staff concludes that the applicant's methodology for identification of electrical components within the scope of license renewal and subject to an AMR is in accordance with the requirements of 10 CFR 54.21(a)(1) and, therefore, is acceptable.

2.1.5.5 Screening Methodology Conclusion

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

2.1.6 Summary of Evaluation Findings

On the basis of its review of the information presented in LRA Section 2.1, the supporting information in the scoping and screening implementing procedures and reports, the information presented during the scoping and screening methodology audit, discussions with the applicant, sample system reviews, and the applicant's response dated May 28, 2009, to the staff's RAI, the staff confirms that the applicant's scoping and screening methodology is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). The staff also concludes that the applicant's description and justification of its scoping and screening methodology are adequate to meet the requirements of 10 CFR 54.21(a)(1). From this review, the staff concludes that the applicant's methodology for identifying systems and structures within the scope of license renewal and SCs requiring an AMR is acceptable.

2.2 Plant-Level Scoping Results

2.2.1 Introduction

LRA Section 2.1 describes the methodology for identifying systems and structures within the scope of license renewal. In LRA Section 2.2, the applicant used its scoping methodology to determine which plant-level systems and structures 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 the following three groups:

- 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)
- 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

LRA Tables 2.2-1 and 2.2-3 list those mechanical systems, electrical and I&C systems, and structures that are within the scope of license renewal. In LRA Tables 2.2-2 and 2.2-4, the applicant listed the systems and structures that did not meet the criteria specified in 10 CFR 54.4(a) and were excluded from the scope of license renewal. The applicant also provided an LRA drawing that showed the in-scope structures for license renewal.

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 provides its evaluation in SER Section 2.1. To verify that the applicant properly implemented its methodology, the staff's review focused on the implementation results shown in LRA Tables 2.2-1, 2.2-2, 2.2-3, and 2.2-4 to confirm that there were no omissions of plant-level systems and structures within the scope of license renewal.

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

The staff's review of LRA Section 2.2 identified an area where 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 2.2-01, dated April 3, 2009, the staff noted LRA Table 2.2-2, "Systems Not Within the Scope of License Renewal," includes the administration building air conditioning system. The applicant was requested to explain why the administration building air conditioning system, which is inside a Class I and Class III structure, was not included in LRA Table 2.2-1.

In its response, by letter dated April 27, 2009, the applicant stated the administration building air conditioning system provides conditioned air for the administration building office areas (i.e., the two upper levels) that are Class III. The administration building air conditioning system does not provide cooling to the Class I portion of the administration building and is not located within the Class I areas of the building. Therefore, the system does not perform a license renewal intended function and is not included within the scope of license renewal.

Based on its review, the staff finds the applicant's response to RAI 2.2-01 acceptable because the administration building air conditioning system does not provide cooling to the Class I portion of the administration building, is not located within the Class I areas of the building, and does not perform a license renewal intended function. Therefore, the staff's concern described in RAI 2.2-01 is resolved.

2.2.4 Conclusion

The staff reviewed LRA Section 2.2, the RAI response, and the USAR supporting information to determine whether the applicant failed to identify any systems and structures within the scope of license renewal. On the basis of its review, as discussed above, the staff concludes that the applicant has appropriately identified the systems and structures within the scope of license renewal in accordance with 10 CFR 54.4.

2.3 Scoping and Screening Results: Mechanical Systems

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

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

The staff evaluation of the mechanical system scoping and screening results applies to all mechanical systems reviewed. Those systems that required RAIs to be generated (if any) include an additional staff evaluation which specifically addresses the applicant's responses to the RAIs.

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 verify that the applicant identified the mechanical system SCs that met the scoping criteria and were subject to an AMR, confirming that there were no omissions.

The staff's evaluation of mechanical systems was performed using the evaluation methodology described here using the guidance in SRP-LR Section 2.3, and took into account (where applicable) the system functions described in the USAR. 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 meet the license renewal scoping criteria. Similarly, the staff evaluated the applicant's screening results to verify that all passive, long-lived components are subject to an AMR, as required by 10 CFR 54.21(a)(1).

In its scoping evaluation, the staff reviewed the LRA, applicable sections of the USAR, and license renewal drawings, and other licensing basis documents, as appropriate, for each mechanical system within the scope of license renewal. The staff reviewed relevant licensing basis documents for each mechanical system to confirm that the LRA specified all intended functions defined by 10 CFR 54.4(a). The review then focused on identifying any components with intended functions defined by 10 CFR 54.4(a) that the applicant may have omitted from the scope of license renewal.

After reviewing the scoping results, the staff evaluated the applicant's screening results. For those SCs with intended functions delineated under 10 CFR 54.4(a), the staff verified the applicant properly screened out only: (1) SCs that have functions performed with moving parts or a change in configuration or properties, or (2) SCs that are subject to replacement after a qualified life or specified time period, as described in 10 CFR 54.21(a)(1). For SCs not meeting either of these criteria, the staff confirmed the remaining SCs received an AMR, as required by 10 CFR 54.21(a)(1). The staff requested additional information to resolve any omissions or discrepancies identified.

2.3.1 Reactor Vessel, Internals, and Reactor Coolant System

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

- Section 2.3.1.1, "Reactor Vessel"
- Section 2.3.1.2, "Reactor Vessel Internals"
- Section 2.3.1.3, "Reactor Coolant System"
- Section 2.3.1.4, "Steam Generator"

Information provided by the applicant from these sections is summarized below in portions titled "Summary of Technical Information in the Application."

2.3.1.1 Reactor Vessel

2.3.1.1.1 Summary of Technical Information in the Application

The reactor vessel is a cylindrical shell with a welded, hemispherical lower head and a removable, bolted, flanged, and gasketed (O-ring), hemispherical upper head, which was replaced in the fall of 2004. The reactor vessel contains the core, core support structures, control rods, and other vessel internals associated with the core. Control rod drive mechanisms (CRDMs) are positioned on the reactor closure head. The reactor vessel is vertically mounted on six individual air-cooled support pads. Four of the support pads are attached to the bottom side of the primary nozzles and two of the support pads are attached to vessel-attached support brackets. Four reactor coolant and two safety injection nozzles penetrate the reactor vessel. The hemispherical welded bottom head has penetrations for movable in-core thimble tubes, which are housed in guide tubes and extend from the seal table into the reactor vessel interior and mate with the lower internal assembly.

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

- serve as a pressure boundary for containing reactor coolant
- provide a barrier against the release of radioactivity
- support and contain the reactor core and core support structure
- support and guide reactor controls and instrumentation
- mitigate thermal shock

The following license renewal drawing provides the details of SSCs for the scope of license renewal and subject to an AMR:

- LRXK-100-10

LRA Table 2.3.1-1 lists the component types requiring an AMR as follows:

- bottom-mounted instrumentation (BMI) guide tubes/seal table
- bottom head/bottom head instrument tube penetrations
- closure head/closure head CRDM head penetrations
- closure head instrument tubes/lifting lugs/ventilation shroud support structure/stud assembly/vent/reactor vessel level instrumentation system head penetrations
- core support guides
- CRDM pressure housings
- primary nozzles/safe ends
- safety injection nozzle

- upper, intermediate, and lower shell
- vessel flange/vessel flange leakage monitoring lines
- vessel support brackets

2.3.1.1.2 Staff Evaluation

The staff evaluated the reactor vessel functions described in the LRA and USAR 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 and USAR to determine whether the applicant failed to identify any SSCs within the scope of license renewal. The staff finds no omissions. In addition, the staff determined whether the applicant failed to identify any components subject to an AMR. 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 the reactor vessel components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.2 Reactor Vessel Internals

2.3.1.2.1 Summary of Technical Information in the Application

The reactor vessel internals system consists of the reactor vessel internals and reactor core, which includes the nuclear fuel subsystem. The reactor internals, consisting of the upper and lower core support structure, are designed to support, align, and guide the core components; direct the coolant flow to and from the core components; and support and guide the in-core instrumentation. The reactor core, consisting of the fuel assemblies and control rods, provides and controls the heat source for the reactor operation. The reactor vessel internals include the subcomponents that provide structural support, flow distribution, pressure boundary integrity, and gamma and neutron shielding for the vessel. All reactor internals are removable from the vessel for the purpose of their inspection as well as the inspection of the vessel internal surface.

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

- direct the main flow of coolant through the core
- maintain fuel alignment and limit fuel assembly movement
- provide gamma and neutron shielding
- support, align, and guide the core components and in-core instrumentation
- maintain the RCS pressure boundary

The LRA states that there is no license renewal drawing for the reactor vessel internals system.

LRA Table 2.3.1-2 lists the component types that require an AMR as follows:

- baffle/former plates and bolts
- BMI columns
- clevis inserts and bolts
- core barrel/core barrel flange/core barrel outlet nozzles
- flux thimble tubes
- head/vessel alignment pins
- hold down spring
- lower core plate
- lower fuel alignment pins
- lower support columns and bolts/lower support forging
- radial support keys
- rod cluster control assembly guide tubes, bolts, and support pins
- secondary core support assembly
- thermal shield
- upper core plate/alignment pins/fuel alignment pins
- upper instrumentation columns
- upper support columns/bolts/plate assembly

2.3.1.2.2 Staff Evaluation

The staff evaluated the reactor internals system functions described in the LRA and USAR 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 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 and USAR 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 reviewed 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 internals components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.3 Reactor Coolant System

2.3.1.3.1 Summary of Technical Information in the Application

The RCS consists of two identical heat transfer loops connected in parallel to the reactor vessel. Each loop consists of a reactor coolant pump, steam generator (SG), and interconnecting piping. The pressurizer/pressurizer relief system is connected to RCS loop B by a surge line to control RCS pressure and to accommodate volume changes of the coolant due to changes in temperature. The pressurizer is also designed to accommodate in-surges and out-surges caused by load transients. Primary treated water is circulated through the core at a flow rate and temperature consistent with achieving the desired reactor core thermal-hydraulic performance.

The RCS provides a boundary for containing the coolant under operating temperature and pressure conditions. It also serves to confine radioactive material and limits to acceptable values any release of radioactive material, and provides a means of venting non-condensable gases from system high points after an accident.

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

- serve as a pressure boundary and limit the release of fission products
- provide RCS pressure control and limit pressure transients
- provide the capability to monitor water level in the reactor vessel
- provide input to the reactor protection and engineered safeguard features equipment
- provide borated water as a moderator and reflector and for chemical shim control

The following license renewal drawings provide the details of SSCs for the scope of license renewal and subject to an AMR:

- LRM-203, 205, 216, and 350
- LRXK-100-10, 100-131, 100-18, 100-20, 100-28, 100-35, and 100-44

LRA Table 2.3.1-3 lists the component types that require an AMR as follows:

- bolting
- condensing/seal chambers
- flow elements/flow orifices
- piping/tubing
- pressurizer/pressurizer heater sleeves and sheaths, pressurizer integral support
- pressurizer manway and pressurizer relief tank
- resistance temperature detectors
- rupture discs
- reactor coolant pumps
- reactor coolant pump motor upper and lower bearing oil coolers
- reactor coolant pump thermal barriers
- thermal sleeves
- valves

2.3.1.3.2 Staff Evaluation

The staff evaluated the RCS functions described in the LRA and USAR 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 and USAR 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 reviewed 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 RCS 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 Steam Generators

2.3.1.4.1 Summary of Technical Information in the Application

Two identical SGs transfer heat from the RCS to the secondary system during normal plant conditions, producing steam used by the turbine generator. Each SG is a recirculating-type, vertical shell and tube heat exchanger, where heat transferred from a single-phase fluid at high temperature and pressure (the reactor coolant) on the tube side is used to generate a two-phase (steam/water) mixture at a lower temperature and pressure on the secondary side. The steam/water mixture, generated in the secondary side, flows upward through the moisture separators to the steam outlet nozzle at the top of the SG.

The lower portion of each SG was replaced with a Westinghouse (Model 54F) replacement unit in 2001, utilizing Alloy 690 tubes and stainless steel support plates which have improved resistance to known corrosion issues affecting pressurized water reactor SGs. The upper portion of each SG was refurbished. The refurbishment included installing a steam flow limiter inside the steam nozzle, installing a replacement feedring assembly with a welded thermal sleeve, feedwater nozzle improvements, and modifications to the moisture separation equipment.

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

- transfer heat from the RCS to the secondary systems
- provide RCS pressure boundary functions
- confine radioactive material

The following license renewal drawing provides the details of SSCs for the scope of license renewal and subject to an AMR:

- LRXK-100-10

LRA Table 2.3.1-4 lists the component types that require an AMR as follows:

- anti-vibration bars
- channel head/closure ring/divider plate
- feedwater inlet ring and supports/feedwater inlet ring J nozzles
- feedwater nozzle/feedwater nozzle thermal sleeve
- flow distribution baffle

- moisture separator assembly
- primary manway cover/diaphragm/bolting
- primary nozzles/safe end/buttering
- secondary manway/handhole covers/bolting
- secondary-side nozzles
- shell – top elliptical head/shell – upper, lower, and transition cone
- steam nozzle/steam nozzle flow restrictor
- tube bundle support hardware/tube plugs/support plates/wrapper/sleeves
- tubesheet

2.3.1.4.2 Staff Evaluation

The staff evaluated the SG functions described in the LRA and USAR 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 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 and USAR 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 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 SG components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2 Engineered Safety Features

LRA Section 2.3.2 describes the engineered safety features systems, along with their SCs, subject to an AMR for license renewal. The applicant described the supporting SCs of the engineered safety features system in the following LRA sections:

- containment vessel internal spray system
- safety injection system
- residual heat removal system

2.3.2.1 Containment Vessel Internal Spray System

2.3.2.1.1 Summary of Technical Information in the Application

LRA Section 2.3.2.1 describes the containment vessel internal spray system as being designed to reduce reactor containment vessel pressure during DBAs in conjunction with the containment cooling system (which is part of the reactor building ventilation system). This system also functions to scrub fission products out of the vessel atmosphere. This is accomplished by spraying treated, borated water into the vessel from the spray nozzles located high inside the upper dome of the containment. The system is described as having two trains taking suction

from a common line; each train consists of a containment vessel internal spray pump with associated valves, piping, and spray nozzles. The system can perform long-term spray recirculation by being aligned in conjunction with the residual heat removal (RHR) system's pumps and heat exchangers.

LRA Table 2.3.2-1 identifies the components subject to an AMR for the containment vessel internal spray system by component type and intended function.

2.3.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.1, USAR Sections 1.2, 1.2.8, 1.3.4, 1.3.7, 1.5.5, 1.6.1, 1.8 (item VII), 5.1.1, 5.4.3, 6.4, and Table B.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 USAR 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 identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

During its review of LRA Section 2.3.2.1, the staff 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 a letter dated August 28, 2009, the staff requested that the applicant provide clarification for not listing the component types in LRA Tables 2.3.2-1 and 3.2.2-1 for sealants, pump casings, screens, piping, and containment isolation components.

By letter dated September 28, 2009, the applicant clarified the above component types as follows:

Sealants (RAI 2.3-2). The applicant was requested to clarify if sealants are within the scope of license renewal in accordance with 10 CFR 54.21(a)(1). In a letter dated September 28, 2009, the applicant clarified that LRA Section 2.1.5.7 identifies short-lived components and consumables such as packing, gaskets, component seals, duct sealants, and O-rings. The applicant further stated that, based on the American National Standards Institute (ANSI) B31.1 and the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code Section III, these consumable items are not pressure-retaining parts. Therefore, they do not perform a license renewal intended function in accordance with 10 CFR 54.4(a) and are not within the scope of license renewal.

Pumps (RAI 2.3-3). In a letter dated September 28, 2009, the applicant clarified that pump casings meet the intended function of pressure boundary for the component type "Pump" and are subject to an AMR.

Screens (RAI 2.3-5). In a letter dated August 28, 2009, the applicant was requested to clarify if the containment sump screens are within the scope of license renewal and subject to an AMR.

In a letter dated September 28, 2009, the applicant stated that screens for the containment sump are within the scope of license renewal and are evaluated with the safety injection system.

The screens are highlighted on license renewal drawing LRXK-100-28 as being within the scope of license renewal and are included in the component type "Reactor Containment Vessel Sump Strainers," in LRA Table 2.3.2-2. The associated AMR results are provided in LRA Table 3.2.2-2.

Containment Isolation (RAI 2.3-4). The staff noted that a separate discussion about containment isolation was not included in the LRA. In a letter dated August 28, 2009, the applicant was requested to clarify that all components and any supporting systems that are meant for containment isolation are included within the scope of license renewal.

In a letter dated September 28, 2009, the applicant clarified that containment penetrations (including the personnel and emergency airlocks and equipment hatch, piping penetrations, electrical penetrations, heating and ventilation penetrations, and the fuel transfer tube penetration) are within the scope of license renewal and have been evaluated as part of the reactor containment vessel in LRA Section 2.4.1; and that the containment isolation valves and the associated connecting piping are within the scope of license renewal and included in the tables associated with their respective systems in LRA Section 2.3. The AMR results for these components are provided in the AMR result tables associated with their respective systems in LRA Section 3.0.

Piping (RAI 2.3.2.1-1). In a letter dated August 28, 2009, the staff requested that the applicant clarify which components of the "Containment Vessel Internal Spray System" shown in license renewal drawing LRXK-100-131 are within the scope of license renewal.

In a letter dated September 28, 2009, the applicant stated that the two lines located upstream of valve RC-509 shown on license renewal drawing LRXK-100-131 (also shown on license renewal drawings LRM-217 and LRXK-100-29) are within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's responses to RAI 2.3-2, RAI 2.3-3, RAI 2.3-4, RAI 2.3-5, and RAI 2.3.2.1-1 acceptable because the applicant provided an acceptable clarification such that the component types are properly identified as within the scope of license renewal, and 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). Therefore, the staff's concerns described in RAI 2.3-2, RAI 2.3-3, RAI 2.3-4, RAI 2.3-5, and RAI 2.3.2.1-1 are resolved.

2.3.2.1.3 Conclusion

The staff reviewed the LRA, USAR, and RAI responses 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 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 vessel internal spray system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.2 Safety Injection System

2.3.2.2.1 Summary of Technical Information in the Application

The safety injection system is an engineered safety system used for emergency core cooling to deliver borated water to the reactor core in the event of a loss of coolant accident (LOCA). This limits the fuel clad temperature and ensures that the core will remain intact and in place, with its heat transfer geometry preserved.

The safety injection system consists of two independent trains, each consisting of a safety injection pump with a pressurized lube oil subsystem, and interconnecting piping. The safety injection pumps are used to deliver water to the RCS from the refueling water storage tank during the injection phase and from the RHR pumps during the recirculation phase. The safety injection system also contains two safety injection accumulators. They provide rapid filling of the lower reactor core plenum in the event of a large break in the RCS.

The intended functions of the safety injection system component types within the scope of license renewal include the following:

- form part of the RCS pressure boundary
- provide source of emergency core cooling in response to a LOCA
- provide mechanical support for safety-related SSCs

The following license renewal drawings provide the details of SSCs for the scope of license renewal and subject to an AMR:

- LRM-202-2, 216, 217, 218, and 350
- LRXK-100-10, 100-131, 100-18, 100-20, 100-28, 100-29, 100-36, and 100-38

LRA Table 2.3.2-2 lists the component types that require an AMR as follows:

- accumulators
- bolting
- flow elements/flow indicators/flow orifices
- piping/tubing
- reactor containment vessel sump strainers
- refueling water storage tank
- safety injection pump gland seal coolers/safety injection pump lube oil coolers
- safety injection pumps/safety injection pump lube oil reservoirs
- sight glass
- valves/valve enclosures

2.3.2.2.2 Staff Evaluation

The staff evaluated the safety injection system functions described in the LRA and USAR 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 and USAR 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 reviewed 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 safety injection system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.3 Residual Heat Removal System

2.3.2.3.1 Summary of Technical Information in the Application

The RHR system is a dual purpose system, operating as a portion of low pressure safety injection system during normal operation, and removing decay heat during plant cooldown and shutdown/refueling operations. The RHR system consists of two 100 percent capacity redundant trains. Each train consists of an RHR pump, heat exchanger, piping, valves, and instrumentation. The RHR removes residual and sensible heat from the reactor core during shutdown and reduces the temperature of the RCS during plant cooldown and shutdown operations. During accident conditions, the RHR is aligned to take suction from the refueling water storage tank to provide emergency core cooling low head safety injection. It may also provide backup cooling for the spent fuel pool.

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

- form a part of the RCS pressure boundary
- remove residual and sensible heat from the core
- provide low head safety injection and recirculation during accident conditions
- fill and drain the refueling cavity
- provide mechanical support for safety-related SSCs

The following license renewal drawings provide the details of SSCs for the scope of license renewal and subject to an AMR:

- LRM-217, 218, and 350
- LRXK-100-10, 100-18, 100-19, 100-20, 100-28, 100-29, 100-36, and 100-44

LRA Table 2.3.2-3 lists the component types that require an AMR as follows:

- bolting
- expansion tanks
- flow elements
- miniflow orifices
- piping/tubing

- residual heat exchangers
- RHR pumps
- rupture disks
- shaft seal heat exchangers
- valves

2.3.2.3.2 Staff Evaluation

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

2.3.2.3.3 Conclusion

The staff reviewed the LRA and USAR 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 reviewed 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 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).

2.3.3 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:

- Section 2.3.3.1, "New Fuel Storage"
- Section 2.3.3.2, "Spent Fuel Storage"
- Section 2.3.3.3, "Spent Fuel Pool Cooling"
- Section 2.3.3.4, "Fuel Handling"
- Section 2.3.3.5, "Cranes (Excluding Fuel Handling) System"
- Section 2.3.3.6, "Service Water System"
- Section 2.3.3.7, "Component Cooling System"
- Section 2.3.3.8, "Station and Instrument Air System"
- Section 2.3.3.9, "Chemical and Volume Control System"
- Section 2.3.3.10, "Control Room Air Conditioning System"
- Section 2.3.3.11, "Auxiliary Building Air Conditioning System"
- Section 2.3.3.12, "Auxiliary Building Special Ventilation and Steam Exclusion System"
- Section 2.3.3.13, "Auxiliary Building Ventilation System"
- Section 2.3.3.14, "Reactor Building Ventilation System"
- Section 2.3.3.15, "Turbine Building and Screenhouse Ventilation System"
- Section 2.3.3.16, "Shield Building Ventilation System"
- Section 2.3.3.17, "Technical Support Center Ventilation System"
- Section 2.3.3.18, "Fire Protection System"

- Section 2.3.3.19, "Diesel Generator System"
- Section 2.3.3.20, "Circulating Water System"
- Section 2.3.3.21, "Gaseous Waste Processing and Discharge System"
- Section 2.3.3.22, "Liquid Waste Processing and Discharge System"
- Section 2.3.3.23, "Radiation Monitoring System"
- Section 2.3.3.24, "Makeup and Demineralized Water System"
- Section 2.3.3.25, "Service Water Pretreatment System"
- Section 2.3.3.26, "Miscellaneous Drains and Sumps System"
- Section 2.3.3.27, "Miscellaneous Gas System"
- Section 2.3.3.28, "Potable Water System"
- Section 2.3.3.29, "Primary Sampling System"

Auxiliary Systems Generic Requests for Additional Information. As part of the staff's review, the following RAI identified instances of license renewal drawing errors where the continuation notation for piping from one license renewal drawing to another license renewal drawing could not be identified or was incorrect.

In RAI 2.3-01, dated April 3, 2009, the staff noted drawings for which drawing numbers and/or locations for the continuations could not be identified, or could not be located where identified. The applicant was requested to provide the drawing continuation locations.

In its response dated April 27, 2009, the applicant provided the requested drawing locations.

Based on its review, the staff finds the applicant's response to RAI 2.3-01 acceptable because the applicant identified the applicable drawing locations on the license renewal drawings.

RAI 2.3-01(a). By letter dated July 7, 2009, the staff noted that while reviewing the applicant's response to RAI 2.3-01, on LRXK-101-17A, location C-3, a piping section continued to the "GLD STM LEAKOFF TO GLAND CONDENSER" that was not included in-scope. Similar piping at location C-7 was included in-scope for 10 CFR 54.4(a)(2). The applicant was requested to provide a basis for not including the piping continuing to "GLD STM LEAKOFF TO GLAND CONDENSER" within the scope of license renewal for 10 CFR 54.4(a)(2).

In its response dated August 6, 2009, the applicant stated that the "GLD STM LEAKOFF TO GLAND CONDENSER" is within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3-01(a) acceptable because the applicant stated that the subject piping is within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

2.3.3.1 New Fuel Storage System

2.3.3.1.1 Summary of Technical Information in the Application

LRA Section 2.3.3.3 describes the new fuel storage system as a dry pit adjacent to the spent fuel pool, with a Class I dry storage rack able to store 44 new fuel assemblies. The system is classified as in-scope because it provides for storage of new fuel and maintains those assemblies in a subcritical configuration.

LRA Table 2.3.3-1 contains the components subject to an AMR.

2.3.3.1.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the new fuel storage system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.2 Spent Fuel Storage System

2.3.3.2.1 Summary of Technical Information in the Application

LRA Section 2.3.3.2 describes spent fuel storage. The applicant stated:

> The spent fuel assemblies are stored in high-density vertical Class I storage racks in the north and south spent fuel pools, and in the north end of the fuel transfer canal pool.
>
> The north and south spent fuel pool storage racks are constructed with boron carbide neutron absorber plates located between a stainless steel inner and outer wall. These spent fuel racks have been modified to allow venting of the space that contains the boron carbide neutron absorber plate to prevent bulging of the stainless steel inner and outer walls.
>
> The fuel transfer canal pool storage racks are constructed with Boral neutron absorber plates between a stainless steel inner and outer wall. These racks have been designed such that the enclosures that contain the Boral are vented. The north spent fuel pool storage racks can accommodate 270 spent fuel assemblies, the south spent fuel pool storage racks can accommodate 720 spent fuel assemblies and the fuel transfer canal pool storage racks can accommodate 215 spent fuel assemblies.

LRA Tables 2.3.3-2 and 3.3.2-2 identify that the spent fuel storage racks are within the scope of license renewal and subject to an AMR. The intended function of the spent fuel storage racks is to provide storage for spent fuel assemblies and maintain a subcritical configuration which is within the scope of license renewal based on the criteria of 10 CFR 54.4(a)(1).

2.3.3.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.2, and USAR Section 9.5.1, Section 9.5.2, Table 9.5-1, and Table B.2-1 using the evaluation methodology described in SER Section 2.3 and the guidance in the SRP-LR.

During its review, the staff evaluated the system functions described in the LRA and USAR 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 and USAR 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 storage 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), and that the aging management of the spent fuel storage is consistent with the GALL Report and is, therefore, acceptable.

2.3.3.3 Spent Fuel Pool Cooling System

2.3.3.3.1 Summary of Technical Information in the Application

LRA Section 2.3.3.3 describes the spent fuel cooling system. The system functions to remove decay heat from the spent fuel stored in the spent fuel pool and maintain borated water temperature within the design limits. The system contains pumps, heat exchangers, piping, and connections to filter, cool, and recirculate cooling water to and from the pool locations. The system can also provide water cleanup capability following a refueling on or offload to or from the reactor core.

The applicant stated that the system is classified as in-scope because it:

- provides a pressure boundary for the spent fuel pool and the refueling water storage tank
- provides heat removal from the spent fuel pool
- provides an emergency makeup flowpath from the service water system to the spent fuel pool
- contains nonsafety-related components spatially-oriented such that they could affect safety functions of safety-related SSCs
- contains nonsafety-related piping attached to safety-related piping, which is seismically designed and supported up to the first structural anchor location beyond the safety/nonsafety boundary

LRA Table 2.3.3.3 contains the spent fuel pool cooling system components subject to an AMR.

2.3.3.3.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the spent fuel pool cooling system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.4 Fuel Handling System

2.3.3.4.1 Summary of Technical Information in the Application

LRA Section 2.3.3.4 describes the fuel handling system. The applicant stated that the system contains load handling cranes and other refueling support devices. Four sets of components are classified within the scope of license renewal:

- auxiliary building fuel upending rig winch
- fuel pool bridge crane
- fuel transfer equipment
- manipulator crane

The applicant classified the system as within scope because it contains safety-related equipment to handle and store fuel assemblies, and because of structural members whose failure could impact the function of safety-related SSCs. Finally, the applicant noted that the fuel transfer tube and gate valve are evaluated as part of the reactor containment vessel structure.

LRA Table 2.3.3-4 contains the components subject to an AMR.

2.3.3.4.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA and USAR, the staff concludes that the applicant has appropriately identified the fuel handling system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.5 Cranes (Excluding Fuel Handling) System

2.3.3.5.1 Summary of Technical Information in the Application

LRA Section 2.3.3.5 describes the cranes (excluding fuel handling) system as being those cranes and devices throughout the plant that support maintenance and operational activities. The following cranes and devices are included:

- polar crane
- auxiliary building crane
- turbine building crane
- reactor building pedestal crane
- diesel generators 1A and 1B monorails
- shield building annulus trolley
- boric acid concentrates filter hoist
- filter room hoist

The applicant placed the system within scope because it contains structural members whose failure could affect safety-related SSCs.

LRA Table 2.3.3-5 contains the components subject to an AMR.

2.3.3.5.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA and USAR, the staff concludes that the applicant has appropriately identified the cranes (excluding fuel handling) system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.6 Service Water System

2.3.3.6.1 Summary of Technical Information in the Application

LRA Section 2.3.3.6 describes the service water system. The applicant described the system as an open-cycle cooling system that provides cooling to various safety-related and nonsafety-related components. The system is described as containing two redundant headers, each of which is capable of providing normal and post-accident heat removal requirements. Major equipment includes traveling screens, pumps, associated piping, service water piping up to the circulating water system discharge tunnel, inter-system cross connects, and portions of the chemical injection system.

Major cooling loads include the following:

- component cooling heat exchangers
- containment fan coil units
- control room chillers
- emergency diesel generators (EDGs)

The applicant also stated that the system supplies water to the fire protection jockey pump, provides an alternate supply to the auxiliary feedwater system, and provides emergency makeup to the spent fuel pool and the component cooling systems.

The applicant classified the system as within scope for several reasons, some of which are listed as follows:

- provides safety-related cooling to safety-related SSCs
- isolates nonsafety-related portions to ensure cooling to the safety-related SSCs
- provides reactor containment vessel isolation following an accident
- provides various sources of emergency or alternate makeup/water supplies to systems described above
- contains spatially oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains components required for safe shutdown following a HELB
- includes components that are EQ, and that fulfill fire protection requirements

The applicant also stated that passive portions of the traveling water screens are evaluated with the screenhouse structure.

LRA Table 2.3.3-6 contains the components subject to an AMR.

2.3.3.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.6 and USAR Sections 6.2, 6.3.1, 6.4.1, 6.6.2, 9.6.2, Table 6.2-9, Table B.2-1, Figure 9.6-1, Figure 9.6-2, Figure 9.6-3, and Figure 9.6-4, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.3.6-01, dated April 3, 2009, the staff noted license renewal drawing LRM-202-3, location F-11, shows a 12-inch line out of the turbine oil cooler as in-scope for license renewal for 10 CFR 54.4(a)(2), whereas the 3-inch line connected to this line and going to the fan coil units is shown as not in-scope. However, the continuation of this 3-inch line on license renewal drawing LRM-606, location A8, shows this line is in-scope under 10 CFR 54.4(a)(2). The applicant was requested to provide additional information to explain why there is a difference in scope classification between license renewal drawing LRM-202-3 and LRM-606.

In its response dated April 27, 2009, the applicant clarified that the 3-inch line is incorrectly shown as not in-scope and it should be highlighted to show it is within scope under 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.6-01 acceptable because the applicant clarified the scoping classification for the 3-inch line in question. Therefore, the staff's concern described in RAI 2.3.3.6-01 is resolved.

In RAI 2.3.3.6-02, dated April 3, 2009, the staff noted license renewal drawing LRM-202-2, location H-9, shows valve SW(T)-251 in-scope for 10 CFR 54.4(a)(1). However, the same valve on license renewal drawing LRM-394, location E-7, is shown in-scope for 10 CFR 54.4(a)(2). The applicant was requested to provide additional information to explain why there is a difference of the in-scope classification between drawings LRM-202-2 and LRM-394.

In its response dated April 27, 2009, the applicant clarified that valve SW(T)-251 is in-scope for 10 CFR 54.4(a)(3) in support of 10 CFR 50.48 fire protection regulations. The applicant stated that valve SW(T)-251 on LRM-394, location E-7, is incorrectly shown as in-scope for 10 CFR 54.4(a)(2) and should be highlighted to show it as in-scope for 10 CFR 54.4(a)(3).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.6-02 acceptable because the applicant stated valve SW(T)251 on LRM-394 is incorrectly shown as in-scope for 10 CFR 54.4(a)(2) and should be highlighted to show it is in-scope for 10 CFR 54.4(a)(3). Therefore, the staff's concern described in RAI 2.3.3.6-02 is resolved.

In RAI 2.3.3.6-03, dated April 3, 2009, the staff noted license renewal drawing LRM-202-2, locations D-9 and D-10, shows 1½-inch lines downstream of valves SW1260 and SW1263 as in-scope for 10 CFR 54.4(a)(2). However, the continuations of these 1½-inch lines on license renewal drawing LRM-606, locations G10 and G-11, are shown in-scope for 10 CFR 54.4(a)(1).

The applicant was requested to provide additional information explaining why there is a difference in scope classification between drawings LRM-202-2 and LRM-606.

In its response dated April 27, 2009, the applicant clarified that the 1½-inch lines on license renewal drawing LRM-606, locations G-10 and G-11, are shown in-scope for 10 CFR 54.4(a)(3) in support of 10 CFR 50.48 fire protection regulations. Additionally the 1½-inch lines downstream of valves SW1260 and SW1263 on LRM-202-2 are incorrectly shown as in-scope for 10 CFR 54.4(a)(2) and should be highlighted to show them in-scope for 10 CFR 54.4(a)(3).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.6-03 acceptable because the applicant stated the 1½-inch lines downstream of valves SW1260 and SW1263 on LRM-202-2 are incorrectly shown as in-scope for 10 CFR 54.4(a)(2) and should be highlighted to show them in-scope for 10 CFR 54.4(a)(3). Therefore, the staff's concern described in RAI 2.3.3.6-03 is resolved.

In RAI 2.3.3.6-04, dated April 3, 2009, the staff noted license renewal drawing LRM-202-2, locations C-5 and C-6, shows 1½-inch lines downstream of valves SW850 and SW853 as in-scope for 10 CFR 54.4(a)(2). However, the continuations of these 1½-inch lines on license renewal drawing LRM-606, locations B-5 and B-6, are shown in-scope for 10 CFR 54.4(a)(1). The applicant was requested to provide additional information explaining why there is a difference in the scope classification between drawings LRM-202-2 and LRM-606.

In its response dated April 27, 2009, the applicant clarified that the 1½-inch lines on license renewal drawing LRM-606, locations B-5 and B-6, are shown in-scope for 10 CFR 54.4(a)(3) in support of 10 CFR 50.48 fire protection regulations. Additionally, the 1½-inch lines downstream of valves SW850 and SW853 on LRM-202-2 are incorrectly shown as in-scope for 10 CFR 54.4(a)(2) and should be highlighted to show them as in-scope for 10 CFR 54.4(a)(3).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.6-04 acceptable because the 1½-inch lines downstream of valves SW850 and SW853 on LRM-202-2 are incorrectly shown as in-scope for 10 CFR 54.4(a)(2) and should be highlighted to show them as in-scope for 10 CFR 54.4(a)(3). Therefore, the staff's concern described in RAI 2.3.3.6-04 is resolved.

2.3.3.6.3 Conclusion

The staff reviewed the LRA, USAR, RAI responses, and license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined whether the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the service water system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the service water system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.7 Component Cooling Water System

2.3.3.7.1 Summary of Technical Information in the Application

LRA Section 2.3.3.7 describes the component cooling system as a closed-loop system which serves as an intermediate cooling loop and boundary between nuclear steam supply system

(NSSS) systems and the service water system. Major components include the component cooling pumps, component cooling heat exchangers, surge tank, NSSS load coolers, and associated piping. The applicant described loads cooled and normal operation as follows:

> Some of the major components cooled by the system include the RHR heat exchangers, reactor coolant pumps, letdown and seal water heat exchangers, and primary sample coolers. During normal operation, one component cooling pump and both component cooling heat exchangers are in service to accommodate the heat loads. Heat from the component cooling system is transferred to the service water system. The component cooling surge tank accommodates expansion, contraction and in-leakage of water. A radiation monitor is provided to detect radioactive in-leakage. Demineralized water is the normal source of makeup water to the component cooling system, although the service water system can be used as an emergency source of makeup water.

The applicant classified the system as in-scope for several reasons, some of which are listed as follows:

- provides cooling to safety-related SSCs
- provides for isolation of the reactor coolant pump thermal barrier heat exchanger in case of a leak from the RCS through it into the component cooling system
- provides part of reactor containment vessel pressure integrity and isolation post accident
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- includes components that are EQ and that support fire protection requirements

The applicant stated that heat exchangers cooled by the component cooling system are evaluated as part of their associated systems, and not as part of the component cooling system.

LRA Table 2.3.3-7 contains the components subject to an AMR.

2.3.3.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.7 and USAR Section 9.3.1, Table 9.3-1, Table 9.3-5, Table B.2-1, Figure 9.3-1, Figure 9.3-2, and Figure 9.3-3, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.3.7-01, dated April 3, 2009, the staff noted license renewal drawing LRXK-100-20, location E-2, shows the distillate cooler and evaporator condenser in-scope for 10 CFR 54.4(a)(2) while the pipelines entering and leaving the distillate cooler and evaporator condenser are shown in-scope for 10 CFR 54.4(a)(1) or (a)(3). The applicant was requested to provide additional information explaining why there is a difference in scope classification between the attached piping and the distillate cooler and evaporator condenser.

In its response dated April 27, 2009, the applicant stated the distillate cooler and evaporator condenser are subcomponents of the waste evaporator, which is no longer in operation. The component cooling piping is safety-related and is within the scope of license renewal for 10 CFR 54.4(a)(1). The nonsafety-related distillate cooler and evaporator condenser shells are included within the scope of license renewal for 10 CFR 54.4(a)(2) since they are relied on to provide structural seismic support for the attached safety-related component cooling piping.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.7-01 acceptable because the applicant clarified the scoping classification of the pipelines, distillate cooler, and evaporator condenser. Therefore, the staff's concern described in RAI 2.3.3.7-01 is resolved.

2.3.3.7.3 Conclusion

The staff reviewed the LRA, USAR, RAI response, and license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined whether the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the component cooling system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the component cooling system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.8 Station and Instrument Air System

2.3.3.8.1 Summary of Technical Information in the Application

LRA Section 2.3.3.8 describes the station and instrument air system. The applicant described the system as that which supplies oil-free air for operation of various components, instruments, and hose connections. The system's major components include compressors (both high and low capacity), instrument air dryers, air accumulator tanks, filters, and associated piping.

The applicant classified the system as in-scope for several reasons, some of which are summarized as follows:

- provides reactor containment vessel isolation
- provides back-up air supply to important air-operated valves and dampers
- provides control room isolation
- provides post-LOCA hydrogen control
- includes EQ components and components that support fire protection and SBO

LRA Table 2.3.3-8 contains the components subject to an AMR.

2.3.3.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3, USAR Table B.2-1, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.3.8-01, dated April 3, 2009, the staff noted license renewal drawing LRM-213-4, location H-5, shows a continuation "To POS. FOR CV-31396 SHEET 3 D1" as in-scope for 10 CFR 54.4(a)(2). The continuation on license renewal drawing LRM-213-3, location D-1, does not show this section of piping to be in-scope. The applicant was requested to provide additional information to clarify the scoping classification of this section of piping.

In its response dated April 27, 2009, the applicant stated the continuation of this line on license renewal drawing LRM-213-3 was incorrectly not highlighted, but is within the scope of license renewal for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.8-01 acceptable because the applicant clarified the scoping classification of the pipeline. Therefore, the staff's concern described in RAI 2.3.3.8-01 is resolved.

In RAI 2.3.3.8-02, dated April 3, 2009, the staff noted license renewal drawing LRM-213-3, location A-3, downstream of valve SA-201 shows a continuation to license renewal drawing LRM-213-1, location B-5, as in-scope for 10 CFR 54.4(a)(2). The continuation on license renewal drawing LRM-213-1 is not in-scope. The applicant was requested to provide additional information to clarify the scoping classification for this section of piping.

In its response dated April 27, 2009, the applicant stated the station air system pressure sensing line from the station air piping shown on license renewal drawing LRM-213-1 through valve SA-201, to the positioner for CV-31308 was incorrectly highlighted on license renewal drawing LRM-213-3 and is not within the scope of license renewal, as is the continuation of this sensing line on license renewal drawing LRM-213-1. The applicant also identified that the valve positioner output line to the CV-31308 valve actuator, shown on license renewal drawing LRM-213-1 (location B-5), was incorrectly not highlighted, but is within the scope of license renewal for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.8-02 acceptable because the applicant clarified the scoping classification of the pipeline. Therefore, the staff's concern described in RAI 2.3.3.8-02 is resolved.

In RAI 2.3.3.8-03, dated April 3, 2009, the staff noted license renewal drawing LRM-213-5, location A-12, shows a continuation "To POS. FORCV-31120 SHT 206" as in-scope for 10 CFR 54.4(a)(2). The continuation on LRM-213-2, location D-6, shows this section of piping to be in-scope for 10 CFR 54.4(a)(1) or (a)(3). The applicant was requested to provide additional information to clarify the scoping classification of this section of piping.

In its response dated April 27, 2009, the applicant confirmed that the air line to the positioner for CV-31120 is within the scope of license renewal for 10 CFR 54.4(a)(2). The applicant further stated the continuation of the line on license renewal drawing LRM-213-2 was incorrectly not highlighted, but is within the scope of license renewal for 10 CFR 54.4(a)(2). The line from the positioner to CV-31120 is correctly highlighted as within the scope of license renewal for 10 CFR 54.4(a)(3) for fire protection.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.8-03 acceptable because the applicant clarified the scoping classification of the pipelines. Therefore, the staff's concern described in RAI 2.3.3.8-03 is resolved.

2.3.3.8.3 Conclusion

The staff reviewed the LRA, USAR, RAI responses, and license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined whether the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the station and instrument air system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the station and instrument air system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.9 Chemical and Volume Control System

2.3.3.9.1 Summary of Technical Information in the Application

The chemical and volume control system (CVCS) is a support system for the RCS during all normal modes of plant operation. The CVCS provides a method for controlling the inventory, boration, and chemistry of the RCS and supplies seal injection flow for the reactor coolant pumps. It also provides a method for boron recovery and emergency boration. The CVCS consists of the volume control tank, charging pumps, letdown and excess letdown heat exchangers, seal water heat exchanger, regenerative heat exchanger, letdown orifices, filters, piping, valves, and instrumentation.

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

- form part of the RCS pressure boundary
- maintain the required water inventory in the RCS
- provide cooling water to the reactor coolant pump seal
- provide boron to maintain the required shutdown margin during refueling
- provide mechanical support for safety-related SSCs

The following license renewal drawings provide the details of SSCs for the scope of license renewal and subject to an AMR:

- LRM-216, 218, 350, 368, 385, and 605-1

- LRXK-100-10, 100-131, 100-132, 100-18, 100-19, 100-20, 100-29, 100-35, 100-36, 100-37, 100-38, 100-400, and 100-44

LRA Table 2.3.3.9 lists the component types that require an AMR as follows:

- absorption tower
- batching tank
- bolting
- boric acid tanks
- chemical mixing tanks
- demineralizers and ion exchangers
- evaporator/evaporator condenser

- filter elements/filter housings
- flow elements/flow indicators/flow orifices
- holdup tanks
- letdown heat exchanger
- monitor tanks
- piping/tubing
- pulsation dampers
- pumps
- regenerative heat exchanger
- seal water heat exchanger
- standpipes
- stripping column
- suction stabilizers
- tank heaters
- valves
- vent condenser
- volume control tank

2.3.3.9.2 Staff Evaluation

The staff evaluated the CVCS functions in the LRA and USAR 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 and USAR 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 reviewed 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).

2.3.3.10 Control Room Air Conditioning System

2.3.3.10.1 Summary of Technical Information in the Application

LRA Section 2.3.3.10 describes the control room air conditioning system. The applicant stated that the system supplies conditioned and controlled air to the control room environmental zone (including the control room and other spaces), keeping the control room under positive air pressure with respect to the auxiliary building and the turbine building, to prevent air in-leakage, especially during accidents. The applicant stated that the system is composed of two, 100 percent capacity trains of air conditioning units along with associated heating coils, filters, dampers, and ductwork.

The applicant classified the system as in-scope because it supplies cooling air for the control room environmental zone in both normal and post-accident conditions, contains safety-related instrumentation and controls, supports safe shutdown for HELB accidents, and has SSCs that support EQ and fire protection.

LRA Table 2.3.3-10 contains the components subject to an AMR.

2.3.3.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.10 and USAR Sections 9.6.4, 10A.3.3, 10A.4.3, 11.2.4, and Table B2-1 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 USAR to verify that the applicant has not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

During its review of LRA Section 2.3.3.10, the staff identified area(s) 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 a letter dated August 28, 2009, the staff requested that the applicant provide clarification for not listing the component types in LRA Tables 2.3.3-10 and 3.3.2-10 for sealants, pump casings, screens, and control room post-accident (CRPA) recirculation filter housings.

By letter dated September 28, 2009, the applicant clarified the above component types as follows:

Sealants (RAI 2.3-2). The applicant was requested to clarify whether sealants are within the scope of license renewal in accordance with 10 CFR 54.21(a)(1). In a letter dated September 28, 2009, the applicant clarified that LRA Section 2.1.5.7 identifies short-lived components and consumables such as packing, gaskets, component seals, duct sealants, and O-rings. The applicant further stated that based on ANSI B31.1 and the ASME B&PV Code Section III, these consumable items are not pressure-retaining parts. Therefore, they do not perform a license renewal intended function in accordance with 10 CFR 54.4(a) and are not within the scope of license renewal.

Pumps (RAI 2.3-3). In a letter dated September 28, 2009, the applicant clarified that pump casings meet the intended function of pressure boundary for the component type "Pump" and are subject to an AMR.

Screens (RAI 2.3-5). In a letter dated September 28, 2009, the applicant clarified that the component types "Missile Hood and Bird Screen," "Exhaust Vent Stack, Missile Cover and Screen," and "Fixed Louvers" are listed in LRA Table 2.4.2-3. The component type "Exhaust Vent Stack, Missile Cover and Screen" is associated with the auxiliary building vent stack, which handles exhaust from the other heating, ventilation, and air conditioning (HVAC) systems including the control room air conditioning system.

Filter Housings (RAI 2.3.3.10-1). In a letter dated August 28, 2009, the applicant was requested to clarify whether the filter housings are within the scope of license renewal and subject to an AMR.

In a letter dated September 28, 2009, the applicant clarified that the CRPA recirculation filter assembly housings and filter element housings are within the scope of license renewal and are included in the component type "CRPA Recirculation Filter Assemblies," in LRA Table 2.3.3-10. The associated AMR results are provided in LRA Table 3.3.2-10.

Based on the above, the applicant concluded that a revision is not necessary for LRA Tables 2.3.3-10 and 3.2.2-10.

Based on its review, the staff finds the applicant's responses to RAI 2.3-2, RAI 2.3-3, RAI 2.3-5, and RAI 2.3.3.10-1 acceptable because the applicant provided an acceptable clarification such that the component types are properly identified as within the scope of license renewal, and 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). Therefore, the staff's concerns described in RAI 2.3-2, RAI 2.3-3, RAI 2.3-5, and RAI 2.3.3.10-1 are resolved.

2.3.3.10.3 Conclusion

The staff reviewed the LRA, USAR, and RAI responses 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 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 air conditioning system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.11 Auxiliary Building Air Conditioning System

2.3.3.11.1 Summary of Technical Information in the Application

LRA Section 2.3.3.11 describes the auxiliary building air conditioning system. The applicant stated that the system operates to maintain auxiliary building environmental conditions. The system is described as containing a package chiller unit that is cooled by service water, both high-efficiency and charcoal air filters, and associated ductwork and instrumentation.

The applicant stated that the system is within the scope of license renewal for several reasons, some of which are summarized as follows:

- maintains certain zone air pressure boundaries during accidents
- contains nonsafety-related, spatially-oriented components whose failure could impact safety functions of safety-related SSCs
- contains components relied upon during safe shutdowns following a HELB
- contains components that support EQ and fire protection

LRA Table 2.3.3-11 contains the components subject to an AMR.

2.3.3.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.11 and USAR Table B.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 USAR to verify that the applicant has not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

During its review of LRA Section 2.3.3.11, the staff identified area(s) 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 a letter dated August 28, 2009, the staff requested that the applicant provide clarification for not listing the component types in LRA Tables 2.3.3-11 and 3.3.2-11 for the sealants, screens, condenser tubesheets and condenser tubes, filter element housings for auxiliary building supply vent units, spent fuel pool exhaust filter assembly housings, heating coils, cooling coils, and tubing.

By letter dated September 28, 2009, the applicant clarified the above component types as follows:

Sealants (RAI 2.3-2). The applicant was requested to clarify whether sealants are within the scope of license renewal in accordance with 10 CFR 54.21(a)(1). In a letter dated September 28, 2009, the applicant clarified that LRA Section 2.1.5.7 identifies short-lived components and consumables such as packing, gaskets, component seals, duct sealants, and O-rings. The applicant further stated that based on ANSI B31.1 and the ASME B&PV Code Section III, these consumable items are not pressure-retaining parts. Therefore, they do not perform a license renewal intended function in accordance with 10 CFR 54.4(a) and are not within the scope of license renewal.

Screens (RAI 2.3-5). In a letter dated September 28, 2009, the applicant clarified that the component types "Missile Hood and Bird Screen," "Exhaust Vent Stack, Missile Cover and Screen," and "Fixed Louvers" are listed in LRA Table 2.4.2-3. The component type "Exhaust Vent Stack, Missile Cover and Screen" is associated with the auxiliary building vent stack, which handles exhaust from the other HVAC systems including the auxiliary building air conditioning system.

Condenser Tubesheets and Tubes (RAI 2.3.3.11-1). In a letter dated August 28, 2009, the applicant was requested to clarify whether the condenser tubesheets and tubes are within the scope of license renewal and subject to an AMR.

In a letter dated September 28, 2009, the applicant clarified that the condenser tubesheets and tubes do not perform an intended function as a seismic anchor and, therefore, are not within the scope of license renewal. The condenser shell and channel heads are required for the condenser to perform its intended function and are included in the component type

"Condensers," in LRA Table 2.3.3-11. The associated AMR results are provided in LRA Table 3.3.2-11.

Filter Housings (RAI 2.3.3.11-1). In a letter dated August 28, 2009, the applicant was requested to clarify whether the filter housings are within the scope of license renewal and subject to an AMR.

In a letter dated September 28, 2009, the applicant clarified that the element housings for auxiliary building supply vent units and spent fuel pool exhaust filter assembly housings are included within the scope of license renewal and included in the component type "Filter Assemblies," in LRA Table 2.3.3-13. The associated AMR results are provided in LRA Table 3.3.2-13.

Heating Coils and Cooling Coils (RAI 2.3.3.11-1). In a letter dated August 28, 2009, the applicant was requested to clarify whether the heating coils and cooling coils are within the scope of license renewal and subject to an AMR.

In a letter dated September 28, 2009, the applicant clarified that the heating coils associated with the auxiliary building air supply ventilation units are included within the component type "Heating Coils," in LRA Table 2.3.3-13. The associated AMR results are provided in LRA Table 3.3.2-13. There are no heating coils or cooling coils associated with the spent fuel pool exhaust filter assemblies.

Tubing (RAI 2.3.3.11-1). In a letter dated August 28, 2009, the applicant was requested to clarify whether the tubing is within the scope of license renewal and subject to an AMR.

In a letter dated September 28, 2009, the applicant clarified that the tubing associated with the spent fuel pool exhaust filter assemblies and the auxiliary building air supply ventilation units is within the scope of license renewal and included in the component type "Tubing," in LRA Table 2.3.3-13. The associated AMR results are provided in LRA Table 3.3.2-13. Additionally, for all the ventilation systems, the instrument air tubing for the air operated dampers is included within the scope of license renewal and evaluated with the station and instrument air system discussed in LRA Section 2.3.3.8.

Based on the above, the applicant concluded that a revision is not necessary for LRA Tables 2.3.3-11 and 3.2.2-11.

Based on its review, the staff finds the applicant's responses to RAI 2.3-2, RAI 2.3-5, and RAI 2.3.3.11-1 acceptable because the applicant provided an acceptable clarification such that the component types are properly identified as within the scope of license renewal, and 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). Therefore, the staff's concerns described in RAI 2.3-2, RAI 2.3-5, and RAI 2.3.3.11-1 are resolved.

2.3.3.11.3 Conclusion

The staff reviewed the LRA, USAR, and RAI responses 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 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 building air conditioning system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.12 Auxiliary Building Special Ventilation and Steam Exclusion System

2.3.3.12.1 Summary of Technical Information in the Application

LRA Section 2.3.3.12 describes the auxiliary building special ventilation and steam exclusion system. The applicant stated that this ventilation system collects and filters potential containment vessel leakage that may bypass the shield building annulus (thus preventing it from reaching the environment) and that it provides emergency ventilation in some areas of the auxiliary building during certain accident conditions. The system contains two parallel trains of exhaust equipment, with dampers, exhaust fans, associated ductwork, and filters.

The applicant stated that the system is in-scope because it collects and filters potentially radioactive leakage during a DBA, provides emergency ventilation during certain accidents, contains components used in safe shutdown scenarios such as the HELB, and contains components that support EQ and fire protection.

LRA Table 2.3.3-12 contains the components subject to an AMR.

2.3.3.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.12 and USAR Sections 1.2.8, 5.7.3. 7.2.1, 9.6.5, 11.2.1, 14.3.5, and Table B.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 USAR to verify that the applicant has not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

During its review of LRA Section 2.3.3.12, the staff 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 a letter dated August 28, 2009, the staff requested that the applicant provide clarification for not listing the component types in LRA Tables 2.3.3-12 and 3.3.2-12 for the sealants, screens, and filter housings.

By letter dated September 28, 2009, the applicant clarified the above component types as follows:

Sealants (RAI 2.3-2). The applicant was requested to clarify whether sealants are within the scope of license renewal in accordance with 10 CFR 54.21(a)(1). In a letter dated September 28, 2009, the applicant clarified that LRA Section 2.1.5.7 identifies short-lived components and consumables such as packing, gaskets, component seals, duct sealants, and O-rings. The applicant further stated that based on ANSI B31.1 and the ASME B&PV Code Section III, these

consumable items are not pressure-retaining parts. Therefore, they do not perform a license renewal intended function in accordance with 10 CFR 54.4(a) and are not within the scope of license renewal.

Screens (RAI 2.3-5). In a letter dated September 28, 2009, the applicant clarified that the component types "Missile Hood and Bird Screen," "Exhaust Vent Stack, Missile Cover and Screen," and "Fixed Louvers" are listed in LRA Table 2.4.2-3. The component type "Exhaust Vent Stack, Missile Cover and Screen" is associated with the auxiliary building vent stack, which handles exhaust from the other HVAC systems including auxiliary building special ventilation and steam exclusion system.

Filter Housings (RAI 2.3.3.12-1). In a letter dated August 28, 2009, the applicant was requested to clarify whether the filter housings are within the scope of license renewal and subject to an AMR.

In a letter dated September 28, 2009, the applicant clarified that the filter element housings are within the scope of license renewal and are included in the component type "Zone SV Exhaust Filter Assemblies," in LRA Table 2.3.3-12. The associated AMR results are provided in LRA Table 3.3.2-12.

Based on the above, the applicant concluded that a revision is not necessary for LRA Tables 2.3.3-12 and 3.2.2-12.

Based on its review, the staff finds the applicant's responses to RAI 2.3-2, RAI 2.3-5, and RAI 2.3.3.12-1 acceptable because the applicant provided acceptable clarifications such that the component types are properly identified as within the scope of license renewal, and 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). Therefore, the staff's concerns described in RAI 2.3-2, RAI 2.3-5, and RAI 2.3.3.12-1 are resolved.

2.3.3.12.3 Conclusion

The staff reviewed the LRA, USAR, and RAI responses 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 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 building special ventilation and steam exclusion 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 Auxiliary Building Ventilation System

2.3.3.13.1 Summary of Technical Information in the Application

LRA Section 2.3.3.13 describes the auxiliary building ventilation system. The applicant stated that this system provides general heating and ventilation for the auxiliary building, including such locations as general floor areas, equipment rooms, the spent fuel pool area, and the control room area. The system is designed to maintain air flows from cleaner, lower-level radioactive spaces to areas of potentially higher activity in order to minimize spread of

contamination. The system exhausts its air to the outside through high-efficiency particulate air (HEPA) filters in order to reduce any radioactive leakage to the environment.

The applicant classified this ventilation system as in-scope because it provides cooling for safety-related equipment, maintains pressure boundary integrity for zone SV, contains components used in safe shutdown scenarios such as the HELB, and contains components that support EQ and fire protection.

LRA Table 2.3.3-13 contains the components subject to an AMR.

2.3.3.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.13 and USAR Sections 9.6.3, 11.1.2, 11.2.3, H-2, and Table B.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 USAR to verify that the applicant has not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

During its review of LRA Section 2.3.3.13, the staff identified area(s) 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 a letter dated August 28, 2009, the staff requested that the applicant provide clarification for not listing the component types in LRA Tables 2.3.3-13 and 3.3.2-13 for the sealants, screens, and filter housings.

By letter dated September 28, 2009, the applicant clarified the above component types as follows:

Sealants (RAI 2.3-2). The applicant was requested to clarify whether sealants are within the scope of license renewal in accordance with 10 CFR 54.21(a)(1). In a letter dated September 28, 2009, the applicant clarified that LRA Section 2.1.5.7 identifies short-lived components and consumables, such as packing, gaskets, component seals, duct sealants, and O-rings. The applicant further stated that based on ANSI B31.1 and the ASME B&PV Code Section III, these consumable items are not pressure-retaining parts. Therefore, they do not perform a license renewal intended function in accordance with 10 CFR 54.4(a) and are not within the scope of license renewal.

Screens (RAI 2.3-5). In a letter dated September 28, 2009, the applicant clarified that the component types "Missile Hood and Bird Screen," "Exhaust Vent Stack, Missile Cover and Screen," and "Fixed Louvers" are listed in LRA Table 2.4.2-3. The component type "Exhaust Vent Stack, Missile Cover and Screen" is associated with the auxiliary building vent stack, which handles exhaust from the other HVAC systems including the auxiliary building ventilation system.

Filter Housings (RAI 2.3.3.13-1). In a letter dated August 28, 2009, the applicant was requested to clarify whether the filter housings are within the scope of license renewal and subject to an AMR.

In a letter dated September 28, 2009, the applicant clarified that the filter element housings for the auxiliary building supply air ventilation unit, the spent fuel pool exhaust filter assembly, and the auxiliary building exhaust filter assembly are within the scope of license renewal and are included in the component type "Filter Assemblies," in LRA Table 2.3.3-13. The associated AMR results are provided in LRA Table 3.3.2-13.

Based on the above, the applicant concluded that a revision is not necessary for LRA Tables 2.3.3-13 and 3.2.2-13.

Based on its review, the staff finds the applicant's responses to RAI 2.3-2, RAI 2.3-5, and RAI 2.3.3.13-1 acceptable because the applicant provided an acceptable clarification such that the component types are properly identified as within the scope of license renewal, and 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). Therefore, the staff's concerns described in RAI 2.3-2, RAI 2.3-5, and RAI 2.3.3.13-1 are resolved.

2.3.3.13.3 Conclusion

The staff reviewed the LRA, USAR, and RAI responses 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 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 building ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.14 Reactor Building Ventilation System

2.3.3.14.1 Summary of Technical Information in the Application

LRA Section 2.3.3.14 describes the reactor building ventilation system. The applicant stated that this system is comprised of eight ventilation and cooling subsystems:

- containment air cooling subsystem
- reactor support cooling subsystem
- reactor gap and neutron detector cooling subsystem
- containment dome ventilation subsystem
- containment purge and vent subsystem
- CRDMs cooling subsystem
- post-LOCA hydrogen control subsystem
- vacuum relief subsystem

The containment air cooling subsystem provides general air cooling for the containment vessel interior and operates to limit post-LOCA containment pressure temperature for a DBA. The post-LOCA hydrogen control subsystem (which contains the containment hydrogen analyzers)

controls hydrogen concentrations for post-LOCA containment environments. The vacuum relief system protects the containment vessel from damage due to negative pressures. The remaining subsystems operate to supply ventilation, cooling, supply, and/or exhaust air for their respective areas in order to cool and protect equipment and structures from high temperatures.

The applicant classified this system as in-scope for several reasons, some of which are as follows:

- cools and depressurizes the containment volume post-accident
- controls and disperses hydrogen concentrations post-LOCA
- protects the containment vessel from excessive negative pressures
- maintains vessel and zones pressure boundaries and integrities
- includes components that cool key portions of containment concrete structures
- allows for use of an external post-LOCA hydrogen control unit
- contains EQ components and components that support fire protection

LRA Table 2.3.3-14 contains the components subject to an AMR.

2.3.3.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.14 and USAR Section 5.4, Figure 14.3-32, and Table B.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 USAR to verify that the applicant has not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant has identified as within the scope of license renewal to verify that the applicant has not omitted any passive and long-lived components subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

During its review, the staff identified several areas in which additional information was necessary to complete the review of the applicant's scoping and screening results.

In RAI 2.3-2, dated August 28, 2009, the applicant was requested to clarify whether sealants are within the scope of license renewal in accordance with 10 CFR 54.21(a)(1).

In a letter dated September 28, 2009, the applicant clarified that LRA Section 2.1.5.7 identifies short-lived components and consumables, such as packing, gaskets, component seals, duct sealants, and O-rings. The applicant further stated that based on ANSI B31.1 and the ASME B&PV Code Section III, these consumable items are not pressure-retaining parts. Therefore, they do not perform a license renewal intended function in accordance with 10 CFR 54.4(a) and are not within the scope of license renewal.

In RAI 2.3.3.14-1, dated August 28, 2009, the applicant was asked to explain its reasoning why the containment air hydrogen analyzers are not included in the AMR, as these components were identified both as within the scope of license renewal and as active components by Note 1 in license renewal drawing LRM-403. In addition, the applicant was asked to explain why the calibration gas connecting lines and the associated valves are not included within the scope of license renewal.

In a letter dated September 28, 2009, the applicant stated that the containment air hydrogen analyzers fulfill the requirements of NUREG-0737 ["Clarification of TMI Action Plan Requirements" (November 1980)], item II.F.1.6. The applicant further clarified that Note 1 in license renewal drawing LRM-403 was incorrect and should have noted that the internal components of the containment air hydrogen analyzers are active and do not require an AMR. The applicant further stated that Note 1 should have indicated that the containment air hydrogen analyzer panels are within the scope of license renewal and evaluated with miscellaneous structural commodities. The containment air hydrogen analyzer panels are included in the commodity group "Panels and Cabinets," in LRA Table 2.4.2-13. The associated AMR results are provided in LRA Table 3.5.2-14. Regarding the calibration gas lines, the applicant clarified that they are excluded from the scope of license renewal in accordance with the scoping and screening methodology that is consistent with NEI 95-10, Section 5.2.1.2, "Equipment used to Establish Initial Conditions." Section 5.2.1.2 of NEI 95-10 indicates that nonsafety-related equipment required to maintain safety-related equipment within limits consistent with event assumptions is excluded from scope, provided that the nonsafety-related equipment does not perform a function that meets the criteria of 10 CFR 54.4. Since the calibration gas lines do not meet any of the criteria in 10 CFR 54.4, they are not within the scope of license renewal.

In RAI 2.3.3.14-1, dated August 28, 2009, the applicant was asked to explain the reasons for not including the ductwork on the suction side of containment fan coil units 1A and 1D, as shown in license renewal drawing LRM-602, within the scope of license renewal.

In a letter dated September 28, 2009, the applicant clarified that the lines shown in the license renewal drawing represent non-ducted air flow.

In response to RAI 2.3.3.14-1, the applicant clarified by letter dated September 12, 2009, that the housings of the reactor building ventilation system's filter assemblies meet the intended function of pressure boundary for the component type "Filter Assemblies" shown in LRA Table 2.3.3-14.

The applicant concluded that a revision to the LRA Tables 2.3.3-14 and 3.3.2-14 is not necessary.

Based on the applicant's responses and clarifications to RAI 2.3-2 and RAI 2.3.3.14-1, the staff finds that the component types are properly identified within the scope of license renewal, and 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). Therefore, the staff's questions in RAI 2.3-2 and RAI 2.3.3.14-1 are considered resolved.

2.3.3.14.3 Conclusion

The staff reviewed the LRA, USAR, and RAI responses 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 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 building ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.15 Turbine Building and Screenhouse Ventilation System

2.3.3.15.1 Summary of Technical Information in the Application

LRA Section 2.3.3.15 describes the turbine building and screenhouse ventilation system. The applicant stated that this system supplies fresh air to maintain proper temperatures in the turbine building and screenhouse, and supplies cooling and combustion air for the diesel generators. Fan coil units are provided for safeguards and for non-safeguards areas and components within the system's scope. The applicant stated that the safeguards fan coils are cooled by the service water system. The system supplies room cooling to the auxiliary feedwater pump rooms and to the station battery rooms.

The applicant classified this system as within scope because it supplies air flows to several safeguards rooms, equipment, and areas; contains components used in safe shutdown scenarios such as during a HELB; includes EQ components; and contains components that support fire protection and SBO.

LRA Table 2.3.3-15 contains the components subject to an AMR.

2.3.3.15.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.15 and USAR Table B.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 USAR 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 a letter dated August 28, 2008, the staff requested additional information to complete the review of the applicant's scoping and screening results.

Sealants (RAI 2.3-2). The applicant was requested to clarify whether sealants are within the scope of license renewal in accordance with 10 CFR 54.21(a)(1). In a letter dated September 28, 2009, the applicant clarified that LRA Section 2.1.5.7 identifies short-lived components and consumables, such as packing, gaskets, component seals, duct sealants, and O-rings. The applicant further stated that based on ANSI B31.1 and the ASME B&PV Code Section III, these consumable items are not pressure-retaining parts. Therefore, they do not perform a license renewal intended function in accordance with 10 CFR 54.4(a) and are not within the scope of license renewal.

Applicability of LRA Drawings (RAI 2.3.3.15-1). The staff requested that the applicant confirm the applicability of the license renewal drawings listed in LRA Section 2.3.3-15. In a letter dated September 28, 2009, the applicant clarified that all the drawings listed in LRA Section 2.3.3-15 are applicable to the turbine building and screenhouse ventilation system, except for license renewal drawing LRM-604, which was incorrectly listed.

Temperature Elements (RAI 2.3.3.15-1). The applicant was requested to clarify the reasons for including temperature elements in LRA Table 2.3.3-15. In a letter dated September 28, 2009,

the applicant stated that temperature elements perform a pressure boundary function and are used to close dampers upon high temperature for protection of steam exclusion zones, as described in USAR Section 10A.3.3.5. Therefore, the temperature elements were included within the scope of license renewal as highlighted in license renewal drawings LRM-601 and LRM-603.

Based on its review, the staff finds the applicant's responses to RAI 2.3-2 and RAI 2.3.3.15-1 acceptable because the applicant has properly identified the component types and the reasons for their inclusion within the scope of license renewal.

2.3.3.15.3 Conclusion

The staff reviewed the LRA, USAR, and RAI responses 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 determined if 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 and screenhouse ventilation system components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.16 Shield Building Ventilation System

2.3.3.16.1 Summary of Technical Information in the Application

LRA Section 2.3.3.16 describes the shield building ventilation system. The applicant stated that this system consists of two redundant trains of ventilation equipment and operates during accidents to both recirculate the containment vessel-shield building annulus air volume and clean it from radioactive leakage contaminants.

The applicant classified this system as within scope because it performs during DBAs to minimize potentially radioactive containment leakage to the environment, to maintain pressure boundary integrity and temperature/pressure control for zone SV, and because it contains EQ components.

LRA Table 2.3.3-16 contains the components subject to an AMR.

2.3.3.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.16 and USAR Sections 5.1, 5.2, 5.5, 5.8, H.3, and Table B.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 USAR 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 a letter dated August 28, 2008, the staff requested additional information to complete the review of the applicant's scoping and screening results.

Sealants (RAI 2.3-2). The applicant was requested to clarify whether sealants are within the scope of license renewal in accordance with 10 CFR 54.21(a)(1). In a letter dated September 28, 2009, the applicant clarified that LRA Section 2.1.5.7 identifies short-lived components and consumables, such as packing, gaskets, component seals, duct sealants, and O-rings. The applicant further stated that based on ANSI B31.1 and the ASME B&PV Code Section III, these consumable items are not pressure-retaining parts. Therefore, they do not perform a license renewal intended function in accordance with 10 CFR 54.4(a) and are not within the scope of license renewal.

Shield Building Ventilation Filter Assembly (RAI 2.3.3.16-1). In response to the staff's request to clarify what part of the shield building filter assembly is required to meet the intended function of pressure boundary, in a letter dated September 28, 2008, the applicant stated that the housing of the shield building filter assembly meets the intended function of pressure boundary.

Demister and Electric Heater (RAI 2.3.3.16-1). In a letter dated August 28, 2009, the staff asked the applicant whether the demister and the electric heater are included within the scope of license renewal.

In a letter dated September 28, 2009, the applicant stated that the demisters are within the scope of license renewal, but the electric heaters are not. The applicant stated that the demisters are included in the component type "Filter Elements," in LRA Table 2.3.3-16. The electric heaters are located internal to the filter assembly housing and do not perform a license renewal intended function. The applicant further stated that the electric heaters were removed from the operability and surveillance requirements of the technical specifications by Amendment No. 201, issued by the staff, in a letter dated December 30, 2008.

The staff finds the applicant's response to RAI 2.3.3.16-1 acceptable because the applicant has provided requested clarifications and properly identified the component types and the reasons for their inclusion or exclusion from the scope of license renewal.

2.3.3.16.3 Conclusion

The staff reviewed the LRA, USAR, and RAI responses 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 determined if 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 shield 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).

2.3.3.17 Technical Support Center Ventilation System

2.3.3.17.1 Summary of Technical Information in the Application

LRA Section 2.3.3.17 describes the technical support center (TSC) ventilation system. The applicant stated that this ventilation system has the function of keeping the TSC habitable during a plant emergency. During those times, the system handles 100 percent recirculated air,

pressurizes it, decontaminates it, conditions it, and prevents all but small amounts of air inleakage to its covered areas.

The applicant classified this system as within scope because it includes components that support fire protection and SBO.

LRA Table 2.3.3-17 contains the components subject to an AMR.

2.3.3.17.2 Staff Evaluation

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

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

During its review of LRA Section 2.3.3.17, the staff identified area(s) 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 a letter dated August 28, 2009, the staff requested that the applicant provide clarification for not listing the component types in LRA Tables 2.3.3-17 and 3.3.2-17 for the sealants, screens, battery room air compressor unit (ACU) cooling coils/fins, ACU compressor casings, and filter housings for filter elements.

By letter dated September 28, 2009, the applicant clarified the above component types as follows:

Sealants (RAI 2.3-2). The applicant was requested to clarify whether sealants are within the scope of license renewal in accordance with 10 CFR 54.21(a)(1). In a letter dated September 28, 2009, the applicant clarified that LRA Section 2.1.5.7 identifies short-lived components and consumables, such as packing, gaskets, component seals, duct sealants, and O-rings. The applicant further stated that based on ANSI B31.1 and the ASME B&PV Code Section III, these consumable items are not pressure-retaining parts. Therefore, they do not perform a license renewal intended function in accordance with 10 CFR 54.4(a) and are not within the scope of license renewal.

Screens (RAI 2.3-5). In a letter dated September 28, 2009, the applicant clarified that the component type "Louvers and Bird Screens" is listed in LRA Table 2.4.2-5.

Casings, Cooling Coils, Fins, and Filter Housings (RAI 2.3.3.17-1). In a letter dated August 28, 2009, the applicant was requested to clarify whether the casings, cooling coils, and filter housings are within the scope of license renewal and subject to an AMR.

In a letter dated September 28, 2009, the applicant clarified that the battery room ACU cooling coils/fins, ACU compressor casings, and filter housings for the filter elements are within the scope of license renewal and are included in the component type "Air Conditioning Units" and

"Air Handling Units," in LRA Table 2.3.3-17. The AMR results for these components are provided in LRA Table 3.3.2-17.

Based on the above, the applicant concluded that a revision is not necessary for LRA Tables 2.3.3-17 and 3.3.2-17.

Based on its review, the staff finds the applicant's responses to RAI 2.3-2, RAI 2.3-5, and RAI 2.3.3.17-1 acceptable because the applicant provided an acceptable clarification such that the component types are properly identified as within the scope of license renewal, and 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). Therefore, the staff's concerns described in RAI 2.3-2, RAI 2.3-5, and RAI 2.3.3.17-1 are resolved.

2.3.3.17.3 Conclusion

The staff reviewed the LRA, USAR, and RAI responses 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 determined if 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 TSC 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).

2.3.3.18 Fire Protection System

2.3.3.18.1 Summary of Technical Information in the Application

LRA Section 2.3.3.18 describes the fire protection system. The applicant stated that this system operates to detect and suppress fires so as to minimize equipment damage and to allow the plant to achieve and maintain safe shutdowns for fires and associated situations. The fire protection system consists of smoke detection components, alarms, and water-based, Halon-based, and carbon dioxide (CO_2)-based fire suppression subsystems and components.

- The water-based fire-suppression systems take water from Lake Michigan and use two fire pumps and a jockey pump to distribute fire water to piping, automatic sprinkler systems, and standpipe and hose stations.
- The low-pressure CO_2 fire suppression subsystem uses gas from a 7.5 ton capacity storage tank to protect the diesel generator rooms and to supply CO_2 to manual hose stations at various locations in the turbine and auxiliary buildings.
- The Halon fire-suppression subsystem is a self-contained system that protects various plant locations, including the computer rooms and the count room areas in the TSC.

The applicant stated in LRA Section 2.3.3.18 that the fire protection system is within the scope of license renewal because the system has intended functions that meet the criteria stated in 10 CFR 54.4(a). The system meets 10 CFR 54.4(a)(1) because the system provides fire protection for the EDGs. Further, the applicant stated that the system also meets criteria stated in 10 CFR 54.4(a)(3) because the system includes components that support fire protection.

LRA Table 2.3.3-18 contains the components subject to an AMR.

2.3.3.18.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.18 and USAR Sections 7.7.5, 8.2.2, 9.6.1, and Table B.2-1, and license renewal drawings 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 USAR to verify that the applicant had not omitted from the scope of license renewal any components with intended functions pursuant to 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as within the scope of license renewal to verify that the applicant had not omitted any passive or long-lived components subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the fire protection CLB documents listed in the KPS Operating License Condition 2.C(3). This review included KPS commitments to 10 CFR 50.48, "Fire Protection" (i.e., approved fire protection program), as provided in the responses to Appendix A to the BTP APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," May 1, 1976, documented in the KPS SERs, dated November 25, 1977, December 12, 1978, and February 13, 1981.

During its review of LRA Section 2.3.3.18, the staff identified areas in which additional information was necessary to complete its review of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.3.18-1, dated July 16, 2009, the staff stated that license renewal drawing LRM-202-3 shows fire hose connections at locations F9, F10, F11, G9, G10, and G11 as not within the scope of license renewal (i.e., not colored in brown). The staff requested that the applicant verify whether these fire hose connections 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). The staff also requested that, if these hose connections were excluded from the scope of license renewal and were not subject to an AMR, the applicant provide justification for the exclusion.

In its response dated August 6, 2009, the applicant stated that the fire hose connections at locations F9, F10, F11, G9, G10, and G11 on license renewal drawing LRM-202-3 are used only for non-fire purposes (e.g., station services) and do not perform a license renewal intended function.

In evaluating this response, the staff found that it was incomplete and that review of LRA Section 2.3.3.18 could not be completed. The applicant did not explain why the fire hose connections in question are used only for non-fire purposes (e.g., station services). National Fire Protection Association codes do not allow fire hose connections to be used for non-fire purposes. This resulted in the staff holding a telephone conference with the applicant on September 18, 2009, to discuss information necessary to resolve the concern in RAI 2.3.3.18-1. The product of the telephone conference was an agreement by the applicant to transmit the required information by a follow-up letter.

By letter dated November 13, 2009, the applicant stated that the hose connections shown at locations F9, F10, F11, G9, G10, and G11 on license renewal drawing LRM-202-3 are connections that can be used for general plant services. The applicant also stated that these hose connections are only used for non-fire purposes (e.g., station services) and do not perform a license renewal intended function. Finally, the applicant stated that certain fire hose stations

which are a part of the service water system, such as the one shown at location B6 on license renewal drawing LRM-202-3, are designated as fire hose stations and have been included within the scope of license renewal for 10 CFR 54.4(a)(3).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-1, including the information in the teleconference and letter dated November 13, 2009, acceptable because it clarifies that the components in question at the six locations are hose connections off of the service water system for general plant services and are not fire hose connections. The staff also finds that, as a result, the National Fire Protection Association code would not apply to these components. Fire hose connections that are designated as fire hose stations are highlighted on license renewal drawing LRM-202-3. Therefore, the staff's concern described in RAI 2.3.3.18-1 is resolved.

In RAI 2.3.3.18-2, dated July 16, 2009, the staff stated that license renewal drawing LRM-208-1 shows fire hydrants and hose houses (cabinets) as being within the scope of license renewal and subject to an AMR. However, license renewal drawing LRM-208-1 shows fire hose cabinets at locations G6 and H6 as out of scope (i.e., not colored in blue). The staff requested that the applicant verify whether the above fire hose cabinets 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). The staff also requested that, if these cabinets were excluded from the scope of license renewal and were not subject to an AMR, the applicant provide justification for the exclusion.

In its response dated August 6, 2009, the applicant stated that the LRA Section 2.1.5.4 supports are evaluated as commodities within in-scope structures. The fire hose cabinets are within the scope of license renewal per 10 CFR 54.4(a)(3) because they support fire protection and, therefore, are evaluated as commodities. The fire hose cabinets are included in the component type/structural member "Support for Miscellaneous Components – fire hose stations," in LRA Table 2.4.2-12, "Component Support." The associated AMR results are provided in LRA Table 3.5.2-13. Items treated as commodities, such as the fire hose cabinets mentioned in the RAI, are not highlighted on license renewal drawings.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-2 acceptable because the fire hose cabinets in question were identified to be within the scope of license renewal and subject to an AMR. Fire hose cabinets are included in LRA Table 2.4.2-12 as an in-line item of the component type structural member "Support for Miscellaneous Components – fire hose stations," with the AMR results provided in LRA Table 3.5.2-13.

In RAI 2.3.3.18-3, dated July 16, 2009, the staff stated that license renewal drawing LRM-208-3 shows fire department pump connections and associated components at locations B1, C1, and D1 as out of scope (i.e., not colored in blue). The staff requested that the applicant verify whether the fire department connections and associated 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). The staff also requested that, if they were excluded from the scope of license renewal and were not subject to an AMR, the applicant provide justification for the exclusion.

In its response dated August 6, 2009, the applicant stated that the fire department pump connections and associated components shown at locations B1, C1, and D1 on license renewal drawing LRM-208-3 provide fire protection for the administration training facility (ATF). The ATF is physically separated from the plant power block and is not included within the scope of

license renewal. Therefore, the fire protection piping inside the ATF and the fire department connections and associated components do not perform a license renewal intended function and have not been included within the scope of license renewal.

The staff confirmed that the fire department pump connections and associated components shown at locations B1, C1, and D1 on license renewal drawing LRM-208-3 are for the ATF, which is separated from the plant power block. The staff concludes that these fire pump department connections and associated components are correctly excluded from the scope of license renewal and not subject to an AMR.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-3 acceptable.

In RAI 2.3.3.18-4, dated July 16, 2009, the staff stated that KPS SER Section 4.3.1.5, dated December 22, 1978, states that "...automatic water spray system[s] are provided on combustible liquid hazards in the turbine building (hydrogen seal oil unit, oil storage reservoirs), the heating boiler fuel oil pumps in the auxiliary building, and in the oil-filled transformer in the yard areas...." License renewal drawing LRM-208-3 shows only the yard area oil-filled transformer automatic water spray system as being within the scope of license renewal and subject to an AMR. The staff requested that the applicant verify whether the automatic water spray systems for the hydrogen seal oil unit, oil storage reservoirs, and heating boiler fuel oil pumps 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). The staff also requested that, if they were excluded from the scope of license renewal and were not subject to an AMR, the applicant provide justification for the exclusion.

In its response dated August 6, 2009, the applicant stated that the automatic water spray systems for the hydrogen seal oil unit, oil storage reservoirs, and heating boiler fuel oil pumps are within the scope of license renewal and included in component groups "Pipe," "Sprinkler Head," and "Valves," in LRA Table 2.3.3-18. The associated AMR results are provided in LRA Table 3.3.2-18.

The license renewal drawing and locations identifying the automatic water spray system for the hydrogen seal oil unit, oil storage reservoirs, and heating boiler fuel oil pumps are provided below:

- Hydrogen seal oil unit – license renewal drawing LRM-208-1 at location D-6 (labeled "2 to Hydrogen Seal Oil, See Detail 1").
- Oil storage reservoir – license renewal drawing LRM-208-1 at location C-7 (labeled "To Turbine Oil Storage Tank Area Sprinkler System") and license renewal drawing LRM-208-3 at location D-3 (labeled "To Turb Oil Storage").
- Heating boiler fuel oil pumps – license renewal drawing LRM-208-1 at location D-7 (labeled "11/2 To Heat Boiler Fuel Oil Pump Area Sprinkler System (BSMT Floor), See Detail 2") and license renewal drawing LRM-208-3 at location F-11 (labeled "To Heating Boiler Sprinkler System").

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-4 acceptable because automatic water spray systems for the hydrogen seal oil unit, oil storage reservoirs, and heating boiler fuel oil pumps were identified to be within the scope of license renewal and

subject to an AMR. The applicant has included the fire suppression systems in question in component groups "Pipe," "Sprinkler Head," and "Valves," in LRA Table 2.3.3-18 with AMR results provided in LRA Table 3.3.2-18. The staff concludes that these fire suppression systems and their associated components are correctly included within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.18-4 is resolved.

In RAI 2.3.3.18-5, dated July 16, 2009, the staff stated that KPS SER Section 4.3.1.5, dated December 22, 1978, states that "...wet pipe sprinklers [are provided] on safety-related electrical cable in fire area AX-32, in the hallway of the screenhouse (area SC70), and [there is a plan to] to convert the existing wet pipe system in the working material storage (auxiliary building) to a deluge system...." The wet pipe and deluge sprinkler systems do not appear in LRA Section 2.3.3.18 or license renewal drawings as being within the scope of license renewal and subject to an AMR. The staff requested that the applicant verify whether the above wet pipe and deluge systems 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). The staff also requested that, if they were excluded from the scope of license renewal and were not subject to an AMR, the applicant provide justification for the exclusion.

In its response dated August 6, 2009, the applicant stated that the wet pipe and deluge sprinkler systems mentioned above are within the scope of license renewal and included in component groups "Pipe," "Sprinkler Head," and "Valves," in LRA Table 2.3.3-18. The associated AMR results are provided in LRA Table 3.3.2-18.

The license renewal drawing and locations identifying the automatic wet pipe and deluge sprinkler systems mentioned above are provided below:

- Safety-related electrical cable in fire area AX-32 – license renewal drawing LRM-208-1 at location F-7 (labeled "To Cable Tray Fire Protection") and license renewal drawing LRM-208-3 at location F-12 (labeled "To Cable Tray Sprinkler System").

- Screenhouse hallway (area SC70) – license renewal drawing LRM-208-1 at location E-8 (labeled "Screen House Tunnel Cable Tray Sprinkler System").

- Working material storage area – license renewal drawing LRM-208-1 at location D-8 (labeled "To Working Mat'l Storage Area Sprinkler System") and license renewal drawing LRM-208-3 at location D-10 (also labeled "To Working Mat'l Storage Sprinkler System"). This system was converted to a deluge sprinkler system in 1979.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-5 acceptable because wet pipe and deluge sprinkler systems were identified to be within the scope of license renewal and subject to an AMR. The applicant has included the water-based fire suppression systems in question in component groups "Pipe," "Sprinkler Head," and "Valves," in LRA Table 2.3.3-18 with AMR results provided in LRA Table 3.3.2-18. The staff concludes that these water-based fire suppression systems and their associated components are correctly included within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.18-5 is resolved.

In RAI 2.3.3.18-6, dated July 16, 2009, the staff stated that SER Section 4.3.1.6, dated December 22, 1978, states that "...one portable foam nozzle and foam concentrate is available. The plant had no fixed foam system prior to this review; however, the applicant has installed an

automatic foam suppression system on each of the two reactor coolant pumps...." The automatic foam suppression system for the two reactor coolant pumps does not appear in LRA Section 2.3.3.18 or license renewal drawings as being within the scope of license renewal and subject to an AMR. The staff requested that the applicant verify whether the automatic foam system for reactor coolant pumps is within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to an AMR, in accordance with 10 CFR 54.21(a)(1). The staff also requested that, if the foam system was excluded from the scope of license renewal and was not subject to an AMR, the applicant provide justification for the exclusion.

In its response dated August 6, 2009, the applicant stated that the foam suppression system for the reactor coolant pumps was replaced by a reactor coolant pump motor oil collection system in 1982 in accordance with 10 CFR 50, Appendix R. The staff was notified of this modification by letter dated February 28, 1983, from Mr. C.W. Giesler (WPSC) to the NRC, which transmitted the 1982 Annual Operating Report. The applicant stated that the reactor coolant pump motor oil collection system is within the scope of license renewal and included in the component types "Drip Pan and Enclosures," "Flexible Hoses," "Pipe," and "Reactor Coolant Pump Oil Collection Tank," in LRA Table 2.3.3-18. The applicant also stated that, with the exception of pipes, LRA Table 2.3.3-18 includes a footnote for these items indicating that they are not shown on the fire protection system license renewal drawings. Finally, the applicant stated that the associated AMR results are provided in LRA Table 3.3.2-18.

The staff reviewed the letter dated February 28, 1983, and confirmed that the reactor coolant pump automatic foam suppression system was removed and a reactor coolant pump oil collection system was installed in each of the pump vaults. Therefore, the staff's concern described in RAI 2.3.3.18-6 is resolved.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-6 acceptable.

In RAI 2.3.3.18-7, dated July 16, 2009, the staff stated that the SER, dated December 22, 1978, lists various types of fire water suppression systems provided in the plant areas for fire suppression activities. The fire suppression systems in various areas are:

- service room (fire area AX-32) automatic wet pipe sprinkler system
- turbine lube oil reservoirs deluge system
- charcoal filter deluge system

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

In its response dated August 6, 2009, the applicant stated that the fire water suppression systems for the areas mentioned above are within the scope of license renewal and shown on the license renewal drawings indicated below:

- Service room (fire area AX-32) – as indicated in Section 5.7 of the SER, dated December 12, 1978, the service room refers to an area which contains electrical cables in trays and conduit for redundant safety-related systems, as indicated by license renewal drawing LRM-208-1 at location F-7 (labeled "Cable Tray Fire Protection") and

license renewal drawing LRM-208-3 at location F-12 (labeled "Cable Tray Sprinkler System").

- Turbine lube oil reservoir deluge system – license renewal drawing LRM-208-1 (labeled "To Oil Reservoir and Conditioner Sprinkler System") at location F-5 and license renewal drawing LRM-208-3 at location F-5 (labeled "To Oil Reservoir Sprinkler System").

- Charcoal filter deluge system – the charcoal deluge system is supplied by the service water system as shown on license renewal drawing LRM-606 at locations B-1, C-1, E-1, F-1, B-6.5, E-6.5, F-6.5, and C-8.5.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-7 acceptable because fire water suppression systems were identified to be within the scope of license renewal and subject to an AMR. The staff has confirmed that the applicant correctly identified the service room (fire area AX-32) automatic wet pipe sprinkler system, turbine lube oil reservoir deluge system, and charcoal filter deluge system. The staff concludes that these water-based fire suppression systems and their associated components are correctly included within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.18-7 is resolved.

In RAI 2.3.3.18-8, dated July 16, 2009, the staff stated that the SER dated November 25, 1977, lists various areas of the plant as being protected with a low pressure CO_2 fire suppression system. The CO_2 fire suppression system serves the following areas:

- adjacent to steam generator blowdown (SGBD) tank room AX-20
- adjacent to 4,160-volt switchgear room AX-21
- adjacent to special ventilation room AX-23
- relay room AX-30
- adjacent to service room AX-32
- diesel generator 1-A TU-90
- diesel generator 1-A, day tank room TU-91
- diesel generator 1-B TU-92
- diesel generator 1-B, day tank room TU-93
- air compressor and pump room TU-95
- battery room 1-A TU-97
- battery room 1-B TU-98

LRA Section 2.3.3.18 states that "...the CO_2 storage tank primarily supplies CO_2 for automatic total flooding protection for diesel generator rooms and also supplies CO_2 to manual hose stations at various location in the Turbine Building and the Auxiliary Building...." It is not clear from review of LRA Section 2.3.3.18 that the total flooding automatic CO_2 fire suppression system installed in all areas listed above is included within the scope of license renewal and subject to an AMR. The staff requested that the applicant verify whether the total flooding automatic CO_2 fire suppression system installed in these areas is within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to an AMR, in accordance with 10 CFR 54.21(a)(1). The staff also requested that, if it was excluded from the scope of license renewal and was not subject to an AMR, the applicant provide justification for the exclusion.

In its response dated August 6, 2009, the applicant stated that the letter dated November 25, 1977, from Karl R. Goller of the NRC to Mr. E.W. James (WPSC), provided the interim technical

specifications on fire protection and listed the above areas in Section 3.15(d). A letter dated December 16, 1977, from Mr. E.W. James to Mr. Karl R. Goller, proposed a revision to the interim technical specifications that corrected the list of areas serviced by the low pressure fire protection CO_2 systems. Specifically, the areas identified as "Adjacent to the Special Ventilation Area" (AX-23) and "Adjacent to the Service Room" (AX-32) were removed from the list. A letter dated March 3, 1978, from Mr. A. Schwencer of the NRC to Mr. E.W. James (WPSC), subsequently issued the revised technical specifications for fire protection as Amendment No. 20 to the operating license.

The fire protection system limiting conditions for operation (LCOs) and surveillance requirements were removed from the technical specifications and relocated to the Fire Protection Program, by letter dated March 4, 1991, from Mr. M.J. Davis of the NRC to Mr. K.H. Evers (WPSC). The USAR incorporates the Fire Protection Program plan by reference. The Fire Protection Program plan states that the low-pressure CO_2 fire suppression system shall be operable whenever equipment or components in the following area(s) being protected are required:

(1) relay room AX-30

(2) diesel generator 1-A (TU-90) and day tank room (TU-91)

(3) diesel generator 1-B (TU-92) and day tank room (TU-93)

(4) CO_2 hose station adjacent to battery rooms 1A (TU-97) and 1B (TU-98)

(5) CO_2 hose station adjacent to air compressor and pump room (TU-95)

(6) CO_2 hose station adjacent to 4,160-volt switchgear room (AX-21) and blowdown tank rooms (AX-20)

As indicated in LRA Section 2.3.3.18, the evaluation boundary for the fire protection system includes the CO_2 and Halon gaseous suppression systems. Therefore, the entire low-pressure CO_2 fire suppression system has been included within the scope of license renewal in the areas identified above, as shown on the license renewal drawings as indicated below. As indicated, some of these areas do not utilize automatic suppression as implied in the RAI:

- Relay room (AX-30) – license renewal drawing LRM-384 at locations A-10/A-11 (labeled "Relay Room"). This is a manual trip total flooding system. Additionally, the relay room has a hose station (Hose Reel No. 3) shown at the same drawing locations.

- Diesel generator 1-A (TU-90) and day tank room (TU-91) – license renewal drawing LRM-384 at location E-4 (labeled "To Diesel Generator 1-A Area Discharge Nozzles"). This is an automatic total flooding system.

- Diesel generator 1-B (TU-92) and day tank room (TU-93) – license renewal drawing LRM-384 at location E-6 (labeled "To Diesel Generator 1-B Area Discharge Nozzles"). This is an automatic total flooding system.

- Hose station adjacent to battery rooms 1A (TU-97) and 1B (TU-98) – license renewal drawing LRM-384 at locations B-11/B-12 (labeled "To Turbine Room Mezz. Floor 4160 V SWGR Bus (Hose Reel No. 2)").

- Hose station adjacent to air compressor and pump room (TU-95) – license renewal drawing LRM-384 at locations D-11/D-12 (labeled "To Turbine Room BSMT Floor 4160 V SWGR Bus (Hose Reel No. 1)").

- Hose station adjacent to 4,160-volt switchgear room (AX-21) and blowdown tank rooms (AX-20) – license renewal drawing LRM-384 at locations A-2/A-3 (labeled "To Main 4160V SWGR Bus BSMT Floor. (Hose Reel No. 4)").

The components of the low-pressure CO_2 fire suppression system identified above are included in the component types "Hose Reels/Station," "Nozzles," "Odorizers," "Pipe," and "Valves," in LRA Table 2.3.3.18. The associated AMR results are provided in LRA Table 3.3.2-18.

The staff reviewed the applicant's docketed correspondence and confirmed that the applicant appropriately identified areas protected by the low pressure CO_2 fire suppression system. The staff concluded that the applicant correctly included relay room AX-30, diesel generator 1-A (TU-90) and day tank room (TU-91), diesel generator 1-B (TU-92) and day tank room (TU-93), CO_2 hose station adjacent to battery rooms 1A (TU-97) and 1B (TU-98), CO_2 hose station adjacent to air compressor and pump room (TU-95), and CO_2 hose station adjacent to 4,160-volt switchgear room (AX-21) and blowdown tank rooms (AX-20) and their associated components within the scope of license renewal and subject to an AMR. Moreover, the staff concluded that the applicant correctly excluded areas AX-23 and AX-32 from the scope of license renewal and thus, not subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.18-8 is resolved.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-8 acceptable.

In RAI 2.3.3.18-9, dated July 16, 2009, the staff stated that LRA Table 2.3.3.18 excludes several types of fire protection components that appear in the SER dated December 22, 1978. These components are listed below:

- hose racks
- pipe fittings
- pipe supports
- dikes for oil spill confinement
- floor drains and curbs for fire water

For each, the staff requested that the applicant determine whether the component should be included in LRA Tables 2.3.3-18 and 3.3.2-18, and, if not, justify the exclusion.

In its response dated August 6, 2009, the applicant stated that the above fire protection components are within the scope of license renewal and evaluated for an AMR. Identified below are the LRA tables that contain the screening AMR results for each component:

- Hose racks – evaluated as a commodity and are included in the commodity type/structural member "Supports for Miscellaneous Components (fire hose stations)," in LRA Table 2.4.2-12, "Component Supports." The associated AMR results are provided in LRA Table 3.5.2-13.

- Pipe fittings – included in the component type "Pipe," in LRA Table 2.3.3-18. The associated AMR results are provided in LRA Table 3.3.2-18. Note that LRA Section 2.1.5.1 indicates that "Pipe" includes piping and all of the associated fittings, flanges (including blind and spectacle), elbows, reducers, welds, drain lines, vent lines, end caps, threaded plugs, fill connections, funnels, and access ports such as manholes.

- Pipe supports for fire protection – evaluated as a commodity and are included in the commodity type/structural member "Supports for Piping and Components," in LRA Table 2.4.2-12. The associated AMR results are provided in LRA Table 3.5.2-13.

- Dikes for oil spill confinement – located in the turbine building and evaluated as an inherent part of the structure. The concrete dikes are included in the structural member "Structural Reinforced Concrete (slabs, beams, columns, and walls)," in LRA Table 2.4.2-6. The associated AMR results are provided in LRA Table 3.5.2-7.

- Floor drains – as indicated in LRA Section 2.1.3.6.4, floor drainage outside of the reactor containment vessel that is credited for protecting safety-related equipment has been included within the scope of license renewal per 10 CFR 54.4(a)(2) and evaluated for aging management with the miscellaneous drain and sumps system. These floor drains are included in the component type "Pipe," in LRA Table 2.3.3-26, "Miscellaneous Drain and Sumps." The associated AMR results are provided in LRA Table 3.3.2-26.

- Curbs for fire water – steel curbing for fire water is located in the auxiliary building, turbine building, and screenhouse and evaluated with the associated structures. The steel curbing is included in the structural member "Miscellaneous Steel (embedded steel exposed surfaces (shapes, plates, unistrut, etc.) ladders, grating, checkered plates, stairs handrails)," identified in LRA Tables 2.4.2-3, 2.4.2-6, and 2.4.2-11. The associated AMR results are provided in LRA Tables 3.5.2-4, 3.5.2-7, and 3.5.2-12.

In reviewing the applicant's response to the RAI, the staff found that each item in the RAI was addressed and resolved satisfactorily as follows:

The applicant stated that hose racks are included under commodity type/structural member "Supports for Miscellaneous Components (fire hose stations)," in LRA Table 2.4.2-12, "Component Supports," with the AMR results provided in LRA Table 3.5.2-13.

Although the description of the "Pipe" line item provided in LRA Table 2.3.3-18 does not list pipe fittings specifically, the applicant stated that it considers the pipe fittings, as included in LRA Table 2.3.3-18 under the component type "Pipe," with the AMR results provided in LRA Table 3.3.2-18.

The applicant stated that pipe supports for the fire protection piping are included under commodity type/structural member "Supports for Piping and Components," in LRA Table 2.4.2-12, with the AMR results provided in LRA Table 3.5.2-13.

The applicant stated that dikes for oil spill confinement are included in the line item structural member "Structural Reinforced Concrete (slabs, beams, columns, and walls)," in LRA Table 2.4.2-6, with the AMR results provided in LRA Table 3.5.2-7.

The applicant also stated that floor drains are evaluated under the component type "Pipe," in LRA Table 2.3.3-26, "Miscellaneous Drain and Sumps." The associated AMR results are

provided in LRA Table 3.3.2-26. The applicant stated that steel curbing for fire water is located in the auxiliary building, turbine building, and screenhouse and evaluated with the associated structures.

The applicant also stated that steel curbing is included in the structural member "Miscellaneous Steel," in LRA Tables 2.4.2-3, 2.4.2-6, and 2.4.2-11, with the AMR results provided in LRA Tables 3.5.2-4, 3.5.2-7, and 3.5.2-12.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-9 acceptable because it resolved the staff's concerns regarding scoping and screening of fire protection system components listed in the RAI.

In RAI 2.3.3.18-10, dated July 16, 2009, the staff stated that LRA Section 2.3.3-18 states that "...the water-based fire suppression subsystem, which takes water from Lake Michigan, consists of two fire pumps, a jockey pump, main and branch supply line piping...." LRA Section 2.3.3.18 discusses requirements for the fire water supply system but does not mention trash racks and traveling screens for the fire pump suction water supply. Trash racks and traveling screens are located upstream of the fire pump suctions to remove any major debris from the fresh or raw water to prevent clogging of the fire protection water supply system. Trash racks and traveling screens are typically considered to be passive, long-lived components. Both the trash racks and traveling screens are located in a fresh or raw water/air environment and are typically constructed of carbon steel. Carbon steel in a fresh or raw water environment or water/air environment is subject to loss of material, pitting, crevice formation, and microbiologically-influenced corrosion and fouling. The staff requested that the applicant explain the apparent exclusion of the trash racks and traveling screens that are located upstream of the fire pump suctions from the scope of license renewal, in accordance with 10 CFR 54.4(a), and subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

In its response dated August 6, 2009, the applicant stated that the trash racks are within the scope of license renewal and included in the structural member "Trash Grills" and "Trash Anchorage," in LRA Table 2.4.2-10, "Intake Structure." The associated AMR results are provided in LRA Table 3.5.2-11.

The applicant also stated that the traveling water screens are within the scope of license renewal. As indicated in LRA Section 2.3.3.6, "Service Water System," the passive portions of the traveling water screens (frames and covers) is evaluated for aging management with the screenhouse structure. The frames and covers are included in structural members "Traveling Water Screen Support Frames" and "Traveling Water Screen Covers," respectively, in LRA Table 2.4.2-11, "Screenhouse." The associated AMR results are provided in LRA Table 3.5.2-12.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.18-8 acceptable because the applicant: (1) clarified that trash racks are included in the LRA as part of Table 2.4.2-10, under line item structural member "Trash Grills," with the AMR results provided in LRA Table 3.5.2-11; and (2) stated that traveling screens are within the scope of license renewal, but only the passive portions of the traveling screens (frames and covers) are included in LRA Table 2.4.2-11, with the AMR results provided in LRA Table 3.5.2-12.

2.3.3.18.3 Conclusion

The staff reviewed the LRA, USAR, RAI responses, and drawings to determine whether the applicant properly identified all fire protection system components within the scope of license renewal. In addition, the staff sought to determine if the applicant properly identified all fire protection system components subject to an AMR. On the basis of its review, the staff concludes 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).

2.3.3.19 Diesel Generator System

2.3.3.19.1 Summary of Technical Information in the Application

LRA Section 2.3.3.19 describes the diesel generator system. The applicant stated that this system includes both diesel generator-mechanical and diesel generator-electrical systems. The applicant further stated that the system contains two EDGs and one TSC diesel generator. The diesel generator portion is comprised of five subsystems, which collectively provide dependable, onsite electrical power, capable of starting automatically when required, to supply loads necessary for safe plant shutdown in all circumstances, including DBA responses such as loss of coolant, as well as for SBO situations. The five subsystems for the EDGs are listed as follows:

- starting subsystem
- lube oil subsystems
- cooling water subsystems
- air intake and exhaust subsystems
- fuel oil subsystems

Finally, the applicant stated that the TSC diesel generator is used to supply power to specified loads during an SBO event.

The applicant classified this system as within scope for several reasons, some of which are listed as follows:

- provides emergency electrical power to operate the engineered safety features equipment
- provides air for operation of service water valves and ventilation dampers to the diesel generators
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains components used in safe shutdown scenarios such as the HELB
- includes EQ components and contains components that support fire protection and SBO

LRA Table 2.3.3-19 contains the components subject to an AMR.

2.3.3.19.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.19 and USAR Sections 8.1.1, 8.2.3, Table 8.2-1, Table B.2-1, and Figure 8.2-10, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.3.19-01, dated April 3, 2009, the staff noted license renewal drawing LRM-213-9, locations B-1, B-2, B-3, B-4, B-5, B-7, B-8, B-10, B-11, and B-12, shows nonsafety-related piping connected to safety-related components at valves SA2020A-1, SA2020A-2, SA2020A-3 SA2020A-4, SA2020B-1, SA2020B-2, SA2020B-3, and SA2020B-4, and traps downstream of after coolers 166-021 and 166-022 to floor drains. The applicant was requested to provide the location of the seismic anchor for the nonsafety-related ¾-inch lines connected to the safety-related valves and traps.

In its response dated April 27, 2009, the applicant stated no structural anchors are identified because the bounding scoping methodology as described in LRA Section 2.1.3.6.2, "NS Piping Attached to SR Piping," was applied and the entire drain line sections from the safety-related valves to the floor drain were included within the scope of license renewal for 10 CFR 54.4(a)(2). The traps, after coolers, and air dryers are not safety-related and were included within the scope of license renewal for 10 CFR 54.4(a)(3) in support of 10 CFR 50.48 fire protection regulations.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.19-01 acceptable because the applicant clarified that: (a) the bounding scoping methodology described in LRA Section 2.1.3.6.2 was applied; and (b) the traps, after coolers, and air dryers are not safety-related and are included within the scope of license renewal for 10 CFR 54.4(a)(3). Therefore, the staff's concern described in RAI 2.3.3.19-01 is resolved.

2.3.3.19.3 Conclusion

The staff reviewed the LRA, USAR, RAI responses, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff's review determined whether the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the diesel generator system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the diesel generator system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.20 Circulating Water System

2.3.3.20.1 Summary of Technical Information in the Application

LRA Section 2.3.3.20 describes the circulating water system. The applicant stated that this system is an open-cycle cooling system providing water to the main condensers, while also providing normal and alternate water sources for the service water system and the fire protection system. Water is provided from Lake Michigan. The applicant also stated that the system is comprised of an intake structure and a discharge structure, along with a screenhouse

forebay, circulating water pumps, associated piping, valves, and equipment. The system contains an alternate, safety-related recirculation line/distribution pipe as an alternate water source for the service water system and the fire protection system, as well as for de-icing of the traveling water screens.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides the normal and the alternate water sources for the service water system
- provides flowpaths for de-icing of the traveling water screens
- contains spatially oriented, nonsafety-related components whose failure could impact safety-related SSCs
- minimizes flooding through tripping features to protect the turbine building basement
- includes components that support fire protection

LRA Table 2.3.3-20 contains the components subject to an AMR.

2.3.3.20.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the circulating water system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.21 Gaseous Waste Processing and Discharge System

2.3.3.21.1 Summary of Technical Information in the Application

LRA Section 2.3.3.21 describes the gaseous waste processing and discharge system. The applicant stated that this system collects and processes gaseous radioactive wastes to permit their discharge within applicable regulatory limits.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides reactor containment vessel integrity and isolation
- maintains a pressure boundary from accidental radioactive gas release
- maintains a pressure boundary for the component cooling water system
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary

- includes EQ components

LRA Table 2.3.3-21 contains the components subject to an AMR.

2.3.3.21.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the gaseous waste processing and discharge system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.22 Liquid Waste Processing and Discharge System

2.3.3.22.1 Summary of Technical Information in the Application

LRA Section 2.3.3.22 describes the liquid waste processing and discharge system. The applicant stated that this system collects liquid radioactive wastes from plant operation; processes them by filtration, dilution, and/or demineralization; and provides the means for their release within regulatory limits.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides reactor containment vessel integrity and isolation
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary
- includes EQ components

In addition, the LRA states that portions of the evaporator subsystem (although this subsystem is no longer used) are within scope since they are connected to the component cooling water system and provide some structural support.

LRA Table 2.3.3-22 contains the components subject to an AMR.

2.3.3.22.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.22, USAR Section 11.1.2 and Table B.2-1, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.3.22-01, dated April 3, 2009, the staff noted license renewal drawing LRXK-100-131, location A-7, shows the laundry and hot shower tank 1A within the scope of license renewal per 10 CFR 54.4(a)(2). The attached blind flange on the overflow connection is shown as not within scope (same flange on tank 1B is shown as within scope). The applicant was requested to provide a justification for not including the blind flange on the laundry and hot shower tank 1A within the scope of license renewal per 10 CFR 54.4(a)(2).

In its response dated April 27, 2009, the applicant stated the subject blank flange for the liquid waste processing and discharge system was within the scope of license renewal per 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.22-01 acceptable because the applicant clarified that the flange in question for the liquid waste processing and discharge system is within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.22-01 is resolved.

In RAI 2.3.3.22-02, dated April 3, 2009, the staff noted license renewal drawing LRXK-100-44, location E-8, shows a sample sink and a line to the fume hood sampler as not within the scope of license renewal. The staff also noted that all piping entering and exiting the sink, including the drain to the waste holdup tank which is shown as belonging to the liquid waste processing and discharge system, is shown as within the scope of license renewal for 10 CFR 54.4(a)(2). The applicant was requested to explain why the sample sink and sample line to the fume hood sampler are not within the scope of 10 CFR 54.4(a)(2).

In its response dated April 27, 2009, the applicant stated the subject sample line to the fume hood sampler is incorrectly shown on license renewal drawing LRXK-100-44. The applicant stated that this line is no longer installed in the plant. In addition, the applicant provided justification as to why the sample sink and its associated drain pipe are not within the scope of license renewal by explaining its reasoning behind the conclusion that these two components do not perform an intended function in accordance with 10 CFR 54.4(a).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.22-02 acceptable because the applicant clarified that the sample sink and associated piping in question are not within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.22-02 is resolved.

2.3.3.22.3 Conclusion

The staff reviewed the LRA, USAR, RAI responses, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the liquid waste processing and discharge system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the liquid waste processing and discharge system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.23 Radiation Monitoring System

2.3.3.23.1 Summary of Technical Information in the Application

LRA Section 2.3.3.23 describes the radiation monitoring system. The applicant stated that this system performs continuous radiological monitoring of important plant systems and areas to warn of problems such as system malfunctions, personnel radiological hazards, potential radiological releases, or plant damage.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides reactor containment vessel integrity and isolation
- prevents or minimizes radioactive releases to the environment
- actuates post-accident fans and ventilation components
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- includes EQ components

LRA Table 2.3.3-23 contains the components subject to an AMR.

2.3.3.23.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the radiation monitoring system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.24 Makeup and Demineralizer System

2.3.3.24.1 Summary of Technical Information in the Application

LRA Section 2.3.3.24 describes the makeup and demineralizer system. The applicant stated that this system provides degasified and demineralized water from the outlet of the service water pretreatment system filters. The applicant described the system as composed of two redundant trains of ion exchangers, which then supplies water for both primary and secondary systems.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides a safety-related boundary for several systems
- provides containment volume pressure boundary integrity and isolation

- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary
- includes components that support fire protection and SBO

LRA Table 2.3.3-24 contains the components subject to an AMR.

2.3.3.24.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.24, USAR Figure 9.2-5, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.3.24-01, dated April 3, 2009, the staff noted license renewal drawing LRM-209-2, location B-1, shows a 1½-inch line within the scope of license renewal for 10 CFR 54.4(a)(2). However, the continuation of this 1½-inch line on license renewal drawing LRM-385, location G7, shows this line is not within the scope of license renewal. The applicant was requested to provide additional information explaining why there is a difference in scope classification between license renewal drawings LRM-209-2 and LRM-385.

In its response dated April 27, 2009, the applicant stated that the continuation of this 1½-inch line on license renewal drawing LRM-385 is not within scope because it is located within the solid radioactive waste processing cubicle which has no safety-related SSCs. The applicant also stated that a note identifying the in-scope boundary was omitted.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.24-01 acceptable because the applicant clarified the scoping classification for the 1½-inch line in question. Therefore, the staff's concern described in RAI 2.3.3.24-01 is resolved.

2.3.3.24.3 Conclusion

The staff reviewed the LRA, USAR, RAI response, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the makeup and demineralized water system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the makeup and demineralized water system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.25 Service Water Pretreatment System

2.3.3.25.1 Summary of Technical Information in the Application

LRA Section 2.3.3.25 describes the service water pretreatment system. The applicant stated that this system takes water from the potable water system, or as an alternate, from the service water system, removes solids, and supplies the output to the makeup and demineralized water system, as well as various components in the screenhouse and turbine buildings.

The applicant classified this system as within scope because it provides a safety-related pressure boundary for the service water system; provides bearing lube water to service water pump bearings; contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs; and contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary.

LRA Table 2.3.3-25 contains the components subject to an AMR.

2.3.3.25.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.25 and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.3.25-01, dated April 3, 2009, the staff noted license renewal drawing LRM-394, location F-10, shows a 4-inch line downstream of valve SW(T)404 as not within the scope of license renewal for 10 CFR 54.4(a)(2). However, the continuation of this 4-inch line, on license renewal drawing LRM-211, location G-1, shows this line is within the scope of license renewal for 10 CFR 54.4(a)(2). The applicant was requested to provide additional information explaining why there is a difference in scope classification between license renewal drawings LRM-394 and LRM-211.

In its response dated April 27, 2009, the applicant clarified that a portion of the 4-inch line is shown as within scope on both license renewal drawings LRM-394 and LRM-211. The applicant identifies LRA note 1 which clarifies why the piping downstream of valve SW(T)404 is not within the scope of license renewal.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.25-01 acceptable because the applicant clarified the scoping classification for the 4-inch line in question. Therefore, the staff's concern described in RAI 2.3.3.25-01 is resolved.

In RAI 2.3.3.25-02, dated April 3, 2009, the staff noted license renewal drawing LRM-394, location E-4, shows valve SW(T)242 as within the scope of license renewal for 10 CFR 54.4(a)(2). However, the same valve on license renewal drawing LRM-202-2, location E-8, is shown to be within the scope of license renewal for 10 CFR 54.4(a)(1).

In its response dated April 27, 2009, the applicant stated that valve SW(T)242 is within the scope of license renewal for 10 CFR 54.4(a)(3), in support of 10 CFR 50.48 fire protection regulations, and that valve SW(T)242 on license renewal drawing LRM-394 is incorrectly shown

as within scope for 10 CFR 54.4(a)(2) and should be highlighted to be shown as within the scope of license renewal for 10 CFR 54.4(a)(3).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.25-02 acceptable because the applicant clarified the scoping classification for valve SW(T)242. Therefore, the staff's concern described in RAI 2.3.3.25-02 is resolved.

2.3.3.25.3 Conclusion

The staff reviewed the LRA, RAI responses, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the service water pretreatment system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the service water pretreatment system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.26 Miscellaneous Drains and Sumps System

2.3.3.26.1 Summary of Technical Information in the Application

LRA Section 2.3.3.26 describes the miscellaneous drains and sumps system. The applicant stated that this system consists of separate drains and sumps requiring physical separation due to radiological, chemical, environmental, or toxicological reasons. The system is described as having pumps and sumps that collect drainage from various locations; the pumps are for transferring the liquid wastes for processing and/or disposal.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides containment vessel pressure boundary integrity and isolation
- provides RHR pump room flood control
- provides a pressure boundary against additional radiological releases during plant accidents
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary
- includes EQ components

LRA Table 2.3.3-26 contains the components subject to an AMR.

2.3.3.26.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.26 and USAR Sections 6.2.5, 6.5.1, and 11.1.2, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.3.26-01, dated April 3, 2009, the staff noted license renewal drawing LRM-350, locations D-5, D-6, and D-10, show nonsafety-related piping connected to safety-related piping components at valves MD(R)-250A&B, MD(R)-251A&B, MD(R)-260, MD(R)-261, MD(R)-270, MD(R)-271, MD(R)-272, MD(R)-273, and MD(R)-262. The applicant was requested to provide the location of the seismic restraint for the nonsafety-related 1-inch lines connected to the safety-related heat exchangers, 1A and 1B, the letdown exchanger, and seal water heat exchanger piping.

In its response dated April 27, 2009, the applicant clarified that the bounding scoping methodology was applied, wherein the sludge interceptor tank was used as an equivalent anchor.

Based on its review, the staff found the applicant's response to RAI 2.3.3.26-01 acceptable for the piping to the sludge interceptor tank, but the response was incomplete as described in RAI 2.3.3.26-01(a). Therefore, the staff's concern described in RAI 2.3.3.26-01 was not resolved.

In RAI 2.3.3.26-01(a), dated July 7, 2009, the staff noted the response to RAI 2.3.3.26-01 did not identify the seismic anchor for the branch piping continued to the waste area sump pumps. The applicant was requested to provide the location for the seismic anchor for the nonsafety-related branch piping continued to the waste area sump pumps.

In its response dated August 6, 2009, the applicant stated the bounding methodology described in LRA Section 2.1.3.6.2 was applied to the subject piping, and the piping should have been included within the scope of license renewal for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.26-01(a) acceptable because the applicant stated that the subject piping is within the scope of license renewal for 10 CFR 54.4(a)(2).

In RAI 2.3.3.26-02, dated April 3, 2009, the staff noted license renewal drawing LRM-350, locations H-6 and H-7, shows 3-inch and 2-inch lines, downstream of the RHR pump flushing outlets, as within the scope of license renewal for 10 CFR 54.21(a)(2). However, part of the 2-inch line is shown as not within the scope of license renewal. The 2-inch line upstream of valve MD(R)-280B, location H-7, is continued to license renewal drawing LRM-539, location H-5, where it is shown as within the scope of license renewal while it is shown as not within the scope of license renewal on license renewal drawing LRM-350. The applicant was asked to provide additional information to establish the license renewal boundary for the 3-inch and 2-inch lines shown as not within the scope of license renewal.

In its response dated April 27, 2009, the applicant confirmed that valve MD(R)-280B and the associated 2-inch line on license renewal drawing LRM-539 are within the scope of license renewal for 10 CFR 54.4(a)(2). This same valve and a portion of the associated 2-inch line were

incorrectly not highlighted on license renewal drawing LRM-350 and are within the scope of license renewal for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.3.26-02 acceptable because the applicant clarified the scoping classification for the 2-inch line. Therefore, the staff's concern described in RAI 2.3.3.26-02 is resolved.

2.3.3.26.3 Conclusion

The staff reviewed the LRA, USAR, RAI responses, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the miscellaneous drains and sumps system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the miscellaneous drains and sumps system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.27 Miscellaneous Gas System

2.3.3.27.1 Summary of Technical Information in the Application

LRA Section 2.3.3.27 describes the miscellaneous gas system. The applicant stated that this system supplies nitrogen, hydrogen, propane, and CO_2 gases to various plant equipment and systems. Systems listed include the following:

- safety injection system
- waste gas decay system
- CVCS
- pressurizer relief system
- spent fuel pool components
- main electrical generator
- fire protection system
- gases for chemical analysis and post-accident sampling

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides containment volume pressure boundary integrity and isolation
- provides a pressure boundary for the RCS, safety injection system, and CVCS
- provides nitrogen backup to the spent fuel pool inflatable seals and oxygen supply to the containment hydrogen analyzers
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary
- includes components that support fire protection and SBO

LRA Table 2.3.3-27 contains the components subject to an AMR.

2.3.3.27.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the miscellaneous gas system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.28 Potable Water System

2.3.3.28.1 Summary of Technical Information in the Application

LRA Section 2.3.3.28 describes the potable water system. The applicant stated that this system provides domestic water for plant personnel and for some plant equipment. The LRA states the system's water source is a pair of onsite deep wells located outside the protected area.

The applicant classified this system as within scope because the system has nonsafety-related components that are part of the control room pressure boundary, and because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs.

LRA Table 2.3.3-28 contains the components subject to an AMR.

2.3.3.28.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the potable water system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.3.29 Primary Sampling System

2.3.3.29.1 Summary of Technical Information in the Application

LRA Section 2.3.3.29 describes the primary sampling system. The applicant stated that this system, which consists of two parallel subsystems, provides the ability to sample and analyze the RCS, the containment vessel atmosphere, the containment vessel sumps, and other supporting locations. Each subsystem contains heat exchangers, valves, and associated piping and directs samples to either the auxiliary building sample room or to the auxiliary building high radiation sample room.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides containment volume pressure boundary integrity and isolation

- provides a pressure boundary for the component cooling system
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary
- includes EQ components

LRA Table 2.3.3-29 contains the components subject to an AMR.

2.3.3.29.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the primary sampling system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 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 these systems in the following LRA sections:

- Section 2.3.4.1, "Turbine System"
- Section 2.3.4.2, "Main Steam and Steam Dump System"
- Section 2.3.4.3, "Bleed Steam System"
- Section 2.3.4.4, "Feedwater System"
- Section 2.3.4.5, "Condensate System"
- Section 2.3.4.6, "Steam Generator Blowdown Treatment System"
- Section 2.3.4.7, "Auxiliary Feedwater System"
- Section 2.3.4.8, "Air Removal System"
- Section 2.3.4.9, "Heater and Moisture Separator Drains System"
- Section 2.3.4.10, "Heating Steam System"
- Section 2.3.4.11, "Main Generator (Mechanical) and Auxiliaries System"
- Section 2.3.4.12, "Secondary Sampling System"
- Section 2.3.4.13, "Turbine Oil Purification System"
- Section 2.3.4.14, "Turbine Room Traps and Drains System"

2.3.4.1 Turbine System

2.3.4.1.1 Summary of Technical Information in the Application

LRA Section 2.3.4.1 describes the turbine system. The applicant stated that this system, composed of one high-pressure turbine and two low-pressure turbines, converts thermal energy

from the main steam system into mechanical energy to rotate the main (electrical) generator. The LRA indicates also that several auxiliary subsystems monitor, control, provide lubrication and cooling, and improve turbine system efficiency.

The applicant classified this system as within scope because it provides safety-related protection; provides indication and controls; contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs; and includes components that support safe shutdown following an ATWS.

LRA Table 2.3.4-1 contains the components subject to an AMR.

2.3.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.1 and USAR Sections 10.2.2, B.9, Table 7.2-1, and Table B.2-1, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.4.1-01, dated April 03, 2009, the staff noted license renewal drawing LRM-202-3, location H-7, shows a continuation of in-scope 2-inch 10 CFR 54.4(a)(2) pipe from license renewal drawing LRM-204, location A-5. Review of license renewal drawing LRM-204 found a continuation (i.e., 2 inches to stand pipe) at A-5, however, this line is included within the scope of license renewal for 10 CFR 54.4(a)(1). The applicant was requested to confirm that the located continuation is correct and provide additional information to explain the different criteria for this section of pipe.

In its response dated April 27, 2009, the applicant confirmed that the continuation of the 2-inch auxiliary feedwater pump recirculation line to the standpipe on license renewal drawing LRM-202-3 is within the scope of license renewal for 10 CFR 54.4(a)(2). The applicant also stated this line continues from the 2-inch line downstream of valve AFW-120 on license renewal drawing LRM-204 (location A-5) and is also within the scope of license renewal for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.4.1-01 acceptable because the applicant confirmed the continuation location, and also stated the mismatch in scoping criterion is a highlighting error. Therefore, the staff's concern described in RAI 2.3.4.1-01 is resolved.

2.3.4.1.3 Conclusion

The staff reviewed the LRA, USAR, RAI response, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the turbine system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the turbine system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.2 Main Steam and Steam Dump System

2.3.4.2.1 Summary of Technical Information in the Application

LRA Section 2.3.4.2 describes the main steam and steam dump system. The applicant stated that this system transports dry, saturated steam from the SGs to the main turbine. The LRA states that the steam dump portion functions as an artificial steam load by sending steam to the condenser or to the atmosphere. The system also supplies steam to several plant auxiliaries and components. The LRA further states that the system contains main steam isolation valves, turbine stop and control valves, steamline code safeties, atmospheric power-operated relief valves, steam flow nozzles at the outlet of the SGs, and associated piping, as well as other valves and components.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides a steam flowpath for RCS heat removal
- provides steam motive power to the turbine-driven auxiliary feedwater pump
- provides overpressure protection for the RCS and for the SGs
- limits RCS cooldowns from main steamline breaks (thus limiting positive reactivity insertion to the reactor core)
- provides containment volume pressure boundary integrity and isolation
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary
- includes components that support safe shutdown, fire protection, and SBO
- includes EQ components

LRA Table 2.3.4-2 contains the components subject to an AMR.

2.3.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.2 and USAR Section 10.2, Table 10.3-1, Table B.2-1, Chapter 10A, and Figure 10.2-1, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.4.1-01, dated April 03, 2009, the staff noted license renewal drawing LRM-203, location H-3, shows a section of safety-related 10 CFR 54.4(a)(1) pipe connecting a tachometer element readout and the turbine driven auxiliary feedwater pump, both of which are within scope for 10 CFR 54.4 a (1), however, the connecting pipe section is not within scope. The applicant was requested to provide information explaining why this section of safety-related piping is not within the scope of license renewal.

In its response dated April 27, 2009, the applicant stated that the line joining the tachometer element and readout instrument and the auxiliary feedwater pump is not a pipe section but a shaft, joining the turbine to pump, that does not penetrate the system pressure boundary.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.2-01 acceptable because this drawing line represents a shaft that does not penetrate the system pressure boundary. Therefore, the staff's concern described in RAI 2.3.4.2-01 is resolved.

2.3.4.2.3 Conclusion

The staff reviewed the LRA, USAR, RAI response, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the main steam and steam dump system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the main steam and steam dump system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.3 Bleed Steam System

2.3.4.3.1 Summary of Technical Information in the Application

LRA Section 2.3.4.3 describes the bleed steam system. The applicant stated that this system provides high-pressure turbine exhaust and extraction steam to the low- and high-pressure feedwater heaters to improve overall steam cycle efficiency. The LRA states that the system contains moisture separator reheaters, as well as interconnecting and associated piping and vents to and from the moisture separators, heater drain tank, and the various feedwater heaters.

The applicant classified this system as within scope because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs.

LRA Table 2.3.4-3 contains the components subject to an AMR.

2.3.4.3.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the bleed steam system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.4 Feedwater System

2.3.4.4.1 Summary of Technical Information in the Application

LRA Section 2.3.4.4 describes the feedwater system. The applicant stated that this system takes water flow from the condensate system and from drains of certain portions of the feedwater heaters, increases the pressure of the water, and sends the flow via its two motor-driven feedwater pumps through high-pressure feedwater heaters to the SGs. The system also contains pump lubricating oil subsystems, associated feedwater piping and valves, as well as flow measurement, indications, and protective controls. Finally, the LRA states that the system provides a flowpath for the auxiliary feedwater system pumps.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides the flowpath for auxiliary feedwater to the SGs
- provides isolation of feedwater flow to the SGs during main steam breaks to limit RCS cooldowns and energy release to the containment vessel
- provides containment volume pressure boundary integrity and isolation
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary
- includes components that support safe shutdown and fire protection
- includes EQ components

LRA Table 2.3.4-4 contains the components subject to an AMR.

2.3.4.4.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the feedwater system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.5 Condensate System

2.3.4.5.1 Summary of Technical Information in the Application

LRA Section 2.3.4.5 describes the condensate system. The applicant stated that this system stores condensate water for secondary system makeup, acts as the supply to the auxiliary

feedwater pumps, and provides the flowpath and motive force to transfer water from the condenser hotwell to the feedwater system. The LRA also states that the system provides cooling for various secondary steam components and supplies seal water or makeup water to certain components. Finally, the applicant included portions of the chemical injection system in the condensate system scope.

The applicant classified this system as within scope because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs; contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary; and includes components that support fire protection and SBO.

LRA Table 2.3.4-5 contains the components subject to an AMR.

2.3.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.5 and USAR Sections 6.6.2, 8.2.4, 10.2, Table B.2-1, and Figure 10.2-2, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.4.5-01, dated April 3, 2009, the staff noted license renewal drawing LRM-204, locations B-1 and B-2, show a partially highlighted 10 CFR 54.4(a)(3) sampling line downstream from the condensate storage tanks 1A/1B to valves MU40A/B. This drawing does not match the partially highlighted 10 CFR 54.4(a)(3) section of piping on license renewal drawing LRM-219, location B-1. The applicant was requested to provide additional information to clarify the scoping classification for this pipe section.

In its response dated April 27, 2009, the applicant stated the valves and associated upstream piping on license renewal drawing LRM-204 were incorrectly not highlighted, but are within the scope of license renewal for 10 CFR 54.4(a)(3).

Based on its review, the staff finds the applicant's response to RAI 2.3.4.5-01 acceptable because the applicant clarified that the piping in question was within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.4.5-01 is resolved.

2.3.4.5.3 Conclusion

The staff reviewed the LRA, USAR, RAI response, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the condensate system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the condensate system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.6 Steam Generator Blowdown Treatment System

2.3.4.6.1 Summary of Technical Information in the Application

LRA Section 2.3.4.6 describes the SGBD treatment system. The applicant stated that this system, which consists of the SGBD subsystem and the SGBD treatment subsystem, helps to maintain secondary chemistry for the SGs and the main steam and steam dump system. The LRA states that it provides the means to monitor SG tube integrity and has the capability to treat radioactively contaminated water from SGs following an SG tube rupture.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- isolates SGBD from the SGs during accidents and SG faults
- provides containment volume pressure boundary integrity and isolation
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary
- includes components that support safe shutdown, fire protection, and SBO
- includes EQ components

LRA Table 2.3.4-6 contains the components subject to an AMR.

2.3.4.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.6 and USAR Sections 10.2.3, 11.1.2, 11.2.3, Table B.2-1, Chapter 10A, Figure 11.1-3, and Figure 11.1-4, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.4.6-01, dated April 3, 2009, the staff noted license renewal drawing LRM-368, location H-7, shows 2-inch piping downstream of valve WD41 as within the scope of license renewal for 10 CFR 54.4(a)(2). The scoping classification on this drawing does not match the same section of piping on license renewal drawing LRXK-100-131, location H-10. The applicant was requested to provide additional information to clarify the scoping classification for this pipe section.

In its response dated April 27, 2009, the applicant stated the piping on license renewal drawing LRXK-100-131 was incorrectly not highlighted, but is within the scope of license renewal for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.4.6-01 acceptable because the applicant clarified that the piping in question was within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.4.6-01 is resolved.

2.3.4.6.3 Conclusion

The staff reviewed the LRA, USAR, RAI response, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the SGBD treatment system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the SGBD treatment system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.7 Auxiliary Feedwater System

2.3.4.7.1 Summary of Technical Information in the Application

LRA Section 2.3.4.7 describes the auxiliary feedwater system. The applicant stated that this system provides feedwater to remove sensible and decay heat from the RCS through the SGs when the main feedwater pumps are not available. The LRA describes the system as comprised of one turbine-driven pump; two motor-driven pumps; a normal supply from two condensate storage tanks; an emergency supply from the service water system; interconnections from auxiliary feedwater piping to the main feedwater piping; lubricating oil subsystems; and associated valves, piping, indications, and controls. The LRA also states that parts of the chemical injection system are included in the auxiliary feedwater scope for license renewal.

The applicant classified this system as within scope for several reasons, some of which are summarized as follows:

- provides cooling water to the SGs to remove heat from the RCS and reactor core during accident conditions
- ensures an adequate fission product barrier by maintaining water inventory in the SGs during an SG tube rupture
- provides containment vessel pressure boundary integrity and isolation
- contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs
- contains nonsafety-related piping that is attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary
- contains components required for safe shutdown following a HELB
- includes components that support fire protection, SBO, and ATWS
- includes EQ components

LRA Table 2.3.4-7 contains the components subject to an AMR.

2.3.4.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.6 and USAR Sections 6.6, 10.3.1, Table 7.2-1, Table 10.1-1, Table 10.3-1, Table B.2-1, Chapter 10A, and Figure 10.2-3, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.4.7-01, dated April 3, 2009, the staff noted license renewal drawing LRM-204, location A-5, shows a 10 CFR 54.4(a)(1) pipe line continued to 2-inch "Standpipe" on license renewal drawing LRM-202, location H-7. The continuation on LRM-202-3, location H-7, shows this section of pipe as within the scope of 10 CFR 54.4(a)(2). The applicant was requested to provide additional information to clarify the scoping classification for this pipe section.

In its response dated April 27, 2009, the applicant stated that the continuation of the 2-inch auxiliary feedwater pump recirculation line to the standpipe on license renewal drawing LRM-202-3 was correctly shown as within the scope of license renewal for 10 CFR 54.4(a)(2), and this line is continued from the 2-inch line downstream of valve AFW-120 on license renewal drawing LRM-204, location A-5, which is also within the scope of license renewal for 10 CFR 54.4(a)(2), and should be highlighted within scope for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.4.7-01 acceptable because the mismatch in scoping criterion is a highlighting error. Therefore, the staff's concern described in RAI 2.3.4.7-01 is resolved.

In RAI 2.3.4.7-02, dated April 3, 2009, the staff noted license renewal drawing LRM-205, location G-6, shows a 10 CFR 54.4(a)(1) pipe line continued to 1½-inch "Recirc Line (typ)" on license renewal LRM-204, location A-6. The continuation on license renewal drawing LRM-204, location A-6, shows this section of pipe as not within scope. The applicant was requested to provide additional information to clarify the scoping classification for these pipe sections.

In its response dated April 27, 2009, the applicant stated the pipe line in question is a marker that is not intended to indicate a pipe line.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.7-02 acceptable because the line in question was a continuation marker, not a pipe line. Therefore, the staff's concern described in RAI 2.3.4.7-02 is resolved.

2.3.4.7.3 Conclusion

The staff reviewed the LRA, USAR, RAI responses, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the auxiliary feedwater system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the auxiliary feedwater system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.8 Air Removal System

2.3.4.8.1 Summary of Technical Information in the Application

LRA Section 2.3.4.8 describes the air removal system. The applicant stated that this system removes non-condensible gases from the main condenser, the gland steam condenser, the turbine oil reservoir, and the turbine oil loop seal tank. The LRA states that the system also includes a vacuum breaker valve to lower condenser vacuum and rapidly slow the turbine rotor in cases such as loss of turbine oil pressure.

The applicant classified this system as within scope because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs.

LRA Table 2.3.4-8 contains the components subject to an AMR.

2.3.4.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.8 and USAR Section 10.2.2, Table B.2-1, and Figure 10.2-6, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.4.8-01, dated April 3, 2009, the staff noted license renewal drawing LRM-204, location G-1, shows a section of air removal system 3-inch piping, not included within scope, continuing from license renewal drawing LRM-212, location D-6, where it was included within the scope of license renewal for 10 CFR 54.4(a)(2). The applicant was requested to provide additional information to clarify the scoping classification for this pipe section.

In its response dated April 27, 2009, the applicant stated the continuation of this drain line on license renewal drawing LRM-204 was incorrectly not highlighted up to the check valve MD10, but is within the scope of license renewal for 10 CFR 54.4(a)(2). Valve MD10 and the downstream piping are not within the scope of license renewal because they are separated from the safety-related components by major plant equipment.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.8-01 acceptable because the applicant clarified which part of the piping in question was within the scope of license renewal and adequately explained why part of the piping in question was not within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.4.8-01 is resolved.

2.3.4.8.3 Conclusion

The staff reviewed the LRA, USAR, RAI response, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the air removal system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the air removal system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.9 Heater and Moisture Separator Drains System

2.3.4.9.1 Summary of Technical Information in the Application

LRA Section 2.3.4.9 describes the heater and moisture separator drains system. The applicant stated that this system collects condensate drains from the main steam and steam dump system, the bleed steam system, four feedwater heaters, and the reheat portions of the moisture separator reheaters, in order to return them to the condensate/feedwater streams flowing to the SGs.

The applicant classified this system as within scope because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs.

LRA Table 2.3.4-9 contains the components subject to an AMR.

2.3.4.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.9 and USAR Section 10.2.2, Table B.2-1, and Figure 10.2-5, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.4.9-01, dated April 3, 2009, the staff noted license renewal drawing LRM-207, locations C-1 and D-1, shows two instrument lines (DPS 16431 and DPS 16432) as not within scope that are continued to instrument lines on feedwater heater 15B on license renewal drawing LRM-206, location H-2. The continuation on license renewal drawing LRM-206, location H-2, shows these sections of the instrument lines as within scope for 10 CFR 54.4(a)(2). The applicant was requested to provide additional information to clarify the scoping classification for these pipe sections.

In its response dated April 27, 2009, the applicant stated the continuation of this tubing on license renewal drawing LRM-207 was incorrectly not highlighted, but is within the scope of license renewal for 10 CFR 54.4(a)(2).

Based on its review, the staff finds the applicant's response to RAI 2.3.4.9-01 acceptable because the piping in question was incorrectly not highlighted and is within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.4.9-01 is resolved.

2.3.4.9.3 Conclusion

The staff reviewed the LRA, USAR, RAI response, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the heater and moisture separator drains system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the heater and moisture separator drains system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.10 Heating Steam System

2.3.4.10.1 Summary of Technical Information in the Application

LRA Section 2.3.4.10 describes the heating steam system. The applicant stated that this system supplies steam and hot water to various plant areas, for heating purposes, through certain unit heaters, reheat coils, and preheat coils for various ventilation systems. The LRA states that the system's process steam is condensed in four hot water converters to provide hot water heat for some areas of the plant.

The applicant classified this system as within scope because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs, and because its system piping provides control room pressure boundary integrity.

LRA Table 2.3.4-10 contains the components subject to an AMR.

2.3.4.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.10 and USAR Sections 9.6.4, 10.1.4, 10A.1.2, and Table B.2-11, and the license renewal drawings using the evaluation methodology described in SER Section 2.3 and the guidance in SRP-LR Section 2.3. The staff 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 2.3.4.10-01, dated April 3, 2009, the staff noted license renewal drawing LRM-605-1, location A-1, shows a section of heating steam pipe after control valve (31105/HS476) within scope for 10 CFR 55.4(a)(2). However, the same section of pipe is not included within scope on license renewal drawing LRXK-100-38, location D-8. The applicant was requested to provide additional information to clarify the scoping classification for this pipe section.

In its response dated April 27, 2009, the applicant stated that license renewal drawing LRM-605-1 incorrectly shows a heating steam line to/from the actuator for control valve TCV-100 (31105/HS-476). The configuration on license renewal drawing LRXK-100-38 correctly shows the instrument air control signal line to HS-476.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.10-01 acceptable because the applicant stated the line on license renewal drawing LRM-605-1 does not represent actual plant configuration. The configuration is correctly shown on license renewal drawing LRXK-100-38. Therefore, the staff's concern described in RAI 2.3.4.10-01 is resolved.

In RAI 2.3.4.10-02, dated April 3, 2009, the staff noted license renewal drawing LRM-605-1, location E-8, shows the caustic dilution water heat exchanger as not within scope. The applicant was asked to provide additional information explaining why the caustic dilution water heat exchanger is not included within scope for 10 CFR 54.4(a)(2).

In its response dated April 27, 2009, the applicant stated that the caustic dilution heat exchanger is located in an area of the auxiliary building where there is no potential for spatial interaction with safety-related SSCs.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.10-02 acceptable because the caustic dilution heat exchanger is located in an area of the auxiliary building where

there is no potential for spatial interaction with safety-related SSCs. Therefore, the staff's concern described in RAI 2.3.4.10-02 is resolved.

2.3.4.10.3 Conclusion

The staff reviewed the LRA, USAR, RAI responses, and applicable license renewal drawings to determine whether the applicant failed to identify any components within the scope of license renewal. In addition, the staff determined if the applicant failed to identify any components subject to an AMR. On the basis of its review, the staff concludes the applicant has appropriately identified the heating steam system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the heating steam system mechanical components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.11 Main Generator (Mechanical) and Auxiliaries System

2.3.4.11.1 Summary of Technical Information in the Application

LRA Section 2.3.4.11 describes the main generator (mechanical) and auxiliaries system. The applicant stated that this system provides support functions for operation of the main generator in production of electricity. The main generator converts mechanical energy into electrical energy and supplies electrical power to plant auxiliaries and to the electrical grid. The LRA states the system is comprised of several subsystems, which are described as follows:

- The main generator hydrogen cooling subsystem uses four heat exchangers (hydrogen coolers) located inside the generator housing to reject heat from inside the generator housing to the service water system.
- The seal oil subsystem provides oil at a higher pressure than main generator hydrogen pressure to glands at each end of the main generator shaft to ensure hydrogen does not leak out from the main generator and that air does not leak into the main generator.
- The isophase bus duct cooling subsystem removes heat from generator output electrical buswork due to electrical resistance. Its two heat exchangers reject the heat to the service water system.
- The exciter air cooler cools the air inside the exciter housing, rejecting the heat to the service water system.

The applicant classified this system as within scope because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs.

LRA Table 2.3.4-11 contains the components subject to an AMR.

2.3.4.11.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the main generator (mechanical) and auxiliaries system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the

applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 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. The applicant stated that this system monitors water purity and chemical components of various secondary systems: condensate, feedwater, main steam and steam dump, SGBD treatment, and heating steam. The LRA states that samples can be obtained from various locations, either through the system's analytical instrumentation panel or via local grab samples, and then cooled, conditioned, monitored, analyzed, and recorded for trending purposes.

The applicant classified this system as within scope because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs and it contains nonsafety-related piping attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary.

LRA Table 2.3.4-12 contains the components subject to an AMR.

2.3.4.12.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the secondary sampling system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.13 Turbine Oil Purification System

2.3.4.13.1 Summary of Technical Information in the Application

LRA Section 2.3.4.13 describes the turbine oil purification system. The applicant stated that this system uses an oil conditioning unit to remove water and particulate contamination from turbine oil in the turbine oil reservoir. The LRA states that the removed water is discharged to a sump in the turbine building basement.

The applicant classified this system as within scope because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs.

LRA Table 2.3.4-13 contains the components subject to an AMR.

2.3.4.13.2 Conclusion

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the turbine oil purification system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately

identified the system components subject to an AMR, in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.3.4.14 Turbine Room Traps and Drains System

2.3.4.14.1 Summary of Technical Information in the Application

LRA Section 2.3.14 describes the turbine room traps and drains system. The applicant stated that this system collects condensate from steam piping and from turbine casing drains, returning it to the condenser for reuse. The LRA states that the system collects the accumulations of water in order to prevent damage to steam equipment and piping.

The applicant classified this system as within scope because it contains spatially-oriented, nonsafety-related components whose failure could impact safety-related SSCs and because it contains nonsafety-related piping attached to safety-related piping, seismically designed, and supported up to the first structural anchoring point beyond the safety/nonsafety pipe boundary.

LRA Table 2.3.4-14 contains the components subject to an AMR.

Based on the results of the staff evaluation discussed in SER Section 2.3 and on a review of the LRA, USAR, and applicable license renewal drawings, the staff concludes that the applicant has appropriately identified the turbine rooms traps and drain system mechanical components within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the system components subject to an AMR, in accordance with the requirements stated in 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 describes the following structures:

- reactor containment vessel
- structures and structural components
- shield building
- administration building
- auxiliary building
- screenhouse access tunnel
- TSC
- turbine building
- yard structures
- discharge structure
- discharge tunnel and pipe
- intake structure
- screenhouse
- component supports
- miscellaneous structural commodities
- NSSS supports

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

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

To perform its evaluation, the staff reviewed the applicable LRA sections, focusing its review on components that had not been identified as within the scope of license renewal. The staff reviewed the USAR for each structure to determine whether the applicant had omitted components with intended functions delineated under 10 CFR 54.4(a) from the scope of license renewal. The staff also reviewed the USAR to determine whether all intended functions delineated under 10 CFR 54.4(a) were specified in the LRA. When omissions were identified, the staff requested additional information to resolve the discrepancies.

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

2.4.1 Reactor Containment Vessel

2.4.1.1 Summary of Technical Information in the Application

LRA Section 2.4.1 describes the reactor containment vessel as a Class I cylindrical steel structure with a hemispherical dome roof and ellipsoidal bottom. It is completely enclosed by the shield building, but has an annular space between the reactor containment vessel and the shield building; except at the lower portion that is embedded in the concrete fill. The major concrete components are the reactor cavity shield wall, refueling pool, compartment vaults, and the floors at various elevations. The reactor cavity concrete shield wall surrounds the reactor vessel, all its nozzles and immediate piping, and also provides biological shielding and structural support. The top of the shield wall forms the refueling cavity pool. The shield wall also acts as a missile barrier.

The reactor containment vessel section also includes penetrations and internal concrete and steel structures. The listed penetrations include piping, electrical, heating and ventilation, equipment hatch, emergency and personnel airlocks, fuel transfer tubes, and internal structures.

Its purpose is to house the reactor pressure vessel and NSSS equipment, as well as various safety-related and nonsafety-related components.

LRA Table 2.4.1-1 identifies the components subject to an AMR for the reactor containment vessel by component type and intended function.

2.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.1, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the reactor containment vessel.

In RAI 2.4-1, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of additional structural components that support the intended functions of the penetration assemblies (i.e., welds between the canister and the nozzle and canister support) not listed in LRA Table 2.4.1-1.

In its response dated August 6, 2009, the applicant stated that the structural components that support the intended functions of the penetration assemblies (i.e., welds between the canister and the nozzle and canister support) were within the scope of license renewal and subject to an AMR.

The applicant also stated that the nozzle with the integral welds and canister support was classified under the title "Electrical Penetration Nozzles," in LRA Table 2.4.1-1, and that the intended functions listed for this entry in LRA Table 2.4.1-1 are "EQ Barrier, Fire Barrier, Pressure Boundary, and Structural Support."

Based on its review, the staff finds the response to RAI 2.4-1 acceptable because the structural components that support the intended functions of the penetration assemblies have been designated as within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.4-1 is resolved.

In RAI 2.4-2, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of concrete/grout fill supporting the reactor containment vessel not listed in LRA Table 2.4.1-1.

In its response dated August 6, 2009, the applicant stated that the concrete/grout fill is an integral part of the common foundation basemat that provides support to the reactor containment vessel; therefore, it is within the scope of license renewal and subject to an AMR.

The applicant also stated that the concrete/grout fill was classified under the structural component "Reactor Containment Vessel Basemat," in LRA Table 2.4.1-1. The intended function listed for this entry in LRA Table 2.4.1-1 is "Structural Support."

Based on its review, the staff finds the response to RAI 2.4-2 acceptable because the structural concrete/grout fill that supports the reactor containment vessel and its intended functions has been designated as within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.4-2 is resolved.

In RAI 2.4-3, dated July 16, 2009, the staff requested that the applicant provide additional information to clarify the intended function of the masonry block walls since they were listed as enclosures for equipment in LRA Section 2.4.1 and listed as "Structural Support," in LRA Table 2.4.1-1.

In its response dated August 6, 2009, the applicant stated that the intended function of the masonry block walls located inside the reactor containment vessel is "Enclosure Protection," and that they were incorrectly indicated as "Structural Support," in LRA Table 2.4.1-1.

Based on its review, the staff finds the response to RAI 2.4-3 acceptable because the intended function of the masonry block walls located inside the reactor containment vessel has been clarified. Therefore, the staff's concern described in RAI 2.4-3 is resolved.

2.4.1.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the reactor containment vessel 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 Structures and Component Supports

2.4.2.1 Shield Building

2.4.2.1.1 Summary of Technical Information in the Application

LRA Section 2.4.2.1 describes the shield building as a Class I reinforced concrete cylindrical shell structure with a shallow dome roof, that completely encloses the reactor containment vessel. Both the shield building and the reactor containment vessel are supported on a common concrete foundation basemat.

The purpose of the shield building is to protect the reactor containment vessel from external missiles and provide biological shielding; additionally, it releases annulus atmosphere under accident conditions and provides environmental protection for the reactor containment vessel.

Adjacent and exterior structures to the shield building walls are specially designed with provisions to allow movement of the shield building during an earthquake. Such features are flexible expansion joints at the separation spaces in walls and floors.

The shield building evaluation also includes access openings and penetrations, annulus concrete, and steel structures.

LRA Table 2.4.2-1 identifies the components subject to an AMR for the shield building by component type and intended function.

2.4.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.1 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.2.1, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the shield building.

In RAI 2.4-4, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of the double interlocked doors for the shield building personnel access openings since they are mentioned in LRA Section 2.4.2.1 as being evaluated for an AMR with the "Miscellaneous Structural Commodities," but are not included in LRA Table 2.4.2-13.

In its response dated August 6, 2009, the applicant stated that the double interlocked doors for the shield building personnel access openings are within the scope of license renewal and subject to an AMR.

The applicant also stated that the double interlocked doors for the shield building personnel access openings were classified under the structural member "Doors," in LRA Table 2.4.2-13. The intended functions listed for this entry in LRA Table 2.4.2-13 are "Enclosure Protection, EQ Barrier, Fire Barrier, Flood Barrier, Pressure Boundary, and Structural Support."

Based on its review, the staff finds the response to RAI 2.4-4 acceptable because the double interlocked doors for the shield building personnel access openings that support the intended function of the shield building have been designated as within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.4-4 is resolved.

In RAI 2.4-5, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of the personnel airlock precast concrete panel and support framing for the shield building since they appear in USAR Figure 9.5-2, but have not been included in LRA Table 2.4.2-1.

In its response dated August 6, 2009, the applicant stated that the removable personnel airlock precast concrete panel and support framing are within the scope of license renewal and subject to an AMR.

The applicant also stated that the removable personnel airlock precast concrete panel forms the wall at the shield building airlock cubicle opening and was classified under the structural member "Structural Reinforced Concrete (Cubicles for Airlocks)," in LRA Table 2.4.2-3 titled "Auxiliary Building." The intended functions listed for this entry in LRA Table 2.4.2-3 are "Enclosure Protection, EQ Barrier, Fire Barrier, Flood Barrier, Jet Impingement Shield, Missile Barrier, Pressure Boundary, and Structural Support."

Additionally, the applicant stated that the support framing for the precast concrete panel was classified under the structural member "Miscellaneous Steel," in LRA Table 2.4.2-3, and that the intended function listed for this entry in LRA Table 2.4.2-3 is "Structural Support."

Based on its review, the staff finds the response to RAI 2.4-5 acceptable because the personnel airlock precast concrete panel and structural support framing for the shield building that support

the intended functions of the shield building have been designated as within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.4-5 is resolved.

2.4.2.1.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the shield 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).

2.4.2.2 Administration Building

2.4.2.2.1 Summary of Technical Information in the Application

LRA Section 2.4.2.2 describes the administration building as a structure with a reinforced concrete basemat founded on soil that consists of multiple levels that directly interface with the turbine building. The purpose of the structure's levels varies since the basement houses EDG rooms 1A and 1B and the upper levels consist of office space for plant personnel. The basement of the administration building is classified as Class I. The remaining areas are Class III. Regarding the EDG equipment, the air intake structures for rooms 1A and 1B, and the air outlet structure for room 1B are located outside, adjacent to the administration building. The air outlet for room 1A is through the screenhouse access tunnel. Also, the electrical power cables for two of the service water pumps and a fire pump are routed through an underground duct bank entrance area located at the southeast corner of the administration building.

There are additional safety-related components in the building that are within the scope of license renewal, such as doors and a trench to protect safety-related equipment from internal flooding due to a pipe break, as well as masonry walls that prevent the spread of a fire.

LRA Table 2.4.2-2 identifies the components subject to an AMR for the administration building by component type and intended function.

2.4.2.2.2 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the administration building 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).

2.4.2.3 Auxiliary Building

2.4.2.3.1 Summary of Technical Information in the Application

LRA Section 2.4.2.3 describes the auxiliary building as a concrete and steel multi-story structure that interfaces with the shield building and turbine building. It is a Class I structure, except for the tank storage enclosure area and the cask handling area located on the south and west side of the auxiliary building, respectively. These areas are Class III* structures, which support SBO and fire protection. A steel frame structure which supports the auxiliary building crane and roof decking above the spent fuel pool is designed as Class I*. Additionally, other structural components such as flexible expansion joints are provided above the mezzanine floor between the auxiliary building and shield building exterior walls for lateral movement of the buildings during a seismic event.

Other in-scope components provide equipment protection from various hazards, such as the doors and penetration seals that protect equipment from HELBs; the encapsulation sleeves and jet impingement shields; flood barriers, sumps, and trenches; hatch covers installed on the roof and floors for missile protection; and missile shields installed to protect the service water system piping from tornado generated missiles.

The Zone SV area of the auxiliary building is maintained at a negative pressure to ensure leak-tight integrity and provides a medium-leakage boundary, which confines leakage that could conceivably bypass the shield building annulus. The steam exclusion area is also included in the Zone SV area. The spent fuel pool and the fuel transfer canal are also in the auxiliary building and included within the scope of license renewal.

LRA Table 2.4.2-3 identifies the components subject to an AMR for the auxiliary building by component type and intended function.

2.4.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.3 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.2.3, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the auxiliary building.

In RAI 2.4-6, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of the missile shields for the service water system piping and the fuel transfer canal stainless steel liner since it is not clear whether they were included in LRA Section 2.4.2.3 or LRA Table 2.4.2-3 as being within the scope of license renewal and subsequently evaluated for an AMR.

In its response dated August 6, 2009, the applicant stated that both the missile shields for the service water system piping and the fuel transfer canal stainless steel liner are within the scope of license renewal and subject to an AMR.

The response also stated that the missile shields for the service water system piping were incorrectly omitted from the screening results in LRA Table 2.4.2-3 and AMR Table 3.5.2-4. Their intended function is "Missile Barrier" protection. They are exposed to "air-indoor

uncontrolled" and "borated water leakage" environments which cause the loss of material due to normal corrosion, as well as boric acid corrosion, respectively. The applicant further indicated that these aging effects will be analyzed in the Structures Monitoring Program and the Boric Acid Corrosion Program, respectively.

Additionally, the fuel transfer canal stainless steel liner is classified under the structural member "Spent Fuel Pool Liner," in LRA Table 2.4.2-3. The intended functions listed for this entry in LRA Table 2.4.2-3 are "Enclosure Protection, Pressure Boundary, and Structural Support."

Based on its review, the staff finds the response to RAI 2.4-6 acceptable because the missile shields for the service water system piping and the fuel transfer canal stainless steel liner that support the intended functions of the auxiliary building have been designated as within the scope of license renewal, and subject to an AMR. Therefore, the staff's concern described in RAI 2.4-6 is resolved.

2.4.2.3.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the auxiliary 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).

2.4.2.4 Screenhouse Access Tunnel

2.4.2.4.1 Summary of Technical Information in the Application

LRA Section 2.4.2.4 describes the screenhouse access tunnel as a Class I reinforced concrete rectangular tunnel, founded on soil and located below grade between the screenhouse and the administration building. Its purpose is to provide support and shelter for two service water supply headers and a fire supply header. Additionally, it provides support for the cables that provide power to two of the safety-related service water pumps and to one of the fire pumps located in the screenhouse. Also, the screenhouse access tunnel serves as an air outlet for EDG room 1A of the administration building.

LRA Table 2.4.2-4 identifies the components subject to an AMR for the screenhouse access tunnel by component type and intended function.

2.4.2.4.2 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the screenhouse access tunnel 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 Technical Support Center

2.4.2.5.1 Summary of Technical Information in the Application

LRA Section 2.4.2.5 describes the TSC as being located adjacent to the turbine and auxiliary buildings. It is supported on a reinforced concrete mat foundation that is founded on soil and separated from adjacent buildings by a seismic gap that prevents interactions during a seismic event. The TSC basement level is classified as a Class I structure and has exterior walls constructed of reinforced concrete; the first and second floors are classified as Class III* structures and have exterior walls constructed of concrete masonry block.

Additionally, LRA Section 2.4.2.5 describes the TSC basement level as containing safety-related cables that are required for safe shutdown, as well as housing other administrative facilities. The TSC first floor includes the TSC diesel generator room, associated electrical equipment and battery rooms, additional equipment rooms, and administrative offices.

The TSC second floor level provides offices and working space for office personnel, and the roof provides support for a heat exchanger and an exhaust muffler for the TSC diesel generator.

2.4.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.5 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.2.5, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the TSC.

In RAI 2.4-7, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of the Class III metal siding attached to the masonry block walls since LRA Section 2.4.2.5 states that it is not within the scope of license renewal, but LRA Section 2.1.3.6.3 states that it is included per 10 CFR 54.4(a)(2). There is no exception provided in USAR Table B.2-1 for metal siding classification.

In its response dated August 6, 2009, the applicant stated that the metal siding was evaluated per 10 CFR 54.4(a)(2); however, since the component is not credited for any load carrying capabilities in the TSC seismic analysis, it does not perform a license renewal function and, therefore, this is consistent with the statement in LRA Section 2.4.2.5.

Based on its review, the staff finds the response to RAI 2.4-7 acceptable because the Class III metal siding attached to the masonry block walls does not support any of the scoping criteria presented in 10 CFR 54.4. Therefore, the staff's concern described in RAI 2.4-7 is resolved.

In RAI 2.4-8, dated July 16, 2009, the staff requested that the applicant provide additional information to clarify and further explain the TSC building configuration, since it is stated in USAR Table B.2.1 and Figure 1.2-11 that it is a one-story building and then stated in LRA Section 2.4.2.5 that it is a two-story building.

In its response dated August 6, 2009, the applicant stated that the configuration of the TSC in LRA Section 2.4.2.5 is correct since it is a two-story building.

The response also stated that the basement and first floor were constructed in the 1980s and the second floor was added around 2004. However, the USAR, Revision 20, which was provided with the LRA, does not reflect the addition to the building. A subsequent revision has this addition incorporated in its review.

Based on its review, the staff finds the response to RAI 2.4-8 acceptable because the configuration of the TSC has been clarified and the building is included within the scope of license renewal, and thus subject to an AMR, since the TSC supports the scoping criteria presented in 10 CFR 54.4. Therefore, the staff's concern described in RAI 2.4-8 is resolved.

2.4.2.5.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the TSC 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 Turbine Building

2.4.2.6.1 Summary of Technical Information in the Application

LRA Section 2.4.2.6 describes the turbine building as a multi-story steel structure that interfaces with the auxiliary building, administration building, outdoor transformer bays, and TSC. It is founded on soil atop a reinforced concrete basemat. Additionally, the building is physically separated by seismic gaps from the TSC and outdoor transformer bays for seismic protection. The building is also equipped with flood barriers, a sump, a trench to protect safety-related equipment from internal flooding, and masonry walls for fire protection. The Class I areas of the building consist of the areas' housing safeguard batteries, safety features 480-volt switchgear, a station air compressor, and the auxiliary feedwater pumps. Also, the support system for the turbine building crane is Class I*. The rest of the structure is classified as Class III*. Finally, the turbine building houses the exhaust piping for the two EDGs; these exhaust pipes are routed through the building and their vents are located on the roof.

LRA Table 2.4.2-6 identifies the components subject to an AMR for the turbine building by component type and intended function.

2.4.2.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.6 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.2.6, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the turbine building.

In RAI 2.4-9, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of the jet impingement barriers and

encapsulation sleeves located in the turbine building since they are shown in USAR Figure 10A.3-27 but not included in LRA Table 2.4.2-6.

In its response dated August 6, 2009, the applicant stated that the jet impingement barriers located in the turbine building are within the scope of license renewal and are subject to an AMR. The response also stated that the jet impingement barriers were included under the component type "Piping Sleeves," in LRA Table 2.3.4-2. The intended functions listed for this entry in LRA Table 2.3.4-2 are "EQ Barrier, Jet Impingement Shield, and Pressure Boundary."

Based on its review, the staff finds the response to RAI 2.4-9 acceptable because the jet impingement barrier and encapsulation sleeves that support the intended functions of the turbine building have been designated as within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.4-9 is resolved.

2.4.2.6.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the turbine building SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.7 Yard Structures

2.4.2.7.1 Summary of Technical Information in the Application

LRA Section 2.4.2.7 describes the yard structures as being physically located throughout the yard and substation/switchyard area. They are within the scope of license renewal and are composed of the following structures:

- duct banks
- EDG fuel oil storage tanks foundation
- fire hose houses
- lighting poles (P2, P4, P5)
- manholes
- outdoor transformer bays
- substation/switchyard structures
- transmission towers

LRA Table 2.4.2-7 identifies the components subject to an AMR for the yard structures by component type and intended function.

Duct Banks. The duct banks are made of reinforced concrete, are soil supported, and are provided to route electrical cables underground. Their function is to support and protect electrical cables for safety-related equipment, SBO, and fire protection.

EDG Fuel Oil Storage Tanks Foundation. The EDG fuel oil storage consists of two underground tanks that are supported on compacted backfill material that is located between the tanks and a

common concrete mat foundation. The tanks are structurally equipped with steel bar straps that completely wrap around each tank and are anchored into the concrete mat foundation. The purpose of the bar straps anchored to the foundation is to resist any uplift forces from buoyancy that could occur within the tanks.

Fire Hose Houses. The fire hose houses consist of small steel structures supported on concrete slabs that are provided at various locations throughout the yard area. Their purpose is to house fire protection equipment.

Lighting Poles. The security lighting in the yard area is provided by three steel lighting poles (Poles 2, 4, and 5) which are supported by a reinforced concrete caisson foundation.

Manholes. A total of four manholes located in the yard structures are within the scope of license renewal. Three of the four manholes provide access to underground fuel oil storage tanks and the remaining manhole supports electrical cables required for the restoration of offsite power for SBO. This fourth manhole is an enclosed underground reinforced concrete structure that is soil supported and is located near the tertiary auxiliary transformer.

Two reinforced concrete access manholes are provided for the EDG fuel oil storage tanks and one reinforced concrete access manhole is provided for the TSC diesel generator fuel oil storage tank. These manholes rest directly on the tanks.

Outdoor Transformer Bays. There are a total of seven outdoor transformer bays that are located adjacent to the south and east sides of the turbine building. Construction for all the transformer bays consists of reinforced concrete for the side walls and the back wall is the exterior wall of the turbine building. The side walls are supported on a spread footing foundation and each bay has a reinforced concrete floor slab founded on soil. For each bay, the transformers located within are supported on a concrete mat foundation that is isolated by a construction joint from the concrete bay floor. Additionally, each transformer bay is built with firewalls and is fire protected with an automatic water spray system to extinguish and prevent the spread of fires.

The reserve auxiliary transformer (RAT) and the tertiary auxiliary transformer (TAT) are required for the restoration of offsite power for SBO. The evaluation boundary for the outdoor transformer bays structural members subject to an AMR includes all of the bays since they support an automatic water spray system required for fire protection. However, only the foundations that support the RAT and TAT are within the scope of license renewal.

Substation/Switchyard Structures. The structures within the scope of license renewal associated with the substation/switchyard are the steel structures and associated foundations for the 138-kilovolt (kV) take-off tower, 13.8-kV take-off structure, and the 138-kV and 13.8-kV disconnect switches. The 13.8-kV take-off concrete structure and the concrete foundations for the 138-kV and 13.8-kV oil circuit breakers are also included within the scope of license renewal.

Transmission Towers. The transmission lines required for the restoration of offsite power for SBO are supported by three steel transmission towers (Towers 1, 3, and 4). These towers are single pole steel structures supported by a reinforced concrete caisson foundation and are installed from outside the substation/switchyard to the RAT. They support the 138-kV RAT circuit on one side and the main transformer 345-kV circuit on the other side.

2.4.2.7.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.7 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.2.7, the staff identified an area in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the yard structures.

In RAI 2.4-15, dated July 16, 2009, the staff requested that the applicant clarify whether additional foundations for other Class I and II transformers listed in USAR Table B.2-1 are included within the scope of license renewal since LRA Section 2.4.2.7 states that only the foundations that support the RAT and TAT are within the scope of license renewal.

In its response dated August 6, 2009, the applicant stated that USAR Table B.2-1 lists the RAT, the TAT, the start-up transformer, the transformer serving the pressurizer heater from the safety features bus, and the 4.16–.480-kV safety features transformers.

The applicant stated further that the start-up transformer is the same transformer as the RAT and is incorrectly listed in USAR Table B.2-1. Therefore, the applicant concluded that the RAT, TAT, the transformer that serves the pressurizer, and the 4.16–.480-kV safety features transformers are included within the scope of license renewal.

Finally, the response stated that the foundation for the pressurizer heater from the safety features bus is evaluated in the structural member "Equipment pads/grout" in LRA Table 2.4.2-3, and that the foundations for the 4.16–.480-kV safety features transformers are included in LRA Table 2.4.2-6, "Turbine Building."

Based on its review, the staff finds the response to RAI 2.4-15 acceptable because the transformers listed in USAR Table B.2-1 have been clarified and justified for inclusion within the scope of license renewal. The staff's concern described in RAI 2.4-15 is resolved.

2.4.2.7.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the yard structures SCs within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.8 Discharge Structure

2.4.2.8.1 Summary of Technical Information in the Application

LRA Section 2.4.2.8 describes the discharge structure as a Class I reinforced concrete (onshore) structure that provides the termination for the circulating water discharge pipe, a transition from the pipe to the open discharge bay and the outlet to the lake.

The discharge structure consists of reinforced concrete floors, walls, and a roof, as well as a concrete baffle that is provided to help dissipate the exit velocity and spread the discharge water into the open discharge basin, at the shoreline of Lake Michigan. Additionally, there is an interconnecting pipe between the discharge structure and the screenhouse forebay that provides an alternate source of service water, as well as warm recirculation water that helps dissipate the formation of frazil ice on the traveling water screens.

LRA Table 2.4.2-8 identifies the components subject to an AMR for the discharge structure by component type and intended function.

2.4.2.8.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.8 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.2.8, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the discharge structure.

In RAI 2.4-10, dated July 16, 2009, the staff requested that the applicant provide additional information to justify the exclusion of the riprap that paves the near shore portion of the basin and the riprap installed outside the sheet pile walls from the scope of license renewal. LRA Section 2.4.2.8 states that the purpose of the riprap in the structure is to dissipate the exit velocity of the discharge and does not perform a license renewal intended function. However, USAR Section 2.6.2 states that the riprap serves to protect the circulating water discharge.

In its response dated August 6, 2009, the applicant stated that the riprap that paves the near shore portion of the basin and the riprap installed outside the sheet pile wall are not within the scope of license renewal and thus not subject to an AMR.

The response also stated that the riprap is provided as good engineering practice to help prevent shore erosion from storms or wave run-up. Also, the design of the discharge structure and the sheet pile wall is not based on riprap protection being installed outside the sheet pile wall. Additionally, the discharge water would not be prevented from returning to the lake if erosion of the riprap occurred.

Based on its review, the staff finds the response to RAI 2.4-10 acceptable because the reasons for excluding the riprap that paves the near shore portion of the basin and the riprap installed outside the sheet pile wall from the scope of license renewal have been justified. Therefore, the staff's concern described in RAI 2.4-10 is resolved.

2.4.2.8.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the discharge structure 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 Discharge Tunnel and Pipe

2.4.2.9.1 Summary of Technical Information in the Application

LRA Section 2.4.2.9 describes the discharge tunnel and pipe as a reinforced concrete structure founded on soil and buried for the entire length. The discharge tunnel and pipe are classified as Class III structures.

The discharge tunnel is described as a reinforced concrete structure located beneath the turbine building at the condenser discharge. The discharge pipe is described as consisting of sections that are made of concrete encased steel pipe (underneath the turbine building and buried Y-section in the yard). The remaining sections are reinforced concrete pipe.

The purpose of the discharge tunnel and pipe is to route discharge water from the condenser outlets, drainage, and service water into the discharge structure.

LRA Table 2.4.2-9 identifies the components subject to an AMR for the discharge structure by component type and intended function.

2.4.2.9.2 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined whether the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the discharge tunnel and pipe 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 Intake Structure

2.4.2.10.1 Summary of Technical Information in the Application

LRA Section 2.4.2.10 describes the intake structure as a Class I structure consisting of vertical inlet cones, outlet pipes, and trash grilles. The structure is physically located approximately 1,600 feet from the shore of Lake Michigan, in a water depth of 15 feet. The three 22-foot diameter vertical steel inlet cones are completely submerged and buried 12.5 feet below the lakebed, and discharge their water through 6-foot diameter outlet pipes into a 10-foot diameter steel intake pipe. Additionally, the trash grilles located at the top of each cone are anchored to a reinforced concrete ring foundation that is supported by the riprap laid below the lakebed.

The purpose of the intake structure is to provide a reliable source of lake water to the suction of two circulating water pumps, four service water pumps, and two fire pumps.

LRA Table 2.4.2-10 identifies the components subject to an AMR for the intake structure by component type and intended function.

2.4.2.10.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.10 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.2.10, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the intake structure.

In RAI 2.4-11, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of the 6-foot diameter outlet pipes where the inlet cones of the intake structure discharge their water since they were not included in LRA Table 2.4.2-10.

In its response dated August 6, 2009, the applicant stated that the 6-foot diameter outlet pipes located in the intake structure are within the scope of license renewal and subject to an AMR.

The response also stated that the 6-foot diameter outlet pipes were included under the structural member "Inlet Cones," in LRA Table 2.4.2-10. The intended function listed for this entry in LRA Table 2.4.2-10 is "Source of Cooling, Structural Support."

Based on its review, the staff finds the response to RAI 2.4-11 acceptable because the 6-foot diameter outlet pipes that support the intended functions of the intake structure have been included within the scope of license renewal and are subject to an AMR. Therefore, the staff's concern described in RAI 2.4-11 is resolved.

In RAI 2.4-12, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of the two auxiliary water intake tees located in the plant intake since they were not included in LRA Table 2.4.2-10, nor LRA Section 2.4.2.10.

In its response dated August 6, 2009, the applicant stated that the two auxiliary water intake tees located in the intake structure are within the scope of license renewal and subject to an AMR. The response also stated that the two auxiliary water intake tees are spatially located 50 and 100 feet shoreward of the intake crib and physically located in the 10-foot diameter steel intake pipe.

Both tees and the 10-foot diameter intake pipe were evaluated in the circulating water system and included under the component type "Pipe," in LRA Table 2.3.3-20. The intended function listed for this entry in LRA Table 2.3.3-20 is "Pressure Boundary."

Based on its review, the staff finds the response to RAI 2.4-12 acceptable because the two auxiliary water intake tees that support the intended functions of the intake structure have been included within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.4-12 is resolved.

2.4.2.10.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the 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).

2.4.2.11 Screenhouse

2.4.2.11.1 Summary of Technical Information in the Application

LRA Section 2.4.2.11 describes the screenhouse structure as soil-supported on a reinforced concrete mat foundation, mostly buried underground, and having a reinforced concrete roof deck located approximately 2.5 feet above grade. It is physically located 180 feet from the normal shoreline and is (for the areas housing service water facilities, piping and equipment) classified as a Class I structure.

The screenhouse structure includes a forebay area that allows overflow back into the lake in case of a water surge caused by tripping or starting of the circulating water pumps. Additionally, a 30-inch steel slotted pipe is installed in the forebay area that provides warm water from the circulating water discharge structure to the traveling screen inlet to prevent ice formation during cold weather operation. This line can also provide an alternate supply of service water if all other intakes are blocked. The purpose of the screenhouse structure is to house two circulating water pumps, four service water pumps, two fire pumps, and related auxiliaries. Additionally, power cables for two of the service water pumps and a fire pump are routed through an underground duct bank entrance area located at the southwest corner of the screenhouse.

Additional features such as exterior bulkhead doors and bolted floor and manhole covers have been installed to prevent damage to safety-related equipment from external flooding due to the calculated maximum lake water level.

LRA Table 2.4.2-11 identifies the components subject to an AMR for the screenhouse by component type and intended function.

2.4.2.11.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.11 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.2.11, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the screenhouse.

In RAI 2.4-13, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of the forebay overflow weir located in the screenhouse since it was not mentioned in LRA Table 2.4.2-11.

In its response dated August 6, 2009, the applicant stated that the forebay overflow weir is within the scope of license renewal and subject to an AMR.

The response also stated that the forebay overflow weir is included in the review under the structural member "Structural Reinforced Concrete (foundation mat, walls, beams, columns, floor slabs, roof slab)," in LRA Table 2.4.2-11.

The intended functions listed for this entry in LRA Table 2.4.2-11 include "Enclosure Protection, Fire Barrier, Flood Barrier, Missile Barrier, and Structural Support."

Based on its review, the staff finds the response to RAI 2.4-13 acceptable because the forebay overflow weir that supports the intended functions of the screenhouse has been included within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.4-13 is resolved.

2.4.2.11.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the screenhouse within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.3 Component Supports

2.4.3.1 Summary of Technical Information in the Application

LRA Section 2.4.3 describes the components/structural supports provided for the mechanical and electrical components.

Many of the supports are not uniquely identified with component identification numbers. However, since some of the characteristics of the supports such as design, materials of construction, environments, and anticipated stressors are similar, they are evaluated as commodities across system boundaries and within structures that are identified as being within the scope of license renewal. Some of the electrical/mechanical component supports addressed include piping, cable trays, HVAC, conduits, pumps, tanks, fans, and strainers. A complete list is provided in LRA Section 2.4.3 and Table 2.4.2-12.

2.4.3.2 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the component supports within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.4 Miscellaneous Structural Commodities

2.4.4.1 Summary of Technical Information in the Application

LRA Section 2.4.4 describes the miscellaneous structural commodities as commodity groups that perform or support intended functions of in-scope SSCs.

The miscellaneous commodity groups include fire barriers, flood barriers, expansion joint/seismic gap materials, insulation, and electrical enclosure commodities.

LRA Table 2.4.2-13 identifies the components subject to an AMR for the miscellaneous structural commodities by component type and intended function.

2.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.4 using the evaluation methodology described in SER Section 2.4 and the guidance in SRP-LR Section 2.4.

During its review of LRA Section 2.4.4, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results for the miscellaneous structural commodities.

In RAI 2.4-14, dated July 16, 2009, the staff requested that the applicant provide additional information to confirm the inclusion, or justify the exclusion, of the following components from LRA Table 2.4.2-13:

- grout pads for building structural column base plates
- vibration isolators
- waterproofing membrane
- waterstops
- anchor bolts and expansion anchors
- damper framing

In its response dated August 6, 2009, the applicant stated that the following components are within the scope of license renewal:

- grout pads for building structural column base plates
- vibration isolators
- anchor bolts and expansion anchor
- damper framing

The applicant also stated that the following components are not within the scope of license renewal:

- waterproofing membrane
- waterstops

Specifically, the applicant provided in its response the justification for inclusion or exclusion for each component. Additionally, the applicant stated that the components within the scope of license renewal are evaluated and included in the review as follows:

Grout Pads for Building Structural Column Base Plates. Included in the structural member "Structural reinforced Concrete," in LRA Tables 2.4.1-1, 2.4.2-3, and 2.4.2-5. Grout pads for the turbine building are included in the structural member "Foundation Basemat," in LRA Table 2.4.2-6.

Vibration Isolators. Included in the component type/structural member "Supports for Mechanical Equipment," in LRA Table 2.4.2-12.

Anchor Bolts and Expansion Anchors. The embedded portion of the anchor bolts and expansion anchors is evaluated as part of the concrete in which it exists. The section of the anchor bolts and expansion anchors that is not embedded is evaluated as part of the structural member it is supporting.

Damper Framing. Damper framing is identified under the component type "Damper Housing," in LRA Section 2.3, "Mechanical Systems."

Based on its review, the staff finds the response to RAI 2.4-14 acceptable because the additional component types listed under RAI 2.4-14 for the miscellaneous structural commodities have been addressed as being within the scope of license renewal, or justified as excluded from the scope. Therefore, the staff's concern described in RAI 2.4-14 is resolved.

2.4.4.3 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the miscellaneous structural commodities within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.5 Nuclear Steam Supply System Structural Supports

2.4.5.1 Summary of Technical Information in the Application

LRA Section 2.4.5 describes the NSSS equipment supports as components that provide support and restraint to the following RCS equipment:

- reactor vessel
- reactor coolant pumps
- steam generators
- pressurizer

Reactor Vessel Supports. A total of six vertical steel H-columns are connected together at the top by means of a structural tee horizontal bracing system that is welded to a continuous outer steel band. The columns are embedded in concrete in order to provide a rigid anchorage system. Some of the design features of these columns are ventilated support pads, fitted key slot blocks, and machined keys.

Reactor Coolant Pumps Supports. A total of three vertical steel H-columns, hinged at each end for vertical support and uplift, are provided for support to each of the two reactor coolant pumps. They are designed to provide unrestrained movement laterally, in the direction of thermal expansion during heatup and cooldown.

Steam Generators Supports. A total of four steel vertical H-columns, hinged at each end, are provided for support to each of the two SGs. The hinges provide for unrestrained movement in the direction of thermal expansion and the column ends are anchored by embedded bolts at the

base to provide for uplift forces. Also, there are two lateral levels of support that are provided for the lateral seismic and pipe rupture loads. Additionally, two cable anchors fitted with yokes welded to the pipe bends restrain the reactions of jet forces in the main steam line at the top of the SG.

Pressurizer Support. A support skirt anchored to the concrete floor by equally spaced, embedded anchor bolts is provided to support the pressurizer. The other end of the skirt is welded to the pressurizer.

LRA Table 2.4.2-14 identifies the components subject to an AMR for the NSSS supports by component type and intended function.

2.4.5.2 Conclusion

The staff followed the evaluation methodology discussed in SER Section 2.4 and reviewed the LRA and USAR 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 determined if the applicant failed to identify any SCs subject to an AMR. The staff finds no such omissions. On the basis of its review, the staff concludes that the applicant has adequately identified the NSSS supports 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 Systems/Commodity Groups

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 SSCs 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 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 being within the scope of license renewal. The staff reviewed the USAR for each electrical and I&C system to determine if the applicant has omitted from the scope of license renewal components with 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 SSCs 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 SSCs 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 SSCs were subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1 Electrical and Instrumentation and Controls Systems

2.5.1.1 Summary of Technical Information in the Application

LRA Section 2.5 describes the electrical and I&C systems. The scoping method includes all plant electrical and I&C components. Evaluation of electrical systems includes electrical and I&C components in mechanical systems. The plantwide basis approach for the review of plant equipment eliminates the need to indicate each unique component and its specific location, and precludes improper exclusion of components from an AMR.

LRA Tables 2.5.1-1, 2.5.2-1, and 2.5.3-1 identify electrical and I&C systems component types and their intended functions within the scope of license renewal and subject to an AMR:

- cable connections (metallic parts) - conducts electricity
- conductor insulation for electrical cables and connections - insulate
- conductor insulation for electrical cables and connections used in sensitive instrumentation circuits - insulate
- conductor insulation for inaccessible medium-voltage (2-kV to 35-kV) cables - insulate
- electrical equipment subject to 10 CFR 50.49 EQ requirements - conducts electricity, insulate
- fuse holders insulation - insulate
- transmission conductors and connections - conducts electricity
- fuse holders (not part of a larger assembly) metallic clamp - conducts electricity
- conductor insulation, metal-enclosed bus (MEB) - insulate
- metallic conductor, MEB - conducts electricity
- metallic conductor, switchyard bus - conducts electricity
- support insulation, high-voltage - insulate, structural support
- support insulation, MEB - insulate, structural support

2.5.1.2 Staff Evaluation

The staff reviewed LRA Section 2.5 and USAR Sections 7 and 8 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 USAR 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).

General Design Criteria 17 of 10 CFR Part 50, Appendix A, requires that electric power from the transmission network to the onsite electric distribution system be supplied by two physically independent circuits to minimize the likelihood of their simultaneous failure. In addition, the staff noted that the guidance provided by letter, dated April 1, 2002 (ADAMS Accession No. ML020920464), "Staff Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3))," and later incorporated in SRP-LR Section 2.5.2.1.1 states:

> For purposes of the license renewal rule, the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. This path typically includes switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer and transformer and onsite electrical system, and the associated control circuits and structures. Ensuring that the appropriate offsite power system long-lived passive SSCs that are part of this circuit path are subject to an AMR will assure that the bases underlying the SBO requirements are maintained over the period of extended license [operation].

The applicant included the complete circuits between the onsite circuits and, up to and including, switchyard breakers (which includes the associated controls and structures) supplying the RAT and the TAT within the scope of license renewal. The RAT (which is the normal supply to emergency 4160-volt bus 1-6) is supplied from either of two 138-kV breakers in the switchyard and the TAT (which is the normal supply to emergency 4160-volt bus 1-5) is supplied from a 13.8-kV breaker in the switchyard which is fed from the secondary winding of a transformer which connects the 138-kV and 345-kV sections of the switchyard. Consequently, the staff concludes that the scoping is consistent with the guidance issued in the letter of April 1, 2002, and was later incorporated in SRP-LR Section 2.5.2.1.1.

2.5.1.3 Conclusion

The staff reviewed the LRA and the USAR to determine whether the applicant failed to identify any SSCs within the scope of license renewal. The staff found no such omissions. In addition, the staff 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 adequately identified the electrical and I&C 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).

2.6 Conclusion for Scoping and Screening

The staff reviewed the information in LRA Section 2, "Scoping and Screening Methodology for Identifying Structures and Components Subject to Aging Management Review, and Implementation Results." The staff finds that the applicant's scoping and screening methodology is consistent with the requirements of 10 CFR 54.21(a)(1), and with the staff's position on the treatment of safety-related and nonsafety-related SSCs within the scope of license renewal and the SCs requiring an AMR are consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

On the basis of its review, the staff concludes that the applicant has adequately identified those systems and components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and those systems and components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

With regard to these matters, the staff concludes, that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB, and that any changes made to the CLB, in order to comply with 10 CFR 54.21(a)(1), are in accordance with the Atomic Energy Act of 1954 and NRC regulations.