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Safety Evaluation Report
Related to the License Renewal of the Millstone Power Station, Units 2 and 3

Docket Nos. 50-336 and 50-423

Dominion Nuclear Connecticut, Inc.

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC 20555-0001

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ABSTRACT

This safety evaluation report (SER) documents the technical review of the Millstone Power Station (MPS), Units 2 and 3, license renewal applications (LRAs) by the staff of the U.S. Nuclear Regulatory Commission (NRC) (the staff). By letter dated January 20, 2004, Dominion Nuclear Connecticut, Inc. (Dominion or the applicant) submitted the LRAs for MPS in accordance with Title 10, Part 54, of the *Code of Federal Regulations* (10 CFR Part 54). Dominion is requesting renewal of the operating licenses for MPS Units 2 and 3, (Facility Operating License Numbers DPR-65 and NPF-49, respectively) for a period of 20 years beyond the current expiration dates of midnight July 31, 2015, for Unit 2 and midnight November 25, 2025, for Unit 3.

The MPS units are located on an approximately 500-acre site in the town of Waterford, CT, on the north shore of Long Island Sound. The NRC issued the construction permits for MPS Units 2 and 3 on December 12, 1970, and August 9, 1974, respectively. The operating licenses were issued by the NRC on September 26, 1975, for Unit 2 and January 31, 1986, for Unit 3. MPS Unit 2 consists of a two-steam-generator, four-coolant-loop, pressurized-light-water-reactor, with a nuclear steam supply system supplied by Combustion Engineering, Inc. and a turbine generator furnished by General Electric Corporation. The balance of the plant was originally designed and constructed by Northeast Nuclear Energy Company with the assistance of its agent, Bechtel Corporation. Unit 2 was designed to generate 2560 megawatt thermal (MWt), or approximately 865 megawatt electric (MWe), but in 1979, the unit was uprated to a core power output of 2700 MWt with a gross electrical output of approximately 895 MWe. MPS Unit 3 consists of a four-steam-generator, four-coolant-loop, pressurized-light-water-reactor, with a nuclear steam supply system supplied by Westinghouse Electric Corporation and a turbine generator furnished by General Electric Corporation. The balance of the plant was originally designed and constructed by Northeast Nuclear Energy Company with the assistance of its agent, Stone and Webster Corporation. MPS Unit 3 operates at a licensed power output of 3411 MWt, with a gross electrical output of approximately 1195 MWe.

This SER presents the status of the staff's review of information submitted to the NRC through July 22, 2005, the cutoff date for consideration in the SER. The staff identified open items and confirmatory items that had to be resolved before the staff could make a final determination on the application. Sections 1.5 and 1.6 of this report summarize these items and their resolutions. Section 6 provides the staff's final conclusion on the review of the MPS LRAs.

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ABBREVIATIONS

ΔRT_{NDT}	irradiation induced shift in the reference nil ductility transition temperature
AAC	alternate alternating current
AC	air conditioning or alternating current
ACI	American Concrete Institute
ACRS	Advisory Committee on Reactor Safeguards
ACSR	aluminum conductor steel reinforced
AERM	aging effects requiring management
AFW	auxiliary feedwater
AHU	air handling unit
AISC	American Institute of Steel Construction
AMP	aging management program
AMR	aging management review
AMSAC	ATWS mitigating system actuating circuitry
ANSI	American National Standards Institute
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATWS	anticipated transient without scram
B&PV	boiler and pressure vessel
B&W	Babcock and Wilcox
BMI	bottom-mounted instrumentation
BTP	branch technical position
BWR	boiling-water reactor
CASS	cast austenitic stainless steel
CCC	computer code collection
CE	Combustion Engineering
CEA	control element assembly
CEDM	control element drive mechanism
CEOG	Combustion Engineering Owners Group
CFR	*Code of Federal Regulations*
CFS	cubic feet per second
CI	confirmatory item
CF	chemistry factor
CL&P	Connecticut Light & Power
CLB	current licensing basis
CMAA	Crane Manufacturers Association of America
CO_2	carbon dioxide
CR	condition report
CRD	control rod drive
CRDM	control rod drive mechanism
CSPE	chloro-sulfonated polyethylene
CUF	cumulative usage factor
CVCS	chemical and volume control system
CVPS	Central Vermont Public Service Corporation

Cv_{use}	charpy upper shelf energy
DBA	design-basis accident
DBE	design-basis earthquake
DBS	design-basis summary
DC	direct current
DG	draft regulatory guide
DOR	Division of Reactors
DOTIV	discrete ordinates transport code
DSS	diverse scram system
DWST	demineralized water storage tank
ECT	eddy current testing
EDG	emergency diesel generator
EEQ	electrical equipment qualification
EFPD	effective full power days
EFPH	effective full power hours
EFPY	effective full power year
ELD	electronic licensing documentation database
EOC	electric overhead crane
EOL	end of life
EPDM	ethylene propylene diene monomer
EPR	ethylene propylene rubber
EPRI	Electric Power Research Institute
EQ	environmental qualification
EQML	equipment qualification master list
EQR	environmental qualification report
ER	Environmental Report (10 CFR 51)
ESF	engineered safety feature
ETA	ethanolamine
FAC	flow accelerated corrosion
FHA	fire hazards analysis
FMP	fatigue monitoring program
FP	fire protection
FPER	fire protection evaluation report
FSAR	final safety analysis report
GALL	NUREG-1801, "Generic Aging Lessons Learned Report"
GDC	general design criterion
GDLS	guidelines
GEIS	generic environmental impact statement
GL	generic letter
GPM	gallons per minute
GRITS	generation records information tracking system
GSI	generic safety issue
GTR	generic technical report
HELB	high-energy line break
HMWPE	high molecular weight polyethylene
HVAC	heating, ventilation, and air conditioning
HPSI	high pressure safety injection
IASCC	irradiation-assisted stress corrosion cracking
ICI	incore instrumentation

IEEE	Institute of Electrical and Electronics Engineers
ID	inner diameter
IGSCC	intergranular stress corrosion cracking
ILRT	integrated leak-rate test
IN	information notice
INPO	Institute of Nuclear Power Operations
IPA	integrated plant assessment
IR	insulation resistance
ISG	interim staff guidance
ISI	inservice inspection
I&C	instrumentation and controls
IWB	requirements for Class 1 components of light-water cooled power plants
IWC	requirements for Class 2 components of light-water cooled power plants
IWD	requirements for Class 3 components of light-water cooled power plants
kV	kilovolt
LBB	leak before break
LCO	limiting condition for operation
LCR	load center room
LER	licensee event report
LLRT	local leak rate testing
LOCA	loss-of-coolant accident
LPSI	low pressure safety injection
LR	license renewal
LRA	license renewal application
LRIMS	license renewal information management system
LSI	limited structural integrity
LTOP	low temperature overpressurization protection
MAER	material aging effects report
MCC	motor control center
MCL	main coolant line
MEAP	material, environment, aging effects, and aging management program
MEPL	materials and equipment parts list
MIC	microbiologically induced corrosion
MMOD	minor modification
MMWEC	Massachusetts Municipal Wholesale Electric Company
MNSA	mechanical nozzle seal assembly
MOV	motor operated valve
MPS	Millstone Power Station
MR	Maintenance Rule
MRP	materials reliability program
MRRF	Millstone Radwaste Reduction Facility
MSL	mean sea level
MSLB	main steam line break
MSRC	Management Safety Review Committee
MSVB	main steam valve building
MW	megawatt
MWe	megawatts-electrical
MWt	megawatt-thermal
NACE	National Association of Corrosion Engineers

NCFM	nuclear component fatigue management
NDE	*non-destructive examination*
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NPRDS	nuclear plant reliability data system
NRC	U.S. Nuclear Regulatory Commission
NSAC	Nuclear Safety Analysis Center
NSR	non-safety-related
NS>SR	non-safety-related affecting safety-related
NSSS	nuclear steam supply system
OBE	operating basis earthquake
ODSCC	outside diameter stress corrosion cracking
OE	operating experience
OI	open item
PAID	piping and instrumentation diagram
PB	pressure boundary
PCM	personnel contamination monitor
PDT	primary drain tank
PLL	predicted lower limit
PM	preventive maintenance
PMMS	production maintenance management system
PNNL	Pacific Northwest National Laboratory
PPB	parts per billion
PPM	parts per million
PRA	probabilistic risk assessment
P-T	pressure-temperature
PTS	pressurized thermal shock
PVC	polyvinyl chloride
PWR	pressurized water reactor
PWSCC	primary water stress corrosion cracking
QA	quality assurance
QAP	quality assurance program
QC	quality control
QDR	qualification document review
RAI	request for additional information
RBCCW	reactor building closed cooling water system
RCCA	rod cluster control assembly
RCD	regulatory commitment database
RCP	reactor coolant pump
RCPB	reactor coolant pressure boundary
RCS	reactor coolant system
RFO	refueling outage
RHR	residual heat removal
RPCC	reactor plant component cooling
RI-ISI	risk informed - inservice inspection
RG	regulatory guide
RPV	reactor pressure vessel
RSST	reserve station service transformer

RT	radiography testing
RTD	resistance temperature detector
RT_{NDT}	reference nil ductility transition temperature
RT_{PTS}	reference temperature for pressurized thermal shock
RV	reactor vessel
RVHP	reactor vessel head penetration
RVI	reactor vessel internals
RVID	reactor vessel integrity database
RVSP	reactor vessel surveillance program
RWST	refueling water storage tank
SAMA	severe accident mitigation alternative
SBO	station blackout
SC	structure and component
SCBA	self contained breathing apparatus
SCC	stress corrosion cracking
SDC	shutdown cooling
SER	safety evaluation report
SFRM	safety function requirements manual
SG	steam generator
SGFP	steam generator feedwater pump
SGSIP	steam generator structural integrity program
SI	safety injection
SIAS	safety injection actuation signal
SPCS	steam and power conversion systems
SR	safety-related
SRP	Standard Review Plan
SRP-LR	NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants"
SSC	structures, systems, and components
SVI	single volumetric indication
SW	service water
SWGR	switchgear
t	thickness
TBCCW	turbine building closed cooling water
TGSCC	transgranular stress corrosion cracking
TIC	temperature indicating controllers
TLAA	time-limited aging analysis
TRM	technical requirements manual
TS	technical specification
TSCR	technical specification change request
TSP	trisodium phosphate dodecahydrate
USE	upper shelf energy
UT	ultrasonic testing
UV	ultraviolet
VAC	voltage alternating current
VETIP	vendor equipment technical information program
VT	visual test
WINCDMS	chemistry data management system
WOG	Westinghouse Owners Group
XLPE	cross-linked polyethylene

SECTION 1

INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

This document is a safety evaluation report (SER) on the applications for license renewal for the Millstone Power Station (MPS), as filed by the Dominion Nuclear Connecticut, Inc. (Dominion or the applicant). By letter dated January 20, 2004, Dominion submitted its applications to the U.S. Nuclear Regulatory Commission (NRC or the Commission) for renewal of the MPS operating licenses for an additional 20 years. The NRC staff (the staff) prepared this report, which summarizes the results of its safety review of the renewal applications 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 MPS license renewal review is Johnny Eads. Mr. Eads can be contacted by telephone at 301-415-1471 or electronic mail at jhe@nrc.gov. Alternatively, written correspondence may be sent to the following address:

License Renewal and Environmental Impacts Program
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
Attention: Johnny Eads, Mail Stop 0-11 F1

In its January 20, 2004, submittal letter, the applicant requested renewal of the operating licenses issued under Section 104b (Operating License No. DPR-65) and Section 103 (Operating License No. NPF-49) of the Atomic Energy Act of 1954, as amended, for MPS Units 2 and 3, respectively, for a period of 20 years beyond the current license expiration dates of midnight, July 31, 2015, for Unit 2 and November 25, 2025, for Unit 3. The MPS units are located on an approximately 500-acre site in the town of Waterford, CT, on the north shore of Long Island Sound. The NRC issued the construction permit for Unit 2 on December 11, 1970, and for Unit 3 on August 9, 1974. The NRC issued the operating license for Unit 2 on September 26, 1975, and for Unit 3 on January 31, 1986. MPS Unit 2 consists of a two-steam-generator, four-coolant-loop, pressurized-light-water-reactor, with a nuclear steam supply system supplied by Combustion Engineering, Inc. and a turbine generator furnished by General Electric Corporation. The balance of the plant was originally designed and constructed by Northeast Nuclear Energy Company with the assistance of its agent Bechtel Corporation. Unit 2 was designed to generate 2560 megawatt thermal (MWt), or approximately 865 megawatt electric (MWe), but in 1979 the unit was uprated to a core power output of 2700 MWt, with a gross electrical output of approximately 895 MWe. MPS Unit 3 consists of a four-steam-generator, four-coolant-loop, pressurized-light-water-reactor, with a nuclear steam supply system supplied by Westinghouse Electric Corporation and a turbine generator furnished by General Electric Corporation. The balance of the plant was originally designed and constructed by Northeast Nuclear Energy Company with the assistance of its agent, Stone and Webster Corporation. Unit 3 operates at a licensed power output of 3411 MWt, with a gross electrical output of approximately 1195 MWe. The final safety analysis report (FSAR) contains details concerning the plant and the site.

The license renewal process consists of two concurrent reviews—a technical review of safety issues and an environmental review. The NRC regulations found in 10 CFR Parts 54 and 51, respectively, set forth the requirements for these reviews. The safety review for the MPS license renewal is based on the applicant's license renewal applications (LRAs) and on the responses to the staff's requests for additional information (RAIs). The applicant supplemented and clarified its responses to the LRA and RAIs in audits, meetings, and docketed correspondence. Unless otherwise noted, the staff reviewed and considered information submitted through July 22, 2005. The staff reviewed information received after that date on a case-by-case basis, depending on the stage of the safety review and the volume and complexity of the information. The public may review the LRA and all pertinent information and materials, including the FSAR mentioned above at the NRC Public Document Room, located in One White Flint North, 11555 Rockville Pike (first floor), Rockville, MD 20852-2738 (301-415-4737/800-397-4209), and at the Waterford Public Library, 49 Rope Ferry Road, Waterford, CT 06385-2806, and at the Three Rivers Community College, Thames River Campus, 574 New London Turnpike, Norwich, CT 06360. In addition, the public may find the MPS Units 2 and 3 LRAs, as well as materials related to the license renewal review, on the NRC website at www.nrc.gov.

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

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

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

In accordance with 10 CFR Part 51, the staff prepared a plant-specific supplement to the Generic Environmental Impact Statement (GEIS). This supplement discusses the environmental considerations related to renewing the licenses for MPS Units 2 and 3. The NRC staff issued Supplement 22 to NUREG-1437 "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Millstone Power Station, Units 2 and 3 Final Report," on July 18, 2005.

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 on the basis of an expected 40-year service life.

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

In 1991, the NRC published the license renewal rule in 10 CFR Part 54 (the Rule). The NRC participated in an industry-sponsored demonstration program to apply the Rule to a pilot plant and to gain experience necessary to develop implementation guidance. To establish a scope of review for license renewal, the Rule defined age-related degradation unique to license renewal. However, during the demonstration program, the NRC found that many aging mechanisms occur and are managed during the period of initial license. In addition, the NRC found that the scope of the review did not allow sufficient credit for existing programs, particularly the implementation of the Maintenance Rule, which also manages plant-aging phenomena. As a result, the NRC amended the license renewal rule in 1995. The amended 10 CFR Part 54 established a regulatory process that is simpler, more stable, and more predictable than the previous license renewal rule. In particular, the NRC amended 10 CFR Part 54 to focus on managing the adverse effects of aging rather than on identifying age-related degradation unique to license renewal. The NRC initiated these rule changes to ensure that important systems, structures, and components (SSCs) will continue to perform their intended functions during the period of extended operation. In addition, the revised Rule clarified and simplified the integrated plant assessment (IPA) process to be consistent with the revised focus on passive, long-lived structures and components (SCs).

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

1.2.1 Safety Review

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

(1) The regulatory process is adequate to ensure that the licensing bases of all currently operating plants provide and maintain an acceptable level of safety, with the possible exception of the detrimental effects of aging on the functionality of certain SSCs during the period of extended operation, as well as a few other issues related to safety 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 those SSCs (1) that are safety-related; (2) whose failure could affect safety-related functions; and (3) that are relied on to demonstrate compliance with the NRC's regulations for fire protection (FP), environmental qualification (EQ), pressurized thermal shock (PTS), anticipated transient without scram (ATWS), and station blackout (SBO).

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

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

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

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

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

1.2.2 Environmental Review

In December 1996, the staff revised the environmental protection regulations to facilitate the environmental review for license renewal. The staff prepared 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 that are applicable to all nuclear power plants. These generic findings are codified in Appendix B to Subpart A of 10 CFR Part 51. Pursuant to 10 CFR 51.53(c)(3)(i), an applicant for license renewal may incorporate these generic findings in its environmental report. In accordance with 10 CFR 51.53(c)(3)(ii), an environmental report must also include analyses of those environmental impacts that must be evaluated on a plant-specific basis (i.e., Category 2 issues).

In accordance with NEPA and the requirements of 10 CFR Part 51, the NRC performed a plant-specific review of the environmental impacts of license renewal, including whether new and significant information existed that the GEIS did not consider. As part of its scoping process, the NRC held a public meeting on May 18, 2004, in Waterford, CT, to identify environmental issues specific to the plant. The NRC held another public meeting on January 11, 2005, in Waterford, CT, to discuss the draft plant-specific Supplement 22 to the MPS Units 2 and 3, GEIS. The NRC's plant-specific Supplement 22 to the MPS Units 2 and 3, GEIS, which was issued on July 18, 2005, documents the results of the environmental review and includes a recommendation with respect to the license renewal action.

1.3 Principal Review Matters

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

In 10 CFR 54.19(a), the Commission requires a license renewal applicant to submit general information. The applicant provided this general information in Section 1 of its LRA for MPS Units 2 and 3, which it submitted to the NRC by letter dated January 20, 2004. The staff reviewed Section 1 and finds that the applicant has submitted the information required by 10 CFR 54.19(a).

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

> The current indemnity agreement for the unit does not contain a specific expiration term for the operating licenses. Therefore, conforming changes to account for the expiration term of the proposed renewed licenses are not necessary, unless the license numbers are changed upon issuance of the renewed licenses.

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

In 10 CFR 54.21, the Commission requires that each LRA must contain (a) an IPA, (b) a description of any CLB changes that occurred during staff review of the LRA, (c) an evaluation of TLAAs, and (d) an FSAR supplement. Sections 3 and 4 and Appendix B to the LRA address the license renewal requirements of 10 CFR 54.21(a), (b), and (c). Appendix A to the LRA contains the license renewal requirements of 10 CFR 54.21(d).

In 10 CFR 54.21(b), the Commission requires that each year following submission of the LRA, and at least 3 months before the scheduled completion of the staff's review, the applicant must submit an amendment to the renewal application that identifies any changes to the CLB of the facility that materially affect the contents of the LRA, including the FSAR supplement. The applicant submitted an update to the LRA by letter dated January 12, 2005, which summarized the changes to the CLB that have occurred at MPS Units 2 and 3, during the staff's review of the LRA. This submission satisfies the requirements of 10 CFR 54.21(b) and is still under staff review.

In accordance with 10 CFR 54.22, an applicant's LRA must include changes or additions to the technical specifications (TS) that are necessary to manage the effects of aging during the period of extended operation. In Appendix D to the LRA, the applicant stated that it had not identified any TS changes necessary to support issuance of the renewed operating licenses for MPS Units 2 and 3. This adequately addresses the requirement specified in 10 CFR 54.22.

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

The staff's evaluation of the environmental information required by 10 CFR 54.23 is contained in the final plant-specific supplement to the GEIS which states the considerations related to renewing the licenses for MPS Units 2 and 3. This supplement was prepared by the staff separate from this SER. As required by 10 CFR 54.25, the ACRS issued a report to document its evaluation of the staff's LRA review and associated SER. Section 5 of this SER incorporates the ACRS report. The findings required by 10 CFR 54.29 can be found in Section 6 of this SER.

1.4 Interim Staff Guidance

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

The following table provides the current set of ISGs issued by the staff, as well as the SER sections in which the staff addresses ISG issues.

ISG Issue (Approved ISG No.)	Purpose	SER Section
GALL report presents one acceptable way to manage aging effects **(ISG-1)**	This ISG clarifies that the GALL report contains one acceptable way, but not the only way, to manage aging for license renewal.	N/A
SBO Scoping **(ISG-2)**	The license renewal rule 10 CFR 54.4(a)(3) includes 10 CFR 50.63(a)(1)—SBO. The SBO rule requires that a plant must withstand and recover from an SBO event. The recovery time for offsite power is much faster than that of EDGs. The offsite power system should be included within the scope of license renewal.	2.1.3.1.1
Concrete AMP **(ISG-3)**	Lessons learned from the GALL demonstration project indicated that GALL is not clear on whether concrete requires an AMP.	3.5A.2.2.1.1 3.5B.2.2.1.1

ISG Issue (Approved ISG No.)	Purpose	SER Section
FP System Piping (ISG-4)	This ISG clarifies the staff position for wall-thinning of the FP piping system in GALL AMPs XI.M26 and XI.M27. The staff's new position is that there is no need to disassemble FP piping, as disassembly can introduce oxygen to FP piping, which can accelerate corrosion. Instead, use a non-intrusive method, such as volumetric inspection. Testing of sprinkler heads should be performed at year 50 of sprinkler system service life, and every 10 years thereafter. This ISG eliminates the Halon/carbon dioxide system inspections for charging pressure, valve line-ups, and the automatic mode of operation test from GALL; the staff considers these test verifications to be operational activities.	3.0.3.2.7

ISG Issue (Approved ISG No.)	Purpose	SER Section
Identification and Treatment of Electrical Fuse Holders **(ISG-5)**	This ISG includes electrical fuse holders AMR and AMP (i.e., same as terminal blocks and other electrical connections). The position includes only fuse holders that are not inside the enclosure of active components (e.g., inside of switchgears and inverters). Operating experience finds that metallic clamps (spring-loaded clips) have a history of age-related failures from aging stressors such as vibration, thermal cycling, mechanical stress, corrosion, and chemical contamination. The staff finds that visual inspection of fuse clips is not sufficient to detect the aging effects from fatigue, mechanical stress, and vibration.	2.1.3.2.3 3.0.3.2.5
The ISG Process **(ISG-8)**	This ISG provides clarification and update to the ISG process on Improved License Renewal Guidance Documents.	N/A
Standardized Format for License Renewal Applications **(ISG-10)**	The purpose of this ISG is to provide a standardized license renewal application format for applicants.	N/A

1.5 Summary of Open Items

As a result of its review of the LRA for MPS Units 2 and 3, including additional information submitted to the NRC through February 15, 2005, the staff identified six open issues that remained open at the time the SER with Open Items was published. An issue was considered open if the applicant had not presented a sufficient basis for resolution. Each open item (OI) had been assigned a unique identifying number. By letters dated April 1, 2005, June 2, 2005, July 14, 2005, and July 21, 2005, the applicant responded to these open items. The staff reviewed these responses and has closed out each of the open items. The basis for closing the open items is as follows:

OI-2.1.3-1 (Section 2.1.3.1.1 - Application of the Scoping Criteria in 10 CFR 54.4(a))

In RAI 2.1-1, the staff requested additional information regarding the scoping methodology associated with the 10 CFR 54.4(a)(2) evaluation. The staff requested that the applicant define the term "first equivalent anchor point" as it relates to the evaluation of NSR piping attached to SR piping and describe the methodology of its application. Additionally, in cases where plant equipment credited with providing support to NSR piping within the scope of license renewal may be equivalent to an associated piping anchor as described in NUREG-1800, the staff requested that the applicant provide justification for not including this plant equipment within the scope of license renewal. The applicant's November 9, 2004, response to the RAI stated that for the purpose of license renewal, the first equivalent anchor is defined as when the piping has been restrained in each of the three orthogonal directions. The response also recognized that, in some cases, plant equipment may be credited as providing restraint in one or more directions in the piping system seismic evaluation. Dominion stated that in these cases, the credited components are also included within the scope of license renewal. The applicant applied the six criteria in the determination of the license renewal boundary endpoints for NSR piping attached to SR piping. However, the staff had concerns with the criteria's consistency with the CLB and whether the criteria established by the applicant would conservatively bound the equivalent anchor. This was identified as Open Item 2.1.3-1.

In response to Open Item 2.1.3-1, the applicant provided additional information to the staff on April 1, 2005, regarding the basis of the six bounding criteria used in the determination of the license renewal boundary endpoints for NSR piping attached to SR piping. The applicant stated that the bounding criteria provided assurance that the license renewal scoping boundary would envelop the scope of the NS piping system included in the design basis seismic analysis, consistent with the CLB, and in some cases, the bounding approach resulted in an overly conservative license renewal boundary determination. The applicant also provided the staff with a revised definition of an equivalent anchor to be used for the purposes of identifying the NS piping in the scope of license renewal during the case-by-case reviews. The revised definition was changed from one restraint in each of the three orthogonal directions to two restraints. A review was performed by the applicant to apply this equivalent anchor definition to the cases where the LR boundary endpoint was previously determined through piping analysis/isometric drawing review or plant walkdown. The applicant stated that as a result, the LR boundary was extended where necessary to include additional supports and portions of piping systems; however, there were no additional component types as a result of these boundary extensions.

Based on the above discussion, the staff concludes that the applicant has supplied sufficient information to demonstrate that SSCs, that meet the scoping requirements of 10 CFR 54.4(a)(2), have been identified as being within the scope of license renewal. Therefore, Open Item 2.1.3-1 is considered closed.

OI-3.0.3.2.18-1 (Section 3.0.3.2.18 - Bolting Integrity Program)

The applicant states that the bolting integrity program is consistent with the aging management program described in GALL AMP XI.M18, with the following exception related to loss of preload. The applicant states that the operating temperature for all other in scope bolted connections are well below the threshold temperature at which stress relaxation of pressure boundary bolting would occur. The staff found that other factors such as vibration can contribute to loss of preload. The applicant needed to address other factors which can contribute to loss of preload and justify if loss of preload is an aging effect requiring management for all bolting within the scope of license renewal. This was identified as Open Item 3.0.3.2.18-1.

In response to Open Item 3.0.3.2.18-1, dated June 29, 2005, the applicant stated the Millstone bolting integrity AMP has now been revised to manage loss of preload as an applicable aging effect for all in-scope bolting. Based on this change to the bolting integrity AMP, Open Item 3.0.3.2.18-1 is closed.

OI-3.0.3.2.18-2 (Section 3.0.3.2.18 - Bolting Integrity Program)

The procedures for ensuring bolting integrity at Millstone identify inspection requirements and general practices for in scope bolting that are consistent with the bolting recommendations identified in Section XI.M18, but do not directly reference EPRI NP-5769 or NUREG-1339 as applicable source documents for these recommendations. However, the Millstone procedures do reference and incorporate the good bolting practices identified in EPRI NP-5067. EPRI NP-5769 and EPRI NP-5067 are very closely related documents that cross-reference one another and reference NUREG-1339. The staff requested clarification on how the guidance in EPRI NP-5067 and EPRI NP-104213 meets the intent of EPRI NP-5769 and NUREG-1339 as identified in GALL AMP XI.M18. This was identified as Open Item 3.0.3.2.18-2.

By letter dated April 1, 2005, the applicant provided a comparison of EPRI NP-5769 and EPRI NP-5067 as they relate to the bolting integrity program at Millstone. In summary, the Millstone bolting integrity program is consistent with the recommendations in NUREG-1801, Section XI.M18. The comparison provided by the applicant demonstrates that EPRI NP-5067 provides adequate guidance for addressing the bolting integrity for Millstone Units 2 and 3. Therefore, Open Item 3.0.3.2.18-2 is closed.

OI-3.1.2-6 (Section 4.1.2.4.2 - Reactor Vessel Internals)

Leakage flow past the inner reactor vessel flange O-ring is limited in the event of seal failure by the 3/16 inch-diameter hole in the reactor vessel flange, which is smaller than the inside diameter of the leak detection line. Additionally, the potential flowrate through the 3/16 inch-diameter hole in the flange is within the normal make-up capability of the chemical and volume control system such that the leak detection system does not constitute the reactor coolant system (RCS) pressure boundary. The failure of the leak detection system components has been evaluated and cannot affect the function of safety related systems, structures or components. As such, the applicant determined that the reactor vessel flange seal leak detection system, including the leak detection line, does not meet the criteria of 10 CFR 54.4(a) and is not within the scope of license renewal. Therefore, the system is not subject to aging management review and there is no aging management program applicable to the leak detection line. The staff review of this position was identified as Open Item 3.1.2-6.

In response to Open Item 3.1.2-6, in a letter dated April 1, 2005, the applicant revised its position and has now included the leak detection components within the scope of license renewal. In addition, the applicant stated that the leak detection system consists of piping, tubing, and valves that are long-lived, passive components and are consistent with the existing component types in the reactor coolant system included in LRA Table 2.3.1-3. These stainless steel components are exposed to a treated water environment and are managed for loss of material and cracking aging effects by the chemistry program for primary systems AMP and the inservice inspection program: systems, components, and supports as indicated for piping, tubing, and valve component types in LRA Table 3.1.2-3. The applicant noted that the loss of fracture toughness aging effect listed in Table 3.2.1-3 is not applicable to these valves since the valves are not CASS.

Based on the applicant's inclusion of the leak detection components within the scope of license renewal, Open Item 3.1.2-6 is closed

OI-4.7.3-1(a) (Section 4.7.3 - Reactor Coolant Pump Code Case N-481)

In response to RAI 4.7.3-1(a), in a letter dated December 3, 2004, the applicant stated that a fracture mechanics evaluation, performed as a part of a Combustion Engineering Owners Group CEN-412, Revision 2, Supplement 2 activity, has been performed for the Millstone Unit 2 reactor coolant pumps. The applicant also stated that for Millstone Unit 2, the limiting end-point crack size is 0.39t, significantly greater than the 1/4t flaw postulated in ASME Code Case N–481. The time for the Millstone Unit 2 reactor coolant pump casing to reach the limiting end-point crack size is 103 years. To confirm the methodology and fracture mechanics results, the staff requested that the applicant provide the fracture mechanics evaluation for staff review. This was identified as Open Item 4.7.3-1(a).

In response to RAI 4.7.3-1(a), dated February 8, 2005, the applicant provided CEN-412, Revision 2, Supplement 2. The staff reviewed the report and found the evaluation used a non-conservative fracture toughness value of 150.4 ksi √in. Using the methodology in the report, along with the staff established fracture toughness value of 82 ksi √in, based on the staff's letter to NEI, dated May 19, 2000, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel Components," the staff determined that the time required to reach the limiting end-point crack size is 87 years, instead of 103 years. Since this bounds the extended period of operation, the staff finds that the Millstone, Unit 2 reactor coolant pump casing to have adequate toughness for the extended period of operation based on CEN-412, Revision 2, Supplement 2 and the staff's letter dated May 19, 2000. The applicant also submitted an additional supplemental response in a letter dated June 2, 2005, to clarify how it intends to manage the aging of its RCP casings through the period of extended operation. In the June 2, 2005, letter, the applicant stated that the RCP casings will be managed through inspections performed under the aging management program, "Inservice Inspection Program: Systems, Components and Supports," in accordance with 10 CFR 54.21(c)(1)(iii). The staff finds the applicant's management of thermal aging embrittlement using the ASME Code Case N-481 inspection requirements, which consist of a visual inspection, acceptable. This resolves Open Item 4.7.3-1(a).

OI-4.7.4-1 (Section 4.7.4 - Reactor coolant system piping leak-before-break)

For Millstone Unit 2, the applicant reviewed and found the number and characteristics of cycles identified in the leak-before-break (LBB) topical report (CEN-367-A) to be acceptable for the period of extended operation for the RCS piping. The applicant needed to identify all other systems or sections of piping that are covered by LBB analyses and if the analyses are applicable for the period of extended operation. The applicant needed to provide documented justification that the LBB analyses for systems covered by LBB analyses remain valid for the period of extended operation. The applicant needed to also provide justification that the analyses have been projected to the end of the period of extended operation, or that the effects of aging on the intended functions of the systems covered by LBB analyses will be adequately managed for the period of extended operation. The applicant needed to also update the FSAR supplement as appropriate. This was identified as Open Item 4.7.4-1.

By letter dated February 8, 2005, the applicant provided additional information to address Open Item 4.7.4-1. For Millstone Unit 2, the systems and components that have been analyzed for LBB include the reactor coolant loop piping (hot leg, cold leg, and crossover piping), the pressurizer surge line, and portions of the safety injection and shutdown cooling systems. The applicant stated that each of the LBB analyses associated with these systems and components were evaluated for the period of extended operation. The discussion for the reactor coolant loop piping is intended to envelop all of the current design basis LBB analyses. The materials evaluated for the subject components include carbon and low alloy steels, stainless steel (including cast austenitic stainless steel (CASS)) and nickel-based alloys. For each LBB analysis, the inputs to the evaluation were reviewed to identify time-limited assumptions. Thermal aging of CASS materials and fatigue crack growth calculations were determined to be time-based inputs as defined in 10 CFR 54.3 and required evaluation for the period of extended operation. The TLAA evaluations of metal fatigue are discussed in LRA Section 4.3.1 and the staff's evaluation is provided in Section 4.3 of this report. The metal fatigue TLAA evaluations conclude that design-basis limits are not exceeded for ASME Class 1 components (which envelops the components evaluated for LBB) through the period of extended operation. Thermal aging of CASS materials for components that have been evaluated for LBB has been evaluated for its effect on fracture toughness. The applicant's review concluded that the analysis used fully aged values for fracture toughness. Corrosion of nickel-based alloys was also considered. Cracking due to PWSCC of nickel-based alloys is managed by the inservice inspection program: systems, components, and supports AMP described in LRA Section B2.1.18. Millstone Unit 2 has committed to follow the industry recommendations related to nickel-based alloys. This commitment is identified in Appendix A, Table A6.0-1, License Renewal commitments, Item 14. The staff finds that the applicant provided an adequate demonstration that the TLAA for LBB evaluations for the subject components remain valid or have been projected to the end of the period of extended operation.

By letter dated February 8, 2005, the applicant provided additional information to address Open Item 4.7.4-1 for Millstone Unit 3. The applicant stated that for Millstone Unit 3, the reactor coolant system loop piping (hot leg, cold leg and crossover piping) has been evaluated for LBB. The materials evaluated for these components include carbon and low alloy steels, stainless steel (including CASS), and nickel-based alloys.

CASS used in the RCS are subject to thermal aging during service. Thermal aging causes an elevation in the yield strength of the material and a decrease in the fracture toughness. The decrease in fracture toughness is proportional to the level of ferrite in the material. Thermal aging in these stainless steels will continue until a saturation or fully aged point is reached. The applicant needed to address how fatigue will be evaluated or monitored to assure that the number of cycle counts for a transient set do not exceed its cycle limits which could invalidate the fatigue crack growth analysis. By letter dated February 8, 2005, the applicant provided information to address the LBB analyses for Millstone Unit 3. The applicant stated that each of the LBB analyses associated with these systems and components were evaluated for the period of extended operation. The discussion for the reactor coolant loop piping is intended to envelop all of the current design-basis LBB analyses. The materials evaluated for the subject components include carbon and low alloy steels, stainless steel (including cast austenitic stainless steel (CASS)) and nickel-based alloys. For each LBB analysis, the inputs to the evaluation were reviewed to identify time-limited assumptions. Thermal aging of CASS materials and fatigue crack growth calculations were determined to be time-based inputs as defined in 10 CFR 54.3 and required evaluation for the period of extended operation. The TLAA evaluations of metal fatigue are discussed in LRA Section 4.3.1 and the staff's evaluation is provided in Section 4.3 of this report. The metal fatigue TLAA evaluations conclude that design-basis limits are not exceeded for ASME Class 1 components (which envelops the components evaluated for LBB) through the period of extended operation. Thermal aging of CASS materials for components that have been evaluated for LBB has been evaluated for its effect on fracture toughness. The applicant's review concluded that the analysis used fully aged values for fracture toughness. Corrosion of nickel-based alloys was also considered. Cracking due to PWSCC of nickel-based alloys is managed by the inservice inspection program: systems, components, and supports AMP described in LRA Section B2.1.18. Millstone Unit 3 has committed to follow the industry recommendations related to nickel-based alloys. This commitment is identified in Appendix A, Table A6.0-1, License Renewal commitments, Item 15. The staff finds that the applicant has provided an adequate demonstration that the TLAA for LBB evaluations for the subject components remain valid or have been projected to the end of the period of extended operation.

Based on the discussion above, the staff concludes that Open Item 4.7.4.1 is closed.

1.6 Summary of Confirmatory Items

As a result of its review of the LRA for MPS Units 2 and 3, including additional information and clarifications submitted to the NRC through February 15, 2005, the staff identified the following confirmatory items. An issue was considered confirmatory if the staff and the applicant had reached a satisfactory resolution, but the resolution had not yet been formally submitted to the staff. Each confirmatory item (CI) had been assigned a unique identifying number. By letters dated April 1, 2005, June 2, 2005, July 14, 2005, and July 21, 2005, the applicant responded to these confirmatory items. The staff reviewed these responses and has closed out each of the confirmatory items. The basis for closing the confirmatory items is as follows:

CI-3.0.3.2.18-1

The staff found that the resolution of Open Items 3.0.3.2.18-1 and 3.0.3.2.18-2 may warrant a modification to the FSAR. This issue was identified as Confirmatory Item 3.0.3.2.18-1. By letter dated July 14, 2005, the applicant provided the revised FSAR sections to reflect resolution of Open Items related to the bolting integrity program. Based on these FSAR changes, Confirmatory Item 3.0.3.2.18-1 is closed.

CI-3.1.3-3 (Section 3.1B.2.2.7 - Crack Initiation and Growth Due to Stress Corrosion Cracking (SCC) or Primary Water Stress Corrosion Cracking (PWSCC))

In response to supplemental RAI 3.1.3-3, in a letter dated February 8, 2005, the applicant stated that the response to supplemental RAI 4.7.3-1(a) addresses supplemental RAI 3.1.3-3. The staff noted that the response to RAI 4.7.3-1(a) provides information on the evaluation of CASS reactor coolant pumps and not the CASS spray head assembly requested in supplemental RAI 3.1.3-3. Therefore, the applicant was requested to provide the information requested by supplemental RAI 3.1.3-3. This was identified as Confirmatory Item 3.1.3-3.

In a supplemental response to RAI 3.1.3-3, dated June 2, 2005, the applicant agreed that the guidance contained in the staff's letter to NEI, dated May 19, 2000, should be used when analyzing the pressurizer spray head through the extended period of operation. The applicant therefore initiated an evaluation of the Millstone, Unit 3 pressurizer spray head to determine the crack growth over the period of extended operation in accordance with NUREG-1801, Section XI.M12 "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)," Item 6 (Acceptance Criteria) and the flaw evaluation section of the staff's letter to NEI, dated May 19, 2000. As stated in NUREG-1801, Section XI.M12, the flaw tolerance evaluation for CASS components with ferrite values up to 25 percent is performed according to the methodology associated with the ASME Code Subsection IWB-3640 procedure for submerged arc welds. The applicant, however, could not positively confirm that the ferrite content of the Millstone, Unit 3 pressurizer spray head was less than 25 percent based on the currently available data. Since the ferrite content could not be confirmed to be less than the 25 percent used in the ASME Code methodology, the applicant could not utilize the flaw tolerance evaluation to resolve this issue and decided to manage thermal aging embrittlement of the Millstone, Unit 3 pressurizer spray head by enhanced volumetric inspections performed under the inservice inspection program: systems, components and supports aging management program, in accordance with 10 CFR 54.21(a)(1)(iii). The applicant also stated that this program is consistent with NUREG-1801, Section XI.M12, which considers an enhanced volumetric inspection (ultrasonic examination) that meets the criteria of the ASME Code, Section XI, Appendix VIII, "Performance Demonstrations for Ultrasonic Examination Systems," acceptable. This commitment is contained in the Millstone, Unit 3 LRA, Appendix A, Section A6.0, Table A6.0-1 "License Renewal Commitments," Item 28, and states that either an enhanced volumetric examination or a component specific flaw tolerance evaluation (considering reduced fracture toughness and unit specific geometry and stress information) will be used to demonstrate that the thermally-embrittled material has adequate fracture toughness in accordance with NUREG-1801, Section XI.M12. The staff finds the applicant's management of thermal aging embrittlement through inspection in accordance with 10 CFR 54.21(c)(1)(iii) acceptable. The staff also finds that if the applicant can confirm the ferrite content in the future, a flaw tolerance evaluation in accordance with the guidelines of NUREG-1801, Section XI.M12 is an acceptable alternative to the volumetric examination in accordance with NUREG-1801. This evaluation would have to be submitted to the NRC for approval at least two years prior to the period of extended operation. This resolves Confirmatory Item 3.1.3-3.

CI-3.6-1 (Section 3.6.2.3 - AMR Results That Are Not Consistent With or Are Not Addressed In the GALL Report)

In its letter dated November 9, 2004, the applicant confirmed that it treats splices as an integral part of the cable and that non-EQ splices are included in commodity groups, "Conductors," and, "Insulation," in LRA Table 2.5.1-1. The associated aging management review results are included in Table 3.6.2-1. This commodity includes non-EQ cables installed in raw water or damp soil. The staff requested clarification of the statement in the LRA that the external environment would remain below 95°F and therefore would not require an AMP. The applicant needed to provide clarification regarding the effects of ohmic heating on the cable insulation. This was identified as Confirmatory Item 3.6-1.

In response to Confirmatory Item 3.6-1, in a letter dated April 1, 2005, the applicant stated that the information requested in this confirmatory item, related to the effects of ohmic heating on the cable insulation, was provided in response to RAI 3.6-3 by letter dated January 11, 2005. In its response dated January 11, 2005, the applicant confirmed that the referenced temperature was the ambient temperature and when the effects of ohmic heating on the cable insulation is included, sufficient margin exists below the 60 year analyzed temperature limit for the extended period of operation. Therefore no aging management program is required. Based on the above, Confirmatory Item 3.6-1 is closed.

CI-4.3-1 (Section 4.3 - Metal Fatigue)

The staff noted that the applicant provided usage factors for the low-alloy charging and safety injection nozzles, whereas NUREG/CR-6260 indicates the highest environmental usage factors for the newer vintage Combustion Engineering plant occurred in the nozzle safe-ends. In a December 3, 2004, response, the applicant indicated that the highest design cumulative usage factor (CUF) for the safety injection and charging nozzles occurred in the low-alloy nozzles. However, the applicant also indicated that, using worst case environmental factors for stainless steel, the calculated CUF for the charging nozzle safe-end is greater than the low-alloy nozzle. The applicant indicated that the environmental usage factor for the safe-end is less than 1.0 using the projected number of cycles for 60 years of plant operation. Since the applicant used projected cycles instead of design cycles to evaluate the charging nozzle safe-end, the applicant's fatigue monitoring program (FMP) should incorporate these cycles in the program. This was identified as Confirmatory Item 4.3-1.

In response to Confirmatory Item 4.3-1, in a letter dated April 1, 2005, the applicant stated that cycle counting has been incorporated in the Millstone FMP and the projected cycles versus design cycles are now used in the evaluation of the charging nozzle safe-ends, with acceptable results through the period of extended operation. Based on this response, Confirmatory Item 4.3-1 is closed.

CI-4.7.4-1

Section A3.5.3 of Appendix A to the LRA provides the applicant's FSAR supplement regarding LBB for RCS piping. The FSAR supplement states, "The acceptability of eliminating Reactor Coolant System pipe LBB considerations for Millstone Unit 3 is contained within Westinghouse Topical Report WCAP-10587. The report has been re-evaluated and to be applicable for the period of extended operation." This paragraph was not clear on how the report was re-evaluated and why it is acceptable for the period of extended operation. In addition, the statement was not clear on what considerations are acceptable to be eliminated. The applicant needed to include in the summary how the report was re-evaluated and why it is applicable for the period of extended operation. The applicant also needed to address how thermal aging of CASS is supported in WCAP-10587 for the period of extended operation and how the fatigue-crack growth analysis is acceptable for the period of extended operation. On the basis of its review of the FSAR supplements, the staff concluded that the summary description of the applicant's TLAA evaluation to address LBB for the RCS piping for the period of extended operation required additional clarification to satisfy 10 CFR 54.21(d). This was identified as Confirmatory Item 4.7.4-1.

By letter dated April 1, 2005, the applicant provided the requested update to Section A3.5.3 of Appendix A to provide a summary description of the evaluation of the TLAA for LBB. The staff reviewed the revised summary description and finds that the revised summary description of the applicant's TLAA evaluation to address LBB for the period of extended operation is now adequate and satisfies 10 CFR 54.21(d). Based on the above, Confirmatory Item 4.7.4-1 is closed.

CI-B2.1.18-3 (Section B2.1.18c - Nickel Alloy Nozzles and Penetrations (XI.M11 of NUREG-1801))

The applicant stated that Millstone Unit 2 will follow industry efforts investigating the aging effects applicable to nickel-based alloys (i.e., PWSCC in Alloy 600 base metal and Alloy 82/182 weld metals) and identifying the appropriate aging management activities, and it will implement the appropriate recommendations resulting from this guidance. This commitment is identified in Appendix A, Table A6.0-1 License Renewal Commitments, Item 14.

In RAI B2.1.18-1, the staff requested that the applicant modify its commitment to state that the aging management activities to monitor the aging effects of nickel-based alloys will be submitted three years prior to the period of extended operation in order for the staff review and approval to determine whether the program demonstrates the ability to manage the effects of aging in nickel-based components pursuant to 10 CFR 54.21(a)(3). In addition, the applicant was requested to address how nickel-based components will be evaluated in terms of susceptibility to PWSCC.

The applicant, by letter dated December 3, 2004, modified its commitment to submit its program prior to the period of extended operation for staff review and approval. The applicant's response did not meet with the staff's request to submit the program three years prior to the period of extended operation to allow the staff time to review and approve the program. This was identified as Confirmatory Item B2.1.18-3.

In response to Confirmatory Item B2.1.18-3, in a letter dated April 1, 2005, the applicant stated that in LRA Appendix A "FSAR Supplement," Sections A2.1.18 and A2.1.22 for Unit 2 and Sections A2.1.27 and A2.1.21 for Unit 3, the commitment to follow industry efforts regarding nickel-based alloys has been modified to read:

> The revised program description will be submitted at least two years prior to the period of extended operation for staff review and approval to determine if the program demonstrates the ability to manage the effects of aging in nickel-based components per 10 CFR 54.21(a)(3).

Additionally, the schedule for Table A6.0-1, Commitment 14 (Unit 2) and 15 (Unit 3), in LRA Appendix A will be changed to:

> At Least Two Years Prior to the Period of Extended Operation.

Based on this revised commitment, Confirmatory Item B2.1.18-3 is closed.

1.7 Summary of Proposed License Conditions

As a result of the staff's review of the LRAs for MPS Units 2 and 3, including subsequent information and clarifications provided by the applicant, the staff identified three proposed license conditions.

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

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

The third license condition is as follows:

All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of ASTM E 185-82 to the extent practicable for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H.

SECTION 2

STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW

2.1 Scoping and Screening Methodology

2.1.1 Introduction

Title 10 of the *Code of Federal Regulations*, Part 54 (10 CFR Part 54 or the Rule), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," Section 54.21, "Contents of Application — Technical Information," requires that each application for license renewal contain an integrated plant assessment (IPA). Furthermore, the IPA must list and identify those structures and components (SCs) that are subject to an aging management review (AMR) from the systems, structures, and components (SSCs) that are within the scope of license renewal in accordance with 10 CFR 54.4. Sections 2.1.4 and 2.1.5 of the license renewal application (LRA) describe the applicant's process for identifying these SCs and provide the scoping and screening results for those components, subcomponents, structural members, and commodity groups that are subject to an AMR per Section 3.0 of the LRA.

In LRA Section 2.1, "Scoping and Screening Methodology," the applicant described the scoping and screening methodology used to identify SSCs at the Millstone Power Station (MPS) Units 2 and 3 within the scope of license renewal, and SCs that are subject to an AMR. The staff reviewed the applicant's scoping and screening methodology to determine if it meets the scoping requirements stated in 10 CFR 54.4(a) and the screening requirements stated in 10 CFR 54.21.

In developing the scoping and screening methodology, the applicant considered the requirements of the Rule, the Statements of Consideration (SOC) for the Rule, and the guidance presented by the Nuclear Energy Institute (NEI), "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Revision 3, March 2001, (NEI 95-10). In addition, the applicant also considered the NRC staff's correspondence with other applicants and with NEI in the development of this methodology. Scoping and screening were performed as an integrated review at the system/structure level. Screening was performed on a component-level basis, and the scoping results were reviewed and revised as required to be consistent with the screening results. 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 screened out as part of the AMR process.

2.1.2 Summary of Technical Information in the Application

In Sections 2.0 and 3.0 of the LRA, the applicant provided the technical information required by 10 CFR 54.21(a). In LRA Section 2.1, "Scoping and Screening Methodology," the applicant describes the process used to identify the SSCs that meet the license renewal scoping criteria under 10 CFR 54.4(a), as well as the process used to identify the SCs that are subject to an AMR as required by 10 CFR 54.21(a)(1). Section 2.1.2 discusses the application of the 10 CFR 54.4(a) scoping criteria; Section 2.1.3 provides a discussion of the documentation that was used to perform scoping and screening; and Sections 2.1.4 and 2.1.5 describe the scoping and screening methodology.

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

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

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

2.1.2.1 Scoping Methodology

In Section 2.1 of the LRA, the applicant described the methodology used to scope systems and structures pursuant to the requirements of 10 CFR 54.4(a). The applicant's scoping methodology, as described in the LRA, is outlined in the sections below.

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

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

(1) Application of the Scoping Criteria in 10 CFR 54.4(a)(1). In LRA Section 2.1.2.1, "10 CFR 54.4(a)(1)," the applicant discussed the scoping methodology as it related to SR criteria in accordance with 10 CFR 54.4(a)(1). With respect to the SR criteria, the applicant stated that the SSCs within the scope of license renewal include SR SSCs that are relied upon to remain functional during and following design-basis events as defined

in 10 CFR 50.49(b)(1). The quality classifications established in the Production Maintenance Management System (PMMS) for uniquely numbered plant components are consistent with the SR definitions presented in 10 CFR 50.49(b)(1) and are based on reviews of plant accident analyses and evaluations. PMMS, a multi-faceted program encompassing, in part, an equipment information database and the plant work order subsystem, also provides for the identification of relevant engineering and quality classification information and specific component information. The applicant used these quality classifications for the identification of components meeting the requirements of 10 CFR 54.4(a)(1). License renewal information is also contained in the License Renewal Information Management System (LRIMS), which is used to collect, process, and report license renewal information.

The quality classification information includes the identification of quality assurance (QA) Category 1 for SR and NSR components. For components identified as QA Category I, a safety function and safety function description are provided. In addition to identifying SR components, the following four augmented QA classifications are identified as a subset of NSR: (1) rad waste, (2) fire protection, (3) anticipated transient without scram, and (4) station blackout. The PMMS database also indicated the applicability of 16 engineering programs. Examples of engineering programs that pertain to license renewal intended functions are the electrical equipment qualification, Appendix R, seismic, fire protection, high-energy line break, heavy loads, and station blackout programs. The use of PMMS during the scoping and screening process is discussed in Sections 2.1.4 and 2.1.5 of the LRA. The classification and identification of plant components within PMMS are discussed in Section 2.1.3.4 of the LRA.

(2) Application of the Scoping Criteria in 10 CFR 54.4(a)(2). In LRA Sections 2.1.2.2, "10 CFR 54.4(a)(2) — Non Safety-Related Affecting Safety-Related;" 2.1.5, "Screening Methodology;" 2.1.3.6, "10 CFR 54.4(a)(2) Report;" and 2.1.6.9, "Scoping Criteria 10 CFR 54.4(a)(2)," the applicant discussed the scoping methodology as it related to the NSR criteria in accordance with 10 CFR 54.4(a)(2). The applicant stated that a review has been performed to identify the NSR SSCs whose failure could prevent satisfactory accomplishment of the SR intended functions identified in 10 CFR 54.4(a)(1). The NSR SSCs that are within the scope of license renewal for Units 2 and 3 fall into two categories: (1) NSR SSCs that functionally support the operation of SR SSCs and (2) NSR SSCs whose failure could cause an interaction with SR SSCs that could potentially result in the failure of the SR SSCs to perform their intended safety functions. With respect to scoping of SSCs pursuant to 10 CFR 54.4(a)(2), the applicant performed a review of the FSAR, plant-specific operating experience, and CLB documentation to provide the guidelines and the sources of information to be used as input to scoping and screening. This information was also augmented by plant walkdowns performed to identify NSR components containing liquids or steam that are spatially oriented such that their failure could prevent the satisfactory accomplishment of an SR function of an SR SSC.

The applicant's review encompassed the design-basis earthquake (DBE) considered within these documents. The NSR 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 NSR piping that is attached to SR piping, and that is required to be seismically designed and supported up to the first equivalent anchor point beyond the SR/NSR boundary, is included within the scope of license renewal. Although these NSR piping segments are not uniquely identified during the screening process nor highlighted on license renewal drawings, applicable aging effects for these piping segments are managed by the applicant along with the adjoining SR piping. Supports for NSR SSCs that could adversely interact with SR SSCs as a result of a seismic event (Seismic II/I) were not individually identified during the screening process. These supports were identified on a commodity basis within areas that contain SR SSCs and were included within the scope of license renewal regardless of whether they were directly associated with the SR SSCs. The results of the applicant's review were incorporated into a 10 CFR 54.4(a)(2) report, which was used as input to the scoping and screening process and is discussed in Section 2.1.3.6 of the LRA.

(3) Application of the Scoping Criteria in 10 CFR 54.4(a)(3). In LRA Sections 2.1.2.3, "10 CFR 54.4(a)(3) — Regulated Events;" 2.1.6.2, "Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout Rule for License Renewal (ISG-02);" 2.1.6.4, "Fire Protection System Piping (ISG-04);" and 2.1.6.7, "Scoping of Fire Protection Equipment for License Renewal (ISG-07);" the applicant discussed the scoping methodology as it related to the regulated event criteria in accordance with 10 CFR 54.4(a)(3). With respect to the scoping criteria set forth in 10 CFR 54.4(a)(3), the applicant evaluated all regulated events including fire protection, environmental qualification, pressurized thermal shock, anticipated transient without scram, and station blackout. For each event, the applicant identified the plant-specific licensing basis documents applicable to each regulated event, such as the final safety analysis report, safety evaluation reports (SERs), licensing correspondence, plant-controlled databases, calculations, and analyses to establish the scoping determinations. SSCs relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with the applicable regulations were initially included within the scope of license renewal.

2.1.2.1.2 Documentation Sources Used for Scoping and Screening

In LRA Section 2.1.3, "Documentation Sources Used for Scoping and Screening," the applicant stated information derived from the following sources was reviewed during the license renewal scoping and screening process:

- final safety analysis report
- current licensing basis. Information including technical specifications (TS) and docketed licensing correspondence
- System Functional Requirements Manual (SFRM)
- technical position papers and reports prepared to support scoping evaluations of 10 CFR 54.4(a)(2) and the regulated events identified in 10 CFR 54.4(a)(3)
- Maintenance Rule summary reports and scoping tables
- design-basis summaries (DBSs)
- plant drawings and walkdowns
- PMMS, LRIMS, and the probabilistic risk assessment (PRA) model

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

2.1.2.1.3 Plant and System-Level Scoping

In LRA Section 2.1.4, "Scoping Methodology," the applicant described the scoping methodology for plant systems and structures that were safety-related, non safety-related, and equipment relied upon to perform a function for the any of the five regulated events described in 10 CFR 54.4(a)(3).

The scoping for systems and structures was performed as two separate efforts. For system scoping, systems presumed to be within the scope of license renewal were based on the following criteria: any system containing a component whose safety classification in PMMS met one of the scoping criteria; a system function taken from the Maintenance Rule documentation; a DBS or SFRM with a license renewal intended function as defined by 10 CFR 54.4; system functions meeting the criteria of 10 CFR 54.4(a)(2) or (3); and systems which performed one or more intended functions. 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. The final system scoping results are presented in Section 2.2 of the LRA.

For structures, a structure was initially identified as being within the scope of license renewal if one or more of the criteria of 10 CFR 54.4(a) were met as identified in the FSAR (such as Class I structure designation), the 10 CFR 54.4(a)(2) report (LRA Section 2.1.3.6), or the 10 CFR 54.4(a)(3) regulated event reports (LRA Section 2.1.3.7). In some cases, MPS Unit 1 structures were included in scope for Units 2 and 3 since they provide an intended function. After the screening process for mechanical and electrical systems was completed, the lists of in-scope structures was reviewed and validated to ensure that all structures supporting in-scope systems or components were identified and included in scope. The final scoping results for structures are presented in Section 2.2 of the LRA.

2.1.2.2 Screening Methodology

Following the determination of plant systems and structures that were candidates for inclusion within the scope of license renewal, the applicant implemented a process for determining which passive components, structural members, and commodities that support a license renewal intended function would then be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1). This process is described in LRA Section 2.1.5, "Screening Methodology." The screening portion of the integrated license renewal plant assessment was divided by engineering discipline into three primary areas: system (mechanical), civil/structural, and electrical/instrumentation and controls (I&C).

The applicant also screened selected major components to identify the passive long-lived subcomponents that require an AMR, as discussed in Section 2.1.5.2 and Appendix C, Section C2.2, "Identification of In-scope Passive Subcomponents," of the LRA. Screening identified NSR SSCs that provide a support function (such as supplying instrument air, cooling water, or heating and ventilation) required for in-scope SSCs to perform their intended functions. The NSR support SSCs were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) to a level necessary to provide satisfactory accomplishment of the SR functions identified in 10 CFR 54.4(a)(1).

2.1.2.2.1 System (Mechanical) Screening

Following system-level scoping for mechanical systems, the applicant performed screening to identify those mechanical components (pumps, valves, piping, etc.) that support the system intended functions. The intended functions, developed utilizing the documentation sources discussed previously in Section 2.1.2.1.2 of this report, were used as input to the screening process to identify the passive components within the scope of license renewal. Passive component determinations were made in accordance with 10 CFR 54.21(a)(1)(i) and the guidance in NEI 95-10, Revision 3. The license renewal boundaries for a mechanical system flow path were typically extended to include the first normally closed valve (manual valve, check valve, or automatic valve that receives a signal to close) that forms the flow path pressure boundary.

Following completion of the screening review for a system, the annotated drawings were used to generate a set of license renewal drawings which identified the in-scope passive mechanical components. This included the passive components that were subsequently determined, during the AMR process, to be short lived, as discussed in Appendix C, Section C2.3 of the LRA. The system screening results are presented in LRA Section 2.3, "Scoping and Screening Results: Mechanical Systems," for each mechanical system containing in-scope mechanical components. The information includes the system description, FSAR references, license renewal drawings, and the components subject to an AMR. A screening summary table lists the component groups that require an AMR along with the associated intended functions. The screening section also includes a reference to the AMR results table. Screening for major components within the reactor coolant system (i.e., the reactor vessel, reactor vessel internals, and steam generators) was performed separately from the remainder of the reactor coolant system (RCS) components. Detailed screening was performed to identify subcomponents that perform or support intended functions. The results of the major components screening are presented in Section 2.3.1.1, Section 2.3.1.2, and Section 2.3.1.4 of the LRA.

2.1.2.2.2 Structural Screening

Screening was performed for each in-scope structure identified during the scoping process. Structure screening identified the passive structural members (walls, beams, floors, grating, block walls, missile shields, pads, liners, etc.) that support the intended functions of the structure and, therefore, require an AMR. The structural members that require an AMR were identified based on a review of the structural detail drawings. The screening process for nuclear steam supply system equipment supports was similar to the process for structural screening. The structural members of the support that require an AMR were identified based on a review of detailed support drawings. Load-handling cranes and devices were evaluated based on a review of the FSAR and the data in PMMS. Load-handling cranes and devices that were seismically designed are within the scope of license renewal. Structural supports were evaluated as a commodity grouping termed "general structural supports." Other miscellaneous items such as cable tray covers, barrier doors, penetration fire seals, cabinets, and panels were evaluated as a commodity grouping termed "miscellaneous structural commodities." The screening results are presented in LRA Section 2.4, "Scoping and Screening Results: Structures."

2.1.2.2.3 Electrical/I&C Components Screening

The 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. An AMR evaluation is required for component groups such as cables and connectors, electrical penetrations, and bus ducts since they perform a passive function. The electrical screening results are presented in LRA Section 2.5, "Scoping and Screening Results: Electrical and Instrumentation and Controls Systems."

2.1.2.2.4 Stored Equipment Screening

In response to a February 11, 1999, letter from Christopher I. Grimes, Nuclear Regulatory Commission (NRC), to Doug Walters, NEI, "Request for Additional Information Regarding Generic License Renewal Issue No. 98-0102, 'Screening of Equipment that is Kept in Storage,'" a review was performed by the applicant to identify equipment that is maintained in storage, reserved for installation in the plant in response to a design-basis accident or regulated event, and requires an AMR. The equipment in storage that performs an intended function and is subject to an AMR includes hardware that is dedicated to the following intended functions:

- mitigates the effects of a fire
- protects against flooding of a service water pump motor
- provides temporary local valve operation in an abnormal operating event
- protects against flooding of the fire pump houses
- protects against flooding of the turbine building and intake structure

In addition to passive components, the review has also considered stored, active components that are not routinely inspected, tested, and maintained.

2.1.3 Staff Evaluation

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

- 10 CFR 54.4(a), as it relates to the identification of plant SSCs within the scope of the Rule
- 10 CFR 54.4(b), as it relates to the identification of the intended functions of plant SSCs determined to be within the scope of the Rule
- 10 CFR 54.21(a)(1) and (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 NRC staff reviewed the activities described in the following sections of the LRA using the guidance contained in NUREG-1800:

- Section 2.1, "Scoping and Screening Methodology," 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)(1) - (3)
- Section 2.2, "Plant Level Scoping Results;" Section 2.3, "System Scoping and Screening Results: Mechanical Systems;" Section 2.4, "Scoping and Screening Results: Structures;" and Section 2.5, "Scoping and Screening Results: Electrical and Instrumentation and Control Systems;" to assure the applicant identified the civil/structural, mechanical, and electrical/I&C components that are subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1) and (2).

In addition, the staff conducted a scoping and screening methodology audit at the MPS in Waterford, CT, from May 3 - 7, 2004. The focus of the audit was to ensure 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 application and the requirements of the Rule. The staff reviewed implementation procedures and engineering reports which describe the scoping and screening methodology implemented by the applicant. In addition, the staff conducted detailed discussions with the applicant on the implementation and control of the license renewal program and reviewed administrative control documentation and selected design documentation used by the applicant during the scoping and screening process. The staff further reviewed a sample of system scoping and screening results reports for the chemical and volume control system (CVCS) to ensure the methodology outlined in the administrative controls was appropriately implemented and the results were consistent with the CLB.

2.1.3.1 Scoping Methodology

The staff reviewed MPS implementation procedures, technical bases documents and reports, engineering reports, and project guidelines (GDLs) which describe the scoping and screening methodology implemented by the applicant. The applicable guidelines included GDLs 101, "Personnel Qualification and Training;" 201, "System and Structure Screening;" 401, "Discrepancy Management;" 501, "Quality Assurance Requirements and Document Control;" and 601, "LRIMS Users Guide." The staff found that the scoping and screening methodology instructions were consistent with Section 2.1 of the LRA and were of sufficient detail to provide the applicant's staff with concise guidance on the scoping and screening implementation process to be followed during the LRA activities. In addition to the implementing procedures, the staff reviewed supplemental design information including system functional descriptions, system drawings, and selected licensing documentation, which were relied upon by the applicant during the scoping and screening phases of the review. The staff found these design documentation sources to be useful for ensuring that the initial scope of SSCs identified by the applicant was consistent with the CLB of Units 2 and 3.

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

Application of the Scoping Criteria in 10 CFR 54.4(a)(1). Pursuant to 10 CFR 54.4(a)(1), the applicant must consider all SR SSCs which are relied upon to remain functional during and following DBE to ensure the following functions: (i) the integrity of the reactor coolant pressure boundary; (ii) the ability 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 offsite exposures comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR Part 100.11 of the *Code of Federal Regulations*, to be within the scope of license renewal. The staff found that the applicant appropriately incorporated the pertinent SR SSCs into the scope of its license renewal program. The applicant relied on PMMS as a starting point for identifying systems within the scope of the Rule. Other document sources included LRIMS, the FSAR, technical specifications, documents related to scoping for implementation of 10 CFR 50.65, the Maintenance Rule, and documents related to the MPS PRA model. Additional information sources included docketed licensing correspondence and design information related to various plant systems and technical position papers.

MPS License Renewal Technical Report MP-LR-3000/4000, "System/Structure Scoping," provides guidance for the performance of scoping for mechanical and electrical systems and for structures. The document describes the determination of intended functions for systems and structures, identifies in-scope systems and structures based on the functions, and documents the results in the scoping report. The determination of intended functions for systems is based on the design and licensing basis documentation, license renewal technical reports for 10 CFR 54.4(a)(2) and (3) intended functions, and PMMS indicators used as input for intended function determinations.

Structure intended functions were based on the same criteria established for systems. In addition, structures that provide support or shelter for in-scope SSCs and perform an intended function are considered in scope for license renewal. Scoping of MPS Unit 1 systems and structures was performed to identify any systems or structures that support Unit 2 or 3 intended functions. As a result, Unit 1 fire protection system components that must remain functional to support Units 2 and 3 have been re-assigned to the appropriate unit. For structures, the Unit 1 turbine building flood wall and the control room/radwaste buildings have been included in scope. As part of the review of the applicant's scoping methodology, the staff reviewed a sample of the PMMS database, 10 CFR 54.4(a)(1) scoping results, a sample of the scoping result reports to support these reviews, and held discussions with the applicant's technical staff.

Conclusion. The staff reviewed a sample of the license renewal database 10 CFR 54.4(a)(1) scoping results and discussed the methodology and results with the applicant's license renewal project personnel. The staff verified that the applicant had identified and used pertinent engineering and licensing information to determine the SSCs required to be in scope in accordance with the 10 CFR 54.4(a)(1) criteria. Therefore, on the basis of this sample review, discussions with the applicant, and review of the applicant's scoping process, the staff determined that the applicant's methodology for identifying systems and structures that meet the scoping criteria of 10 CFR 54.4(a)(1) was adequate.

Application of the Scoping Criteria in 10 CFR 54.4(a)(2). Pursuant to 10 CFR 54.4(a)(2), the applicant must consider all NSR SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs 10 CFR 54.4(a)(1)(i) - (iii), to be within the scope of the license renewal. By letters dated December 3, 2001, and March 15, 2002, the NRC issued a staff position to NEI which provided staff expectations for determining which SSCs meet the 10 CFR 54.4(a)(2) criterion.

The December 3, 2001, letter provided specific examples of operating experience which identified pipe failure events (summarized in NRC Information Notice (IN) 2001-09, "Main Feedwater System Degradation in Safety-Related ASME Code Class 2 Piping Inside the Containment of a Pressurized Water Reactor") and the approaches the NRC considers acceptable to determine which piping systems should be included in scope based on the 10 CFR 54.4(a)(2) criterion. The March 15, 2002, letter further described the staff's expectations for the evaluation of non-piping SSCs to determine which additional NSR SSCs are within scope. The position states that applicants should not consider hypothetical failures, but rather should base their evaluation on the plant's CLB, engineering judgment and analyses, and relevant operating experience. The paper further describes operating experience as all documented plant-specific and industry-wide experience that can be used to determine the plausibility of a failure. Documentation would include NRC generic communications and event reports, plant-specific condition reports, industry reports, and engineering evaluations.

The applicant's methodology for performing 10 CFR 54.4(a)(2) scoping of NSR SSCs was documented in MPS License Renewal Technical Report MP-LR-3007/4007, "10 CFR 54.4(a)(2) Report." The document described the current regulation and the interim staff position regarding scoping of SSCs with respect to the 10 CFR 54.4(a)(2) criterion, and the applicant's methodology, discussions, and results regarding scoping in accordance with the Rule criteria. In keeping with the NEI draft position on NSR SSCs that could adversely affect SR SSCs, the applicant developed guidance for interpreting and applying the (a)(2) criterion including NSR components spatially oriented near SR components, seismic II/I components, NSR piping attached to SR piping, flooding, missiles, and high-energy line break.

For non-fluid-containing components, the applicant identified neither spray or leakage concerns nor any industry operating experience indicating a loss of structural integrity. Also, NSR non-fluid-containing components are not in scope for 10 CFR 54.4(a)(2) unless related to NSR attached to SR or to a seismic II/I concern for system components not located in a sheltered environment. For fluid-containing components, the applicant considered greater than 275 PSIG or greater than 200 °F as high energy and used the spaces approach, which considered everything within the structure in scope for license renewal. For low energy, a spatial approach was used based on plant walkdowns by MPS staff. Air and gas systems were excluded from consideration. The applicant provided a list of systems in the 10 CFR 54.4(a)(2) report that contain NSR components spatially oriented such that failure could affect the function of SR components.

During the staff's review of LRA Section 2.1.3.6, "10 CFR 54.4(a)(2) Report," and the applicant's technical report prepared to address the issue, the applicant stated that NSR piping that is attached to SR piping, and that is seismically designed and supported up to the first equivalent anchor point beyond the SR/NSR boundary, is included within the scope of license renewal. However Section 2.1.3.1.2 of NUREG-1800 states that the scoping methodology includes both the NSR piping and the associated piping anchors as being within the scope of license renewal pursuant to 10 CFR 54.4(a)(2).

In RAI 2.1-1, the staff requested additional information regarding the scoping methodology associated with the 10 CFR 54.4(a)(2) evaluation. The staff requested that the applicant define the term "first equivalent anchor point" as it relates to the evaluation of NSR piping attached to

SR piping and describe the methodology of its application. Additionally, in cases where plant equipment credited with providing support to NSR piping within the scope of license renewal may be equivalent to an associated piping anchor as described in NUREG-1800, the staff requested that the applicant provide justification for not including this plant equipment within the scope of license renewal. The staff also requested that the applicant describe the methodology and documentation sources used to perform walkdowns associated with the review of NSR fluid-containing components located near SR components (spatial interaction); and for low-energy, fluid-containing NSR components, describe the extent to which engineering judgment was used to identify NSR components that may affect SR components.

The applicant's November 9, 2004, response to the RAI stated that for the purpose of license renewal, the first equivalent anchor is defined as when the piping has been restrained in each of the three orthogonal directions. The response also recognized that, in some cases, plant equipment may be credited as providing restraint in one or more directions in the piping system seismic evaluation. Dominion stated that in these cases, the credited components are also included within the scope of license renewal. The applicant applied the following six criteria in the determination of the license renewal boundary endpoints for NSR piping attached to SR piping:

(1) The NSR piping terminates at plant equipment that is mounted to a baseplate supported by a structure or mounted to a foundation (base-mounted component). In this instance, the base-mounted component and supporting structure are included within the scope of license renewal.

(2) The NSR piping is attached to an SR piping run or component, constituting an endpoint for the purpose of this evaluation, since the attached SR piping would have been included in scope per 10 CFR 54.4(a)(1).

(3) A flexible connection in the NSR piping segment such as an expansion joint, flexible hose, or other component that effectively decouples the piping system.

(4) In the case of an NSR piping segment that has transitioned below-ground, a point where the buried NSR piping segment exits the ground.

(5) The NSR piping run transitions to small diameter branch piping, where the area moment of inertia ratio of the larger diameter piping to the smaller diameter piping is greater than or equal to 10.

(6) The end of the NSR piping run, such as a drain pipe that ends at an open floor drain.

The applicant stated that these conservative criteria provide assurance that the first equivalent anchor is included within the license renewal boundary. Dominion stated that in some cases, this bounding approach resulted in an overly conservative license renewal boundary determination. In cases where it was deemed appropriate to limit the additional scope for a specific piping system, specific piping anchors (or equivalent anchors) were identified via the review of isometric piping drawings. In a limited number of instances where isometric drawings were not available, plant walkdowns were performed to determine the location of the piping anchors (or equivalent anchors). This methodology provided for the determination of license renewal boundary endpoints that are at or beyond the location of the first equivalent anchor point for NSR piping that is attached to SR piping. Dominion stated that the associated piping supports and plant equipment, up to and including the license renewal boundary endpoints, are included within the scope of license renewal. However, the staff had concerns with the criteria's consistency with the CLB and whether the criteria established by the applicant would conservatively bound the equivalent anchor. This was identified as Open Item 2.1.3-1.

In response to Open Item 2.1.3-1, the applicant provided additional information to the staff on April 1, 2005, regarding the basis of the six bounding criteria used in the determination of the license renewal boundary endpoints for NSR piping attached to SR piping. The applicant stated that the bounding criteria provided assurance that the license renewal scoping boundary would envelop the scope of the NS piping system included in the design basis seismic analysis, consistent with the CLB, and in some cases, the bounding approach resulted in an overly conservative license renewal boundary determination. The applicant also provided the staff with a revised definition of an equivalent anchor to be used for the purposes of identifying the NS piping in the scope of license renewal during the case-by-case reviews. The revised definition was changed from one restraint in each of the three orthogonal directions to two restraints. A review was performed by the applicant to apply this equivalent anchor definition to the cases where the LR boundary endpoint was previously determined through piping analysis/isometric drawing review or plant walkdown. The applicant stated that as a result, the LR boundary was extended where necessary to include additional supports and portions of piping systems; however, there were no additional component types as a result of these boundary extensions.

Based on the above discussion, the staff concludes that the applicant has supplied sufficient information to demonstrate that SSCs, that meet the scoping requirements of 10 CFR 54.4(a)(2), have been identified as being within the scope of license renewal. Therefore, Open Item 2.1.3-1 is considered closed.

As described in LRA Section 2.1.3.6, NSR fluid-containing components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of an SR function of an SR SSC, are included within the scope of license renewal. The applicant stated that identification of these NSR components was based on knowledge-based reviews of the facility configuration and were conducted by experienced plant personnel, supplemented by facility walkdowns, as needed. NSR fluid-containing components in low-energy systems that could affect the function of SR SSCs due to their spatial orientation were determined based on the judgment of the evaluator. Considerations included collapse envelope, fluid leakage, spray, and flood potential. Dominion developed more comprehensive guidelines to limit the use of judgment in the determination of these in-scope NSR components.

Dominion's revised spatial orientation guidelines also considered whether the fluid contents from an NSR component could flow from the area through doorways, grating, or floor penetrations, and then drip on SR components in an adjacent area. As such, credit may be taken for mitigating features such as curbing, dikes, and floor drains which are also included within scope of license renewal. These revised criteria provide comprehensive guidance for the determination of the NSR components in low-energy systems that could affect SR SSC functions due to their spatial orientation.

Dominion stated that implementation of these revised methodologies has resulted in the addition of eight Unit 2 systems. Also, the implementation of the spatial and/or NSR-attached-to-SR piping methodologies caused many systems, previously within the scope of license renewal, to have expanded license renewal boundaries. Additionally, as a result of the revised methodology regarding NSR-attached-to-SR piping, the Unit 3 groundwater underdrains storage tank and the foundation of the primary water storage tank (previously listed in LRA Table 2.2-4 as not in scope for Unit 2), were also added to the scope of license renewal.

For seismic II/I, the applicant stated that Unit 2 was designed to meet the seismic criteria stated in FSAR Section 5.8.4, while Unit 3 was designed to comply with USNRC Regulatory Guide (RG) 1.29, "Seismic Design Classification," Revision 3, dated September 1978. The applicant performed a walkdown of the components on the Unit 2 safe shutdown equipment list developed for NRC Unresolved Safety Issue A-46 in response to NRC Generic Letter (GL) 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors," USNRC, dated February 19, 1987. During the walkdown, potential seismic system interactions that could physically impact safe shutdown equipment were reviewed to ensure that equipment within the scope of the review was not affected by the failure or displacement of adjacent structures, piping, or equipment due to physical impact. Particular attention was given to NSR equipment affecting SR equipment. In the screening process, the applicant used a spaces approach to accommodate seismic II/I supports and a commodity approach to evaluate them.

For NSR fluid-containing components located near SR components (spatial orientation), the applicant queried the PMMS database to determine the structures that contain SR components and the fluid-containing NSR components in the structures that contain SR components. These components are relied on to maintain their limited structural integrity (LSI) and pressure boundary to ensure that the SR components in the vicinity can perform their intended function(s). The applicant used the term LSI to define sufficient structural integrity to preclude detrimental effects on SR components and applied the term to fluid-containing components that may experience loss of LSI from internal- or external-related degradation. The applicant provided a list of systems containing NSR fluid-containing components in Attachments 1 and 2 of its 10 CFR 54.4(a)(2) report.

Conclusion. As part of the review of the applicant's scoping methodology, the staff also reviewed a sample of the license renewal database scoping results to determine if the methodology adequately identified NSR SSCs meeting the 10 CFR 54.4(a)(2) scoping criteria. Based on this review, and as described above, the applicant's methodology for scoping NSR equipment adequately identified those NSR SSCs whose failures are considered in the CLB and could prevent the satisfactory accomplishment of the SR functions identified under 10 CFR 54.4(a)(1). Therefore, the staff determined that the applicant's methodology for identifying systems and structures meeting the scoping criteria of 10 CFR 54.4(a)(2) was adequate.

On the basis of the staff's review of the LRA, the staff's audit of the applicant's scoping and screening methodology, the staff's review of the applicant's response to the RAI, and the applicant's review and evaluation of relevant operating experience, the staff concludes that the applicant supplied sufficient information to demonstrate that all SSCs meeting the 10 CFR 54.4(a)(2) scoping requirements have been identified as being within the scope of license renewal.

Application of the Scoping Criteria in 10 CFR 54.4(a)(3). Pursuant to 10 CFR 54.4(a)(3), the applicant must consider all SSCs relied on in safety analyses or plant evaluations which 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) to be within the scope of the license renewal. The applicant's methodology for performing the scoping of SSCs in accordance with 10 CFR 54.4(a)(3) was documented in MPS License Renewal Project Technical Reports MP-LR-3002/4002 through

3006/4006 developed by the applicant for each regulated event applicable to MPS Units 2 and 3. The applicant performed the initial scoping for regulated events by evaluating CLB information relevant to each regulated event to identify if the structure or system met the scoping criteria of 10 CFR 54.4(a)(3). For each event, the applicant developed a technical report which described the following: the relevant rule requirements; a functional description of the implementation of that requirement at the MPS Units 2 and 3; specific information regarding systems and components credited for the event; the process to identify the scoping boundaries associated with the systems credited; the intended functions applicable to the requirement; a list of CLB information sources used for the analysis; and a list of systems and components determined to be within scope for the given regulated event.

Station Blackout. MPS License Renewal Project Technical Report MP-LR-3006/4006, Revision 3, provided the plant design information for MPS Units 2 and 3 pertaining to the SBO system. All plant systems were reviewed to determine which SSCs were required to achieve and maintain a reactor coolant system temperature equal or below the TS limit for a hot standby condition, assuming an SBO. The technical report stated that all SSCs that performed a function that supported compliance with 10 CFR 50.63 were within the scope of license renewal.

In an April 1, 2002, letter from D. Matthews (NRC) to A. Nelson (NEI) and D. Lochbaum (Union of Concerned Scientists), the staff provided guidance on the scoping of equipment relied on to meet the requirements of the SBO rule. In this letter, the staff noted that, consistent with the requirements specified in 10 CFR 54.4(a)(3) and 10 CFR 50.63(a)(1), 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. In LRA Section 2.1.3.7.5, the applicant stated that the SBO scoping effort identified SCs of the offsite power system for each plant required to restore power from the onsite switchyard down to the SR busses in the plant. Furthermore, the applicant stated that the plant offsite power system and these SCs, which were classified as satisfying 10 CFR 54.4(a)(3), were included within the scope of license renewal. The staff determined that the applicant's approach to scoping SSCs relied on to demonstrate compliance with 10 CFR 50.63 was consistent with the staff's April 1, 2002, interim guidance.

Environmental Qualification. MPS License Renewal Project Technical Report MP-LR-3002/4002, Revision 2, provided the plant design information for MPS Units 2 and 3 pertaining to the EQ program. The EQ program had three major elements for compliance that were reviewed by the staff: design basis, design verification, and implementation. Section 2.1.3.7.2 of the LRA described how the program was developed to maintain compliance with 10 CFR 50.49. The electrical components that fell within the scope of the program were identified in the environmental qualification master list (EQML) and the PMMS. The staff reviewed a sample of components in the EQML and PMMS and determined that they were appropriately classified as within the scope of the Rule. Additionally, the staff found that components such as doors, penetrations, seals, and dampers that provide a barrier between mild and harsh areas of the plants were also included within the scope of license renewal.

Anticipated Transient Without Scram. MPS License Renewal Project Technical Report MP-LR-3003/4003, Revision 2, provided the plant design information pertaining to the ATWS systems at MPS Units 2 and 3. The staff reviewed the report which described how the requirements of 10 CFR 50.62 were fulfilled at MPS Unit 2 by the diverse scram system (DSS) and the ATWS mitigating system actuating circuitry (AMSAC). At Millstone Unit 3, the requirements of 10 CFR 50.62 were fulfilled by AMSAC as validated by the Westinghouse AMSAC generic design. The staff reviewed Section 2.1.3.7.4 of the LRA for each unit, which further discussed the AMSAC and DSS systems. The technical report concluded that all SSCs that perform a function which supports compliance with 10 CFR 50.62 were within the scope of license renewal.

Fire Protection. MPS License Renewal Project Technical Report MP-LR-3005/4005, Revision 4, provided the plant design information pertaining to the fire protection systems and fire safe shutdown systems for MPS Units 2 and 3. The staff reviewed the report that described the fire protection and fire safe shutdown equipment as it related to SSCs that are required by 10 CFR 50.48 and included within the scope of license renewal. The report also described the basis for excluding some fire-protection SSCs from the scope of license renewal. The staff also reviewed LRA Section 2.1.3.7.1 for each unit that described the review performed to identify specific SSCs that fell within the scope of license renewal for fire protection including those relied upon in the fire hazard analysis.

Pressurized Thermal Shock. MPS License Renewal Project Technical Report MP-LR-3004/4004, Revision 0, provided the plant design information pertaining to PTS for MPS Units 2 and 3. The staff reviewed the report that stated that all SSCs performing a function that supported compliance with 10 CFR 50.61 were within the scope of license renewal. The report also stated that an engineering calculation (95-SDS-1007MG) was performed to determine reactor vessel material nil-ductility transition temperature values for the 20-year renewal term and compared to the screening criteria of 10 CFR 50.61. The results indicated both units would remain compliant with the regulation screening criteria for the 20-year renewal term without any additional compensatory actions. The staff also reviewed Section 2.1.3.7.3 of the LRA, which briefly described the contents of the report noted previously in this paragraph. The evaluation of reactor pressure vessel material was further described in Section 4.2 of the LRA.

Conclusion. As part of the review of the applicant's scoping methodology, the staff reviewed a sample of the license renewal database 10 CFR 54.4(a)(3) scoping results, reviewed a sample of the analyses and documentation to support these reviews, and discussed the methodology and results with the applicant's personnel responsible for these evaluations. The staff verified that the applicant had identified and used pertinent engineering and licensing information to determine the SSCs required to be in scope in accordance with 10 CFR 54.4(a)(3). Based on this sampling review and discussions with the applicant, the staff determined that the applicant's methodology for identifying systems and structures meeting the scoping criteria of 10 CFR 54.4(a)(3) was adequate.

2.1.3.1.2 Plant System and Structure Scoping

The applicant's methodology for performing the scoping of systems and structures in accordance with 10 CFR 54.4(a) was documented in MPS License Renewal Project Technical Report MP-LR-3000/4000, Revision 7, "System/Structure Scoping Millstone Power Station." The approach used by the applicant for system and structure scoping was consistent with the methodology described in Section 2.1.4 of the LRA. Specifically, MP-LR-3000/4000 stated that personnel performing license renewal scoping use CLB documents and list all functions that the system or structure is required to accomplish. Sources of information regarding the CLB for systems and structures included the FSAR, DBS, system descriptions, PMMS database, Maintenance Rule information, plant drawings, and the SFRMs. The applicant utilized a two-step process for system/structure scoping. After the preliminary identification of potential in-scope systems/structures, the screening process then reviewed each potential in-scope system/structure in detail to confirm, supplement, or refute the preliminary determinations made during the scoping process. The applicant first identified all plant systems using PMMS, then evaluated them against the scoping criterion of 10 CFR 54.4(a)(1)-(3) to identify those systems that perform one or more intended functions.

A system or structure was presumed to be within the scope of license renewal if it performed one or more SR functions or met other scoping criteria per the Rule as determined by CLB review and walkdown by technical personnel. Identified system or structure functions were then compared to a list of scoping and screening questions to determine the functions that met the scoping criteria of 10 CFR 54.4(a). The applicant documented the results of the scoping process in accordance with MPS MP-LR-3000/4000, Attachments A through E, "MPS Unit 2/3 Database Scoping Matrix." The scoping matrix included a description of the structure or system, the 10 CFR 54.4(a) scoping criteria met by the system or structure, and references. Due to design differences between the units, separate lists identifying the in-scope structures and systems for each unit were developed. During the scoping methodology audit, the NRC staff reviewed a sampling of the applicant's scoping documentation and concluded that it contained an appropriate level of detail to document the scoping process.

Conclusion. Based on a review of the LRA, the scoping and screening implementation procedures, and a sampling review of system and structure scoping results during the methodology audit, the staff concluded that the applicant's scoping methodology for systems and structures was adequate. In particular, the staff determined that the applicant's methodology reasonably identified systems and structures within the scope of license renewal and their associated intended functions.

2.1.3.2 Screening Methodology

The staff reviewed the screening methodology used by the applicant to determine if mechanical systems, structures, and electrical/I&C components within the scope of license renewal would be subject to an AMR. The applicant described its screening process in Section 2.1.5 of the LRA. The initial scoping effort described in LRA Section 2.1.4 identified the plant systems and structures that were candidates for inclusion within the scope of license renewal. Screening was performed in accordance with the guidance provided in NEI 95-10, Revision 3, and applicable NRC interim staff guidance.

MPS License Renewal Project Guideline GDL 201, "System and Structure Screening," was used by the applicant during the screening process. The document provides guidance to determine intended functions, develop license renewal drawings and component groups, and identify passive components and structural members subject to an AMR. For each of those systems and structures, screening was performed to identify the passive components, structural members, and commodities that support an intended function and subject to further AMR. The components that are short-lived (and therefore did not require an AMR) were identified as part of the AMR process, as discussed in LRA Section C2.3, "Identification of Short-lived Components and Consumables." Screening was divided by engineering discipline into three primary areas: system (mechanical), civil/structural, and electrical/I&C. The screening results were used to validate the initial lists of systems and structures within the scope of license renewal. Scoping results were updated as necessary to reflect the screening results. The screening processes for these areas are described in LRA Sections 2.1.5.1, 2.1.5.3, and 2.1.5.4. Section 2.1.5.5 summarizes the screening review performed for stored equipment. The staff evaluated the applicant's screening methodology against the criteria contained in

10 CFR 54.21(a)(1) and (2) using the review guidance contained in NUREG-1800, Section 2.1.3.2, "Screening."

Pursuant to 10 CFR 54.21(a)(1), the applicant's integrated plant assessment (IPA) must identify and list those SCs subject to an AMR. The criterion also requires that SCs subject to an AMR shall encompass those that (i) perform an intended function, as described in 10 CFR 54.4, without moving parts or a change in configuration or properties; and (ii) are not subject to replacement based on a qualified life or specified time period. In accordance with 10 CFR 54.21(a)(2), the applicant is also required to describe and justify the methods used to comply with 10 CFR 54.21(a)(1). The staff evaluation of the applicant's screening approach for each of these disciplines is described in Sections 2.1.3.2.1, 2.1.3.2.2, and 2.1.3.2.3.

2.1.3.2.1 System (Mechanical) Screening

The staff reviewed the methodology used by the applicant to determine if mechanical systems, identified within the scope of license renewal, were screened to determine the in-scope boundary and the passive components that would be subject to further AMR. For mechanical components, a screening process was applied to each mechanical system determined to be in scope in order to determine the types of mechanical component commodities within the systems and the various materials and environments to be considered in the AMR. Evaluation boundaries were established for the various plant mechanical systems, as discussed previously in Section 2.1.2.2.1, in order to further identify individual mechanical components for review. Information sources included design and licensing basis documents, plant drawings, technical reports, and discussions with licensed senior reactor operators and system engineers. The listing of mechanical components was facilitated by grouping these items into component groups from a review of specific in-scope passive equipment. Component-level functions were determined on a component-group basis. Screening reports were developed to document the results of the screening process. License renewal boundary drawings were developed to show the in-scope, passive equipment. These groups were placed into the license renewal database and evaluated in accordance with the screening criteria described in GDL 201. The applicant provided the staff with a detailed discussion of the process and provided screening report information from the license renewal database that described the screening methodology as well as a sample of the screening results reports for a selected group of SR and NSR systems. The staff determined that the screening methodology was consistent with the requirements of the Rule and that implementation of the methodology will identify SCs that meet the screening criteria of 10 CFR 54.21(a)(1).

The staff reviewed the methodology used by the applicant to identify and list the mechanical components and commodities subject to an AMR, as well as the applicant's technical justification for this methodology, and discussed the results with the applicant's cognizant engineers and license renewal staff. The staff also examined the applicant's screening results from the implementation of this methodology by reviewing the MPS Units 2 and 3 CVCSs which were identified as being within the scope of license renewal. The system was selected because it met all three criteria of 10 CFR 54.4(a)(1)-(3). The system meets 10 CFR 54.4(a)(1) since it provides a borated water flow path to the reactor coolant system for reactivity control and for make-up water in the event of an accident; 10 CFR 54.4(a)(2) because the system contains NSR components credited for mitigating the effects of a high-energy line break, and the spatial interaction associated with 10 CFR 54.4(a)(1) components; and 10 CFR 54.4(a)(3) because it contains environmentally qualified equipment and supports FP and SBO. The staff reviewed the DBS for Unit 2 (DBS-2304) and Unit 3 (CVC-3304), evaluation boundaries referenced in license renewal drawings for the system, resultant screened-in components and commodities, the corresponding component-level intended functions, regulated event evaluations, and the resulting list of mechanical components and commodity groups subject to an AMR. The staff also reviewed CVCS Screening Report MP-LR-3111, Revision 3, which provided function descriptions and associated scoping criteria classifications. The report lists several categories including component type (if an AMR was required), and a comment section. The staff also discussed the process and results with the cognizant engineers who performed the review and also reviewed the MPS License Renewal Tagging Record, dated February 23, 2004, which listed passive mechanical components tagged as in scope for CVCS.

During the staff's audit of the applicant's scoping and screening methodology, the staff questioned the exclusion of the Unit 3 boric acid batch tank from within the CVCS evaluation boundary. Further review by the applicant determined that the tank in question should have been included within the evaluation boundary and, therefore, potentially subject to AMR. The staff verified, through discussion with the applicant, that an extent-of-condition review was performed to assure that no other similar commodities were excluded from evaluation boundaries, for other in-scope SSCs, and that the tank would be screened for AMR. The applicant stated that the exclusion of the tank from the AMR screening process would be resolved through the use of MPS License Renewal Project Guideline MP-LRP-GDL 401, Revision 2, "Discrepancy Management."

Conclusion. The staff determined that the applicant's mechanical component screening methodology was consistent with the guidance contained in NUREG-1800 and was capable of identifying those passive, long-lived components within the scope of license renewal that are subject to an AMR.

2.1.3.2.2 Structural Components Screening

The staff reviewed the methodology used by the applicant to determine if structural components and commodities within the scope of license renewal would be subject to an AMR. For civil structures and component supports, a screening process was applied to buildings and civil structures determined to be in scope to determine the types of structural elements utilized and the various materials and environments to be considered in the AMR. The staff discussed the methodology and results with the applicant's technical staff. The staff also examined the applicant's results from the implementation of this methodology by reviewing a sample of the plant structures identified as being within the scope of license renewal. The review included the evaluation boundaries, resultant in-scope components, the corresponding component-level intended functions, and the resulting list of structural components and structural commodity groups subject to an AMR. The staff reviewed several LRIMS reports which listed a breakdown of the structural components within scope of license renewal. Each report listed several categories including component type and material. Evaluation boundaries were established for the various plant structures within the scope of license renewal.

In general, the boundary for a building or structure was the entire building, including the structural members and components that support equipment, piping, ductwork, foundations, walls, beams, and equipments slabs. The various types of structural elements, materials, and environments that make up the buildings and structures were identified and listed. The listing of structural elements was facilitated by grouping these items into commodity groups. A list of structural commodity groups and components was also developed for each civil/structural evaluation boundary. The staff reviewed GDL 201 which described the screening methodology, including the attachments which described the guidelines for identifying passive component groups requiring an AMR, and MPS License Renewal Technical Reports MP-LR-3728/4728, Revision 3, "Structures Monitoring Program," which described the condition monitoring program used for in-scope structures.

Conclusion. The staff concluded that the screening methodology was consistent with the requirements of the Rule; that implementation of the methodology will identify civil/structural components that meet the screening criteria of 10 CFR 54.21(a)(1); that the applicant's structural component screening methodology was consistent with the guidance contained in NUREG-1800; and that the methodology was capable of identifying those passive, long-lived components within the scope of license renewal that are subject to an AMR.

2.1.3.2.3 Electrical/I&C Components Screening

The staff reviewed the methodology used by the applicant to determine if electrical/I&C components within the scope of license renewal would be subject to an AMR. As stated in the LRA, the applicant had used the guidelines of NEI 95-10, Revision 3, Appendix B, "Typical Structure, Components, and Commodity Groupings and Active/Passive Determinations for the Integrated Plant Assessment," and applied the commodity approach to scoping and screening of electrical/I&C components. The applicant determined that the following electrical/I&C component groups perform a passive function and require an AMR: cables and connectors, electrical penetrations, and bus ducts. The screening activities were documented in the following MPS License Renewal Technical Reports: MP-LR-3655/4655, "License Renewal Project Aging Management Review Cables and Connectors;" MP-LR-3656/4656, "License Renewal Project Aging Management Review Bus Ducts;" and MP-LR-3657, "License Renewal Project Aging Management Review Electrical Penetrations."

The staff discussed the methodology and results with the applicant and reviewed the results from the implementation of the methodology by reviewing several electrical/I&C commodity samples. The review verified that the applicant's staff had consistently applied the screening criteria to identify those electrical/I&C commodity groups subject to an AMR. The staff also determined that the electrical screening process was consistent with 10 CFR 54.21(a)(1)(ii) and excluded those components or commodity groups that are subject to equipment qualification requirements. The staff did not identify any discrepancies between the methodology documented and the implementation results.

The staff also reviewed the applicant's approach to scoping and screening of electrical fuse holders. In ISG-5, "Identification and Treatment of Electrical Fuse Holders for License Renewal," dated March 10, 2003, the staff stated that consistent with the requirements specified in 10 CFR 54.4(a), fuse holders (including fuse clips and fuse blocks) are considered passive electrical components. Fuse holders would be scoped, screened, and included in the AMR in the same manner as terminal blocks and other types of electrical connections that are currently being treated in the process. This staff position only applies to fuse holders that are not part of a larger assembly, but support SR and NSR functions in which the failure of a fuse precludes a safety function from being accomplished. The applicant stated in MPS License Renewal Technical Report MP-LR-3903/4903, "Interim Staff Guidance," that fuse holders (including metallic clamps for the fuse clips, insulation material, and fuse blocks) meeting these requirements will be evaluated before the beginning of the period of extended operation for possible aging effects requiring management. The fuse holders will either be replaced, modified to remove the aging effects, or a program will be implemented to manage the aging effects as documented in MPS License Renewal Technical Report MP-LR-3731/4731, "Electrical Cables and Connectors Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The staff determined that this was consistent with the ISG.

Conclusion. The staff concluded that the applicant's electrical/I&C screening methodology was consistent with the requirements of the Rule; that implementation of the methodology will identify electrical/I&C components that meet the screening criteria of 10 CFR 54.21(a)(1); that the applicant's electrical/I&C components screening methodology was consistent with the guidance contained in NUREG-1800 and the staff's interim guidance, and capable of identifying passive, long-lived components within the scope of license renewal that are subject to an AMR.

2.1.3.2.4 Stored Equipment Screening

In LRA Section 2.1.5.5, "Screening of Stored Equipment," the applicant stated that a review had been performed to identify equipment that is maintained in storage, reserved for installation in the plant in response to a design-basis accident or regulated event, and requires an AMR. The LRA stated that the applicant had identified certain equipment maintained in storage which supported the intended functions of systems within scope of license renewal and indicated that the identified equipment was subject to an AMR. In addition to passive components, the review has also considered stored active components that are not routinely inspected, tested, and maintained.

The staff also reviewed MPS License Renewal Technical Report MP-LR-3920/4920, License Renewal Project Position Paper, "Review of Stored Equipment Millstone Power Station," which documented the applicant's activities regarding the screening of equipment that is stored either in a warehouse or in staged locations throughout the station. The screening was applicable for equipment that is normally not in service but is in storage and reserved for use in an application where it would perform a license renewal intended function when installed. Equipment in storage included equipment stored in a warehouse, as well as equipment staged within the plant at locations designated to facilitate its timely use.

To determine if the equipment in storage required an AMR, the applicant had identified stored equipment that was reserved for installation in a specific location where it performs an intended function for a system within scope of license renewal in accordance with 10 CFR 54.4(a)(1)-(3). The intended functions were documented in Section 5 of the MPS Technical Report. Passive stored equipment and active stored equipment (if not periodically tested) were also subject to an AMR. Determination of short-lived and long-lived stored equipment was addressed in the AMR for the respective system. Stored equipment not designated for use exclusively in such locations was excluded from further consideration (e.g., crimping tools, wrenches, screwdrivers, propane cylinders/cutter, test meters, flashlights, etc.).

Conclusion. The staff determined that the applicant's approach to scoping and screening of stored equipment is consistent with 10 CFR 54.4 and will identify stored equipment that meets the screening criteria of 10 CFR 54.21(a)(1). Specifically, the staff concluded that the applicant had appropriately considered equipment maintained in storage which supported the intended functions of systems within scope of license renewal and indicated that the identified equipment was subject to an AMR. In addition to passive components, the applicant had also considered stored active components that are not routinely inspected, tested, and maintained.

2.1.4 Evaluation Findings

The staff review of the information presented in Section 2.1 of the LRA, the supporting information in the scoping and screening implementation procedures and reports, the information presented during the scoping and screening methodology audit, and the applicant's responses to the staff's RAIs, formed the basis of the staff's safety determination. The staff verified that the applicant's scoping and screening methodology was consistent with the requirements of the Rule and the staff's position on the treatment of NSR SSCs. On the basis of this review, the staff concludes that there is reasonable assurance that the applicant's methodology for identifying SSCs within the scope of license renewal and SCs requiring an AMR is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.2 Plant-Level Scoping Results

In license renewal application (LRA) Section 2.1, the applicant described the methodology for identifying the SSCs within the scope of license renewal. In LRA Section 2.2, the applicant used the scoping methodology to determine which of the SSCs are required or not required to be included within the scope of license renewal. The staff reviewed the plant-level scoping results to determine whether the applicant had properly identified all plant-level systems and structures relied upon to mitigate design-basis earthquakes (DBEs), as required by 10 CFR 54.4(a)(1), or whose failure could prevent satisfactory accomplishment of any of the safety-related functions, as required by 10 CFR 54.4(a)(2), as well as the systems and structures relied on in safety analysis or plant evaluations to perform a function required by one of the regulations referenced in 10 CFR 54.4(a)(3).

2.2A Unit 2 Plant-Level Scoping Results

2.2A.1 Summary of Technical Information in the Application

In LRA Tables 2.2-1 and 2.2-3, the applicant provided a list of the plant systems and structures, respectively, that are within the scope of license renewal. In LRA Tables 2.2-2 and 2.2-4, the applicant provided a list of the plant systems and structures, respectively, that are not within the scope of license renewal. Based on the design-basis events considered in the plant's CLB, other CLB information relating to NSR systems and structures, certain regulated events, the applicant identified those plant-level systems and structures within the scope of license renewal as defined in 10 CFR 54.4.

In response to RAI 2.1-1 (described in Section 2.1 of this SER), the applicant changed the methodology used for determining the NSR SSCs that are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(2). The applicant's response to RAI 2.1-1 and supplemental information related to implementation of the revised scoping methodology are documented in the applicant's response dated November 9, 2004. As a result of the implementation of the scoping methodology changes, the applicant added to the scope of license renewal the following, previously excluded, NSR systems:

- aerated liquid radwaste
- solid waste processing
- turbine building closed cooling water
- water box priming

- auxiliary steam reboiler and deaerating feedwater
- exciter air cooler
- stator liquid cooler
- turbine lube oil

2.2A.2 Staff Evaluation

In LRA Section 2.1, the applicant described its methodology for identifying the structures and systems that are within the scope of license renewal and subject to an AMR. The staff reviewed the scoping and screening methodology and provided its evaluation of the methodology in Section 2.1 of this SER. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results as shown in LRA Sections 2.2-1, 2.2-2, 2.2-3, and 2.2-4, and added systems due to the changed scoping methodologies to confirm that there was no omission of plant-level systems and structures within the scope of license renewal.

The staff determined whether the applicant properly identified the structures and systems within the scope of license renewal in accordance with 10 CFR 54.4. The staff reviewed selected structures and systems that the applicant did not identify as falling within the scope of license renewal to verify whether the structures and systems have any intended functions that would require their inclusion within the scope of license renewal. The staff's review of the applicant's implementation was conducted in accordance with the guidance described in Standard Review Plan for License Renewal (SRP-LR) (NUREG-1800) Section 2.2, "Plant-Level Scoping Results."

The staff sampled the contents of the FSAR based on the listing of systems and structures in LRA Sections 2.2-1, 2.2-2, 2.2-3, and 2.2-4 to determine whether there were systems or structures that may have intended functions as defined by 10 CFR 54.4, but were omitted from the scope of license renewal. The staff review did not identify any omissions.

2.2A.3 Conclusion

The staff reviewed LRA Section 2.2, the applicant's November 9, 2004, RAI response, including Attachment 1, "Request for Additional Information Responses," and the supporting information in the FSAR to determine whether any structures or systems within the scope of license renewal had not been identified by the applicant. The staff's review did not identify any omissions. On the basis of this review, the staff concludes that the applicant has appropriately identified the structures and systems that are within the scope of license renewal in accordance with 10 CFR 54.4.

2.2B Unit 3 Plant-Level Scoping Results

2.2B.1 Summary of Technical Information in the Application

In LRA Table 2.2-1 and Table 2.2-3, the applicant provided a list of the plant systems and structures, respectively, that are within the scope of license renewal. In LRA Table 2.2-2 and Table 2.2-4, the applicant provided a list of the plant systems and structures, respectively, that are not within the scope of license renewal. Based on the design-basis events considered in the plant's CLB, other CLB information relating to NSR systems and structures, and certain regulated events, the applicant identified those plant-level systems and structures within the scope of license renewal, as defined in 10 CFR 54.4.

In response to RAI 2.1-1 (described in Section 2.1 of this SER), the applicant changed the methodology used for determining the NSR SSCs that are within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). The applicant's response to RAI 2.1-1 and supplemental information related to implementation of the revised scoping methodology are documented in the applicant's response dated November 9, 2004. No new systems were added due to the NSR piping interaction with the safety-related piping methodology changes.

2.2B.2 Staff Evaluation

In LRA Section 2.1, the applicant described its methodology for identifying the structures and systems that are within the scope of license renewal and subject to an AMR. The staff reviewed the scoping and screening methodology and provided its evaluation of the methodology in Section 2.1 of this SER. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results as shown in LRA Sections 2.2-1, 2.2-2, 2.2-3, and 2.2-4, and in the November 9, 2004, response to confirm that there was no omission of plant-level systems and structures within the scope of license renewal.

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

The staff sampled the contents of the FSAR based on the listing of systems and structures in LRA Tables 2.2-1, 2.2-2, 2.2-3, and 2.2-4 to determine whether there were systems or structures that may have intended functions as defined by 10 CFR 54.4, but were not included within the scope of license renewal. The staff review did not identify any omissions.

2.2B.3 Conclusion

The staff reviewed LRA Section 2.2, the applicant's November 9, 2004, RAI response, including Attachment 1, "Request for Addition Information Responses," and the supporting information in the FSAR to determine whether any structures or systems within the scope of license renewal had not been identified by the applicant. The staff's review did not identify any omissions. On the basis of this review, the staff concludes that the applicant has appropriately identified the structures and systems that are within the scope of license renewal in accordance with 10 CFR 54.4.

2.3 System 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 coolant system
- engineered safety features systems
- auxiliary systems
- steam and power conversion systems

In accordance with the requirements of 10 CFR 54.21(a)(1), the applicant must identify and list passive, long-lived mechanical systems and components 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 mechanical system components that meet the scoping criteria and are subject to an AMR.

Staff Evaluation Methodology. The staff's evaluation of the information provided in the LRA was performed in the same manner for all mechanical systems. The objective of the review was to determine if the components and supporting structures for a specific mechanical system 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 components were subject to an AMR in accordance with 10 CFR 54.21(a)(1).

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

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

The staff reviewed LRA Section 2.3 using the evaluation methodology described above in this section of the SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3, "Scoping and Screening Results — Mechanical Systems."

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

In reviewing LRA Section 2.3, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results. Therefore, by letter to the applicant dated June 9, 2004, the staff issued RAIs concerning the specific issues to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following discussion describes the staff's RAIs and the applicant's related responses.

On March 3, 2004, the staff held a teleconference with the applicant to discuss RAI 2.3-1 and to clarify whether the LRA boundary drawings highlight only those components that are subject to an AMR, or all systems that are within the scope of license renewal because they meet one or more of the 10 CFR 54.4(a) criteria. The applicant stated:

> The LRA drawings are boundary drawings and show the portions of the system that perform 10 CFR 54.4 intended functions. Components that are not subject to AMR because they are short-lived or active have been screened out and are not highlighted on the license renewal drawings. However, the system boundaries were not changed in this process. Therefore, the license renewal drawings can be used for purposes of the scoping review (i.e., determining whether those portions of a system that perform intended functions according to 10 CFR 54.4 were included within the scope of license renewal). In other words, they are AMR drawings, but they show the boundaries of the systems that include the components necessary to perform the intended functions. Dominion will submit under oath, a statement to confirm that the AMR drawings are also license renewal boundary drawings because the boundaries were not changed when the original license renewal drawings were converted to AMR drawings.

The staff requested the applicant to confirm that the AMR drawings are also license renewal boundary drawings because the boundaries were not changed when the original license renewal drawings were converted to AMR drawings.

In its response to RAI 2.3-1, dated July 26, 2004, the applicant stated that the quotation of its statements made during the referenced teleconference is generally accurate with the following clarifications:

> The license renewal drawings were produced during the scoping and screening process and only passive, in-scope components were highlighted. The highlighted components are those that are subject to AMR, except for the components later determined to be short-lived in the AMR process, which were screened out, as stated in LRA Section 2.1.3.1.
>
> Since active components were never highlighted on the license renewal drawings, these drawings were not converted from one form to another (i.e., from original license renewal drawings to AMR drawings), as is implied in RAI 2.3-1.

The license renewal drawings were produced in order to identify components that require evaluation during the AMR process. However, since the AMR evaluation boundary shown on the drawings corresponds to the scoping boundary for the system, these drawings may also serve to indicate the in-scope portion of the system. The applicant further stated that in accordance with LRA Section 2.1.3.6, NSR piping out to the first equivalent seismic anchor point beyond the safety-related interface was not uniquely highlighted on the license renewal drawings.

Based on its review, the staff finds the applicant's response to RAI 2.3-1 acceptable, because, with the exception of short-lived components, the scoping boundaries depicted on the license renewal drawings represent the in-scope portion of the system. Therefore, the staff's concern described in RAI 2.3-1 is resolved.

On March 3, 2004, the staff held a teleconference with the applicant to discuss RAI 2.3-2 and to clarify that the license renewal drawings indicate by highlighting, those NSR components that are within the scope of license renewal solely because they have the potential for interactions with safety-related components due to their spatial orientation (i.e., 10 CFR 54.4(a)(2)). Further clarification was also requested as to whether these components were indicated differently on the license renewal drawings from those meeting the criteria of 10 CFR 54.4(a)(1). In response, the applicant stated: Portions of systems with 10 CFR 54.4(a)(2) intended functions are highlighted on the license renewal drawing. These segments are always included in the aging management program (AMP) along with the adjoining safety-related piping.

The applicant further stated that there is no distinction made on the license renewal drawings indicating those components meeting criteria 10 CFR 54.4(a)(1) and those within scope solely because they meet the criteria of 10 CFR 54.4(a)(2). They are both indicated by highlighting.

The staff requested that the applicant confirm this verbal response and clarify that all components of NSR systems capable of spatial interactions with safety-related systems (i.e., located within the same room or space) were included within the scope of license renewal and highlighted in the licensing renewal boundary drawings.

In its response to RAI 2.3-2, dated July 26, 2004, the applicant stated that its statements made during the referenced teleconference were generally accurate with the following clarifications:

Components that have been determined to be within the scope of license renewal solely because they are NSR components that are spatially oriented near safety-related structures, systems and components (SSCs) are highlighted on the license renewal drawings. These components, along with passive components meeting any of the other criteria of 10 CFR 54.4(a), are highlighted on the license renewal drawings in the same manner. There is no highlighting distinction made among the scoping criteria. The NSR components that are spatially oriented near safety-related SSCs have been determined to be within the scope of license renewal in accordance with the methodology described in LRA Section 2.1.

Based on its review, the staff finds the applicant's response to RAI 2.3-2 acceptable, because adequate explanation is given that NSR components that are spatially oriented near safety-related SSCs have been determined to be within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) and shown on license renewal drawings by highlighting. Therefore, the staff's concern described in RAI 2.3-2 is resolved.

The applicant responded to RAI 2.1-1 in its response dated November 9, 2004, Attachment 1, "Request for Additional Information Responses." In response to this RAI, the applicant revised the scoping methodology for 1) the NSR piping that is attached to safety-related piping, and 2) the NSR fluid-containing components that spatially oriented such that its failure could prevent the satisfactory accomplishment of a safety-related function of an SSC.

As a result of the implementation of the revised spatial methodology, the applicant added the following NSR systems, that were previously excluded from scope, to the Unit 2 scope of license renewal: aerated liquid radwaste; solid waste processing; water box priming; turbine building closed cooling water to the auxiliary systems, and auxiliary steam reboiler and deaerating feedwater; exciter air cooler; stator air cooler; and turbine lube oil to the steam and power conversion systems. In the November 9, 2004, response, the applicant stated that no new Millstone Unit 2 system was added due to the NSR piping attached to safety-related piping methodology changes. No new Millstone Unit 3 systems were added due to the NSR piping interaction to safety-related piping methodology changes.

By response dated December 3, 2004, the applicant provided a list of component types, with their associated intended functions, that were added to the scope of license renewal for the in-scope systems as a result of the response to RAI 2.1-1. Resulting from the methodology changes discussed above, the applicant expanded the license renewal boundaries of the following Unit 2 systems that were previously determined to be within the scope of license renewal:

Engineered Safety Features Systems:

- refueling water storage tank and containment sump (LRA Table 2.3.2-3)
- spent fuel pool cooling (LRA Table 2.3.2-5)

Auxiliary Systems:

- access control area air conditioning (LRA Table 2.3.3-13)
- chilled water (LRA Table 2.3.3-6)
- clean liquid waste processing (LRA Table 2.3.3-38)
- domestic water (LRA Table 2.3.3.33)
- instrument air (LRA Table 2.3.3-7)

- main condensers evacuation (LRA Table 2.3.3-14)
- nitrogen (LRA Table 2.3.3-8)
- primary makeup water (LRA Table 2.3.3-12)
- sampling (LRA Table 2.3.3-11)
- station air (LRA Table 2.3.3-9)
- station sumps and drains (LRA Table 2.3.3-41)

Steam and Power Conversion Systems:

- electro hydraulic control (This system is included in Unit 2 LRA Table 2.2-1 as an in-scope system, but previously had no passive mechanical components subject to aging management review. Therefore, there is no existing LRA screening results table.)
- main steam (LRA Table 2.3.4-1)

Resulting from the methodology changes discussed above, the applicant expanded the license renewal boundaries of the following Unit 3 systems that were previously determined to be within the scope of license renewal:

Engineered Safety Features Systems:

- fuel pool cooling and purification (LRA Table 2.3.2-5)
- quench spray (LRA Table 2.3.2-2)
- safety injection (LRA Table 2.3.2-3)

Auxiliary Systems:

- boron recovery (LRA Table 2.3.3-43)
- chemical and volume control (LRA Table 2.3.3-15)
- containment vacuum (LRA Table 2.3.3-23)
- radioactive gaseous waste (LRA Table 2.3.3-45)
- radioactive liquid waste processing (LRA Table 2.3.3-44)
- reactor plant aerated drains (LRA Table 2.3.3-48)
- reactor plant component cooling (LRA Table 2.3.3-4)
- reactor plant gaseous drains (LRA Table 2.3.3-49)
- reactor plant sampling (LRA Table 2.3.3-16)
- service air (LRA Table 2.3.3-14)

Steam and Power Conversion Systems:

- auxiliary boiler condensate and feedwater (LRA Table 2.3.4-7)
- auxiliary feedwater (LRA Table 2.3.4-5)
- steam generator blowdown (LRA Table 2.3.4-4)

In response to RAI 2.1-1 dated December 3, 2004, the applicant stated that the intended function limited structural integrity (LSI) applies to components within the scope of license renewal for 10 CFR 54.4(a)(2) due to either spatial orientation or non-safety attached to safety-related piping intended functions. The LSI function is combined with the pressure boundary (PB) function for components within the scope of license renewal for spatial orientation. In the November 9, 2004, response to RAI 2.1-1, Attachment 1, Table 5, "Steam and Power Conversion System – Auxiliary Steam Reboiler and Deaerating Feedwater," the applicant identified component types with the intended function of LSI only. These are within the scope of license renewal as non-safety attached to safety-related piping components. Table 5 also contains a component which is within the scope of license renewal due to implementation of the enhanced spatial orientation methodology and has the intended function of LSI and PB. Therefore, the eight new Unit 2 systems identified in the original RAI 2.1-1 response were added to the scope of license renewal based on the enhanced spatial orientation methodology. Although the steam and power conversion system – auxiliary steam reboiler and deaerating feedwater contains components with the intended function of non-safety attached to safety-related piping, no new system was added to the scope of license renewal solely for the non-safety attached to safety-related piping intended function.

None of the filtration systems nor heating ventilation and air conditioning (HVAC) systems in the Millstone 3 LRA included duct sealants or wall sealants in the applicable tables, nor were sealants indicated on LRA drawings. The staff requested in RAI SPSB-3 that the applicant clarify whether sealants were within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If sealants were within the scope of license renewal, the applicant was requested to update the LRA by providing the applicable information in the appropriate LRA tables. If sealants are excluded from the scope of license renewal and not subject to an AMR, the applicant was requested to provide justification for the exclusion.

In its response dated November 9, 2004, the applicant stated that duct sealants should have been included within the scope of license renewal for the Unit 3 auxiliary building ventilation system, control building ventilation system, and supplementary leak collection-and-release system and shown in LRA Table 2.3.3-18, 2.3.3-24, and 2.3.3-33, respectively. Wall sealants were evaluated as part of buildings and structures in LRA Section 2.4.2 as metal siding-caulking and were included in LRA Table 2.4.2-1. The applicant stated that sealants were not specifically identified on plant drawings.

The applicant also stated that the aforementioned ductwork joint seals perform a pressure boundary function and are subject to aging management review (AMR). The sealant is an elastomeric material and is subject to cracking and change of material properties in an air environment. The aging effects will be managed with the general condition monitoring aging management program. The staff finds this acceptable.

In the LRA for both Units 2 and 3, none of the air intake or exhaust structures included screens within the scope of license renewal. The staff requested in RAI SPSB-4 that the applicant clarify whether screens for air intake and exhaust structures were within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If it determined that screens for intake and exhaust structures were within the scope of license renewal, the applicant was requested to update the LRA by providing the applicable information in the appropriate tables. If it determined that screens for intake and exhaust structures were excluded from the scope of license renewal and not subject to an AMR, the applicant was requested to provide justification for the exclusion.

In its response dated November 9, 2004, the applicant stated that screens are installed over wall openings in plant structures that serve as ventilation intake or exhaust points. These screens are installed for maintenance purposes to aid in maintaining the associated ductwork free from nesting materials and debris from birds and other wildlife. Although the build-up of debris in the ventilation intakes and exhausts is not expected to affect the function of the plant ventilation systems regardless of the condition of the screens, the applicant stated that screens are not conservatively included within the scope of license renewal. The applicant further stated that screens will be included with the structural member "Miscellaneous Steel" in the LRA screening results tables for the Unit 2 auxiliary building and turbine building and the Unit 3 auxiliary building, control building, hydrogen recombiner building, engineered safety features building, main steam valve building, emergency generator enclosure and fuel oil tank vault, and circulating and service water pumphouse. The carbon steel screens are exposed to an atmosphere/weather environment. The aging effect of loss of material will be managed by the structures monitoring program. The staff found this acceptable.

2.3A Unit 2 System Scoping and Screening Results

2.3A.1 Reactor Coolant System

In LRA Section 2.3.1, the applicant identified the structures and components of the reactor coolant system (RCS) and major RCS components that are subject to an AMR for license renewal.

The applicant described the supporting structures and components of the reactor coolant system and RCS in the following sections of the LRA:

- 2.3.1.1 reactor vessel
- 2.3.1.2 reactor vessel internals
- 2.3.1.3 reactor coolant system
- 2.3.1.4 steam generator

The corresponding subsections of this SER (2.3A.1.1 - 2.3A.1.4, respectively) present the staff's related review findings.

2.3A.1.1 Reactor Vessel

2.3A.1.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.1, the applicant described the reactor vessel. The reactor vessel is a Combustion Engineering-designed, two-loop pressure vessel consisting of a cylindrical shell with a welded, hemispherical bottom head and a flanged hemispherical closure head. The reactor vessel provides a container for the reactor core and the primary coolant in which the core is submerged.

The reactor vessel directly maintains the RCS pressure boundary and supports and contains the reactor core and core support structures. Additionally, the applicant stated that the reactor vessel provides a function that supports pressurized thermal shock.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides structural and/or functional support related to mechanical components
- provides for flow distribution

In LRA Table 2.3.1-1, the applicant identified the following reactor vessel component types that are within the scope of license renewal and subject to an AMR: bottom head; control element drive mechanism (CEDM), head penetration nozzle; CEDM head penetration nozzle flange; CEDM pressure housings; closure head dome; closure head flange; closure head lifting lugs; closure head stud assembly; core stabilizing lugs and core stop lugs; flow skirt, flow baffle; head vent pipe; instrument tube flange and studs/nuts/washers; instrument tubes; intermediate and lower shell; primary nozzle and safe end; surveillance capsule holders; upper shell; and vessel flange and core support ledge.

2.3A.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.1, Millstone FSAR Sections 3.3.3.2 and 4.3.1, and FSAR Tables 4.3-1, 4.5-2 and 4.6-1 through 4.6-13. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.1 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's request for additional information (RAI) as discussed below.

In RAI 2.3.1.1-1(a), the staff requested the applicant to verify whether vessel support pads, which are located below the primary nozzles and provide support for the reactor vessel, were included within the scope of license renewal and are subject to an AMR, or to provide an explanation for the exclusion. In response, the applicant stated the vessel support pads are welded to three of the six primary nozzles and are within the scope of license renewal. The vessel support pads were included in the "Primary Nozzle and Safe End" subcomponent in LRA Table 2.3.1-1. Based on the inclusion of the above component, the staff finds the applicant's response acceptable.

2.3A.1.1.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the reactor vessel components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the reactor vessel components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.1.2 Reactor Vessel Internals

2.3A.1.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.2, the applicant described the reactor vessel internals (RVIs). The RVIs are designed to support and orient the reactor core fuel assemblies and control element assemblies, absorb the control element assembly (CEA) dynamic loads and transmit these loads to the reactor vessel flange, guide the in-core instrumentation assemblies, and provide flow paths for the reactor coolant through the reactor vessel.

The RVIs support the reactor core in a coolable geometry and provide a CEA insertion path.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support related to mechanical components
- provides for flow distribution

In LRA Table 2.3.1-2, the applicant identified the following RVIs component types that are within the scope of license renewal and subject to an AMR: CEA shroud bolts; CEA shroud extension shaft guides; CEA shrouds – dual; CEA shrouds – single; core shroud assembly; core shroud tie rods; core support barrel; core support barrel alignment keys; core support barrel snubber assemblies; core support barrel upper flange; core support columns; core support plate; expansion compensating ring; fuel alignment pins; fuel alignment plate; fuel alignment plate guide lugs and guide lug inserts; incore instrumentation (ICI) support plate and guide tubes; lower support structure beam assemblies; and upper guide structure support plate.

2.3A.1.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.2, Millstone FSAR Sections 3.3.2 and 7.5.4, and FSAR Figures 3.3-9 through 3.3-14. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.2 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.

The Millstone FSAR states that ICI assemblies are inserted into the core through instrumentation nozzles in the top closure head of the reactor vessel. Each assembly is guided into position in the center of the fuel assembly via a fixed guide tube and instrument thimble assembly and a flange-type seal forms a pressure boundary for each assembly at the instrument nozzle. In RAI 2.3.1.2-1, the staff requested the applicant to verify whether instrument nozzles and instrument thimble assemblies, which provide a pressure boundary and structural support for in-scope equipment, were included within the scope of license renewal and subject to an AMR, or to provide an explanation for the exclusion. In a response dated November 9, 2004, the applicant confirmed that instrument nozzles are within the scope of license renewal and are included in the subcomponent "Instrument Tubes" and "Instrument Tube Flange and Studs/Nuts/Washers" in LRA Table 2.3.1-1. The applicant also stated that instrument thimble assemblies are within scope of license renewal and are included in the subcomponent "ICI Support Plate and Guide Tubes" in LRA Table 2.3.1-2. Based on the inclusion of the above components, the staff finds the applicant's response acceptable.

2.3A.1.2.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the reactor vessel internals components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the reactor vessel internals components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.1.3 Reactor Coolant System

2.3A.1.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.3, the applicant described the reactor coolant system (RCS). The RCS is designed to contain pressurized treated water and transfer heat produced in the reactor core to the steam generators. Borated 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 pressure boundary for containing the primary coolant, serves to confine radioactive material, and limits the uncontrolled release of radioactive material.

The safety-related intended functions of the RCS are to provide a closed pressure boundary for containing the primary coolant, transfer heat from the reactor core to the steam generator, provide system over-pressure protection, provide Regulatory Guide (RG) 1.97 safety-related indications, ensure containment pressure boundary integrity, provide a reactor building closed cooling water system pressure boundary, and provide a means of venting non-condensable gases from system high points after an accident. The RCS contains NSR components credited for mitigating a high-energy line break and NSR components spatially oriented such that a failure could prevent the satisfactory accomplishment of a safety-related (SR) function of an SR system, structure or component. The RCS also contains environmental qualification components and supports fire protection, station blackout, and pressurized thermal shock.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- restricts flow
- provides a spray pattern
- provides structural and/or functional support related to mechanical components

- limits thermal cycling

In LRA Table 2.3.1-3, the applicant identified the following RCS component types that are within the scope of license renewal and subject to an AMR: bolting; flow orifices; pipe; pressurizer; pressurizer heaters; quench tank; reactor coolant pump (RCP) motor lower lube oil coolers; RCP seal coolers; RCP thermal barriers; RCP motor upper lube oil coolers; RCPs; rupture disks; thermal sleeves; tubing; and valves.

2.3A.1.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.3, Millstone FSAR Chapter 4, and FSAR Figures 4.1-1 through 4.1-3 and 4.3-7. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.3 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 2.3.1.3-1, the staff requested the applicant to verify whether the pressurizer components set forth in Table 2.3A-1 were included within the scope of license renewal and require an AMR or, alternatively, to provide an explanation for their exclusion.

Table 2.3A-1 Pressurizer Components that Require Additional Scoping Status Information

Subcomponent	Intended Function
Pressurizer - Nozzles (Surge, Spray, Safety, Relief, Instrument)	Pressure Boundary
Pressurizer - Nozzle Safe Ends	Pressure Boundary
Pressurizer - Heater Sheath	Pressure Boundary
Pressurizer - Manway and Cover	Pressure Boundary
Pressurizer - Surge Line	Pressure Boundary
Pressurizer - Spray Head Assembly	Spray Pattern
Pressurizer - Support Lugs	Structural Support
Pressurizer - Support Skirt and Flange	Structural Support

In a response dated November 9, 2004, the applicant confirmed that the pressurizer, including all subcomponents that perform intended functions, is included within the scope of license renewal and is subject to an AMR. The applicant further stated that the pressurizer was evaluated as part of the RCS and is not considered a major component. Therefore, pressurizer subcomponents are not listed separately in LRA Table 2.3.1-3. The applicant stated that the subcomponents listed in the table above are included in the component types "Pressurizer" and "Pressurizer Heaters" in LRA Table 2.3.1-3. Subcomponents of the pressurizer are set forth in LRA Table 3.1.2-3. Based on the inclusion of the above components, the staff finds the applicant's response acceptable.

In RAI 2.3.1.3-2(a), the staff requested the applicant to verify whether the RCP casing and driver mount, which provide a reactor building closed-cooling-water-system pressure boundary, are within the scope of license renewal and subject to an AMR. The RCP casing, cover (including the thermal barrier), inner tubes of the seal cooler, closure bolting, and driver mount are considered part of the RCS pressure boundary. The upper and lower reactor coolant pump motor lube oil coolers and the outer tubes of the seal cooler provide a reactor building closed-cooling-water-system pressure boundary. In a response dated November 9, 2004, the applicant confirmed the RCP casing and driver mount are within the scope of license renewal and subject to an AMR. The applicant stated that these items are considered subcomponents of the RCP and are included in the component type "Reactor Coolant Pump" in LRA Table 2.3.1-3. These components are identified uniquely in LRA Table 3.1.2-3 as "Reactor Coolant Pumps (Casing)" and "Reactor Coolant Pumps (Driver Mount Assembly)," respectively. Based on the inclusion of the above components, the staff finds the applicant's response acceptable.

In RAI 2.3.1.3-3, the staff requested the applicant to verify whether the RCS welds, which are included in the evaluation boundary for the RCS, are within the scope of license renewal and subject to an AMR. In a response dated November 9, 2004, the applicant confirmed that the RCS welds are within the scope of license renewal and require an AMR. Welds are considered a part of the host component (e.g., pipe, nozzle) and are not uniquely identified in LRA Table 2.3.1-3. Based on the inclusion of the above component, the staff finds the applicant's response acceptable.

2.3A.1.3.3 Conclusion

The staff reviewed the LRA and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the reactor coolant system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the reactor coolant system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.1.4 Steam Generator

2.3A.1.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.4, the applicant described the steam generator. The nuclear steam supply system (NSSS) utilizes two steam generators to transfer the heat generated in the RCS to the secondary system and produce steam at the warranted steam pressure and quality.

The steam generator directly maintains the RCS pressure boundary, supports the capability to shut down the reactor and maintain it in a safe shutdown condition, and supports the capability to prevent or mitigate the discharge of radioactive coolant into the secondary cycle. Additionally, the steam generator provides for core heat removal in support of station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support related to mechanical components
- provides for flow distribution
- provides a pressure boundary
- limits thermal cycling
- restricts flow

In LRA Table 2.3.1-4, the applicant identified the following steam generator component types that are within the scope of license renewal and subject to an AMR: base support and flange; support brackets and lugs; divider plate; feedwater inlet ring and support; feedwater nozzle and safe end; feedwater nozzle thermal sleeve; lower head; nozzle dams and holddown rings; primary instrument nozzles; primary manway bolting; primary manway cover and diaphragm; primary nozzle and safe end; secondary manway and handhole bolting; secondary manway and handhole covers; secondary side nozzles (except steam and feedwater); shroud; steam nozzle and safe end; steam nozzle flow restrictor; top head; transition cone; tube plugs; tube support lattice bars; tube support lattice support rings; tubes; tubesheet; and upper and lower shell.

2.3A.1.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.4, Millstone FSAR Section 4.3.2, and FSAR Figure 4.3-2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.4 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.1.4-1, the staff requested the applicant to verify whether the bearing plates, which provide structural support for the steam generator and allow lateral motion due to thermal expansion of the reactor coolant piping, are within the scope of license renewal and subject to an AMR. In a response dated November 9, 2004, the applicant stated that structural supports for major RCS components are evaluated separately from the component and its integral parts as NSSS equipment supports, as described in LRA Section 2.1.5.3, Structural Screening. The applicant stated that the steam generator support structure, including the bearing plates, is included within the scope of license renewal and is described in LRA Section 2.4.3, NSSS Equipment Supports. Based on the inclusion of the above component, the staff finds the applicant's response acceptable.

2.3A.1.4.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the steam generator components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the steam generator components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.2 Engineered Safety Features Systems

In LRA Section 2.3.2, the applicant identified the structures and components of the engineered safety features (ESF) systems that are subject to an AMR for license renewal.

The applicant described the supporting structures and components of the ESF systems in the following sections of the LRA:

- 2.3.2.1 containment spray system
- 2.3.2.2 safety injection system
- 2.3.2.3 refueling water storage tank and containment sump system
- 2.3.2.4 shutdown cooling system
- 2.3.2.5 spent fuel pool cooling system

The corresponding subsections of this SER (2.3A.2.1 - 2.3A.2.5, respectively) present the staff's related review findings.

2.3A.2.1 Containment Spray System

2.3A.2.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.1, the applicant described the containment spray system. The containment spray system, in conjunction with the containment air recirculation and cooling system, removes heat from the containment atmosphere following a major primary or secondary pipe rupture inside containment. Heat is transferred to the reactor building closed cooling water system via the shutdown cooling heat exchangers.

The containment spray system provides heat removal from containment, RG 1.97 safety-related indications, and containment pressure boundary integrity. The containment spray system also contains environmental qualification components and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- restricts flow
- provides a spray pattern

In LRA Table 2.3.2-1, the applicant identified the following containment spray system component types that are within the scope of license renewal and subject to an AMR: bolting; CS pump seal coolers; flow orifices; pipe; pumps; spray nozzles; tubing; and valves.

2.3A.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.1 and Millstone FSAR Section 6.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.2.1.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment spray system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment spray system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.2.2 Safety Injection System

2.3A.2.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.2, the applicant described the safety injection system. The purpose of the safety injection system is to provide a source of borated water to the RCS to ensure that the reactor is shutdown and to cool the core in the event of a design-basis accident. The safety injection system consists of the high-pressure safety injection subsystem, the low-pressure safety injection subsystem, and the safety injection tanks.

The safety injection system provides injection of borated water into the RCS following an accident, for control of reactor core boron precipitation during long-term loss-of-coolant accident (LOCA) recovery, reactor decay heat removal during shutdown conditions, refueling water storage tank (RWST) isolation, RCS pressure-boundary integrity, containment pressure boundary integrity, and an RG 1.97 safety-related indications. The safety injection system contains NSR components credited for mitigating the effects of a high-energy line break. The safety injection system contains environmental qualification components and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- restricts flow

In LRA Table 2.3.2-2, the applicant identified the following safety injection system component types that are within the scope of license renewal and subject to an AMR: bolting; flow elements; flow orifices; high pressure safety injection (HPSI) pump seal coolers; low-pressure safety injection (LPSI) pump seal coolers; pipe; pumps; safety injection tanks; tubing; and valves.

2.3A.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.2 and Millstone FSAR Section 6.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.2.2.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. 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 that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the safety injection system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.2.3 Refueling Water Storage Tank and Containment Sump System

2.3A.2.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.3, the applicant described the refueling water storage tank and containment sump system. The refueling water storage tank (RWST) provides the initial source of borated water for the safety injection and containment spray pumps. The containment sump collects water following a LOCA for recirculation after the RWST has emptied. Vortex breakers are installed in the safety injection and containment spray pumps suction from the RWST and from the containment sump to prevent pump suction air entrainment. The RWST and containment sump system also includes an encapsulation feature provided for the sump recirculation lines and isolation valves outside of the containment. The encapsulation feature limits the potential fluid releases from the recirculation piping and valves at the containment wall penetration. Containment sump water pH level is controlled by baskets of dissolvable trisodium phosphate dodecahydrate (TSP).

The RWST and containment sump system provides a source of water to the safety injection and containment spray pumps, sump water pH control, RG 1.97 safety-related indications, and containment pressure boundary integrity. The system also supports RCS inventory and reactivity control, decay heat removal make-up, and spent fuel pool inventory control during shutdown conditions. The RWST and containment sump system contains NSR components credited for mitigating the effects of a high-energy line break. The RWST and containment sump system also contains environmental qualification components and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides structural and/or functional support related to mechanical components
- provides for vortex suppression

In LRA Table 2.3.2-3, the applicant identified the following RWST and containment sump system component types that are within the scope of license renewal and subject to an AMR: bolting; circulating pump; encapsulation piping; encapsulation valves; expansion joints; heat exchanger; pipe; refueling water storage tank; rupture disks; TSP baskets; tubing; valves; and vortex breakers.

2.3A.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.3 and Millstone FSAR Section 6.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.2.3 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.

The Millstone FSAR states the containment sump is protected from clogging by the sump screens. Sump screens are normally used in the containment sump which provides water for the RWST recirculation phase and one of the intended functions is to protect the pumps from debris and cavitation due to harmful vortex following a LOCA. In RAI 2.3.2.3-1, the staff requested the applicant to verify whether sump screens are within the scope of license renewal and subject to an AMR. In a response dated November 9, 2004, the applicant confirmed that the containment sump screens are within the scope of license renewal and subject to an AMR. The applicant further stated that the sump screens are identified LRA Table 2.4.1-1. Based on the inclusion of the above component, the staff finds the applicant's response acceptable.

2.3A.2.3.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the refueling water storage tank and containment sump system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the refueling water storage tank and containment sump system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.2.4 Shutdown Cooling System

2.3A.2.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.4, the applicant described the shutdown cooling system. The shutdown cooling system transfers heat from the RCS to the reactor building closed cooling water system, via the shutdown cooling system heat exchangers, during plant cooldown operations. The shutdown cooling system also provides heat removal from recirculated containment sump water during the recirculation phase of accident recovery.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides filtration
- restricts flow

In LRA Table 2.3.2-4, the applicant identified the following shutdown cooling system component types that are within the scope of license renewal and subject to an AMR: bolting; carry-over tank; filter/strainers; flexible hoses; flow elements; pipe; restricting orifices; shutdown cooling heat exchangers; tubing; vacuum flask; vacuum pump; and valves.

2.3A.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.4 and Millstone FSAR Section 9.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

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

functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.2.4.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the shutdown cooling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the shutdown cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.2.5 Spent Fuel Pool Cooling System

2.3A.2.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.5, the applicant described the spent fuel pool cooling system. The spent fuel pool cooling system removes decay heat generated by spent fuel assemblies stored in the spent fuel pool. Heat is transferred from the pool water to the reactor building closed cooling water system.

The spent fuel pool cooling system provides heat removal from the spent fuel pool and containment pressure boundary integrity. The evaluation boundary includes the spent fuel pool cooling system components that provide cooling for the spent fuel pool.

The system's intended function, within the scope of license renewal, is to provide a pressure boundary.

In LRA Table 2.3.2-5, the applicant identified the following spent fuel pool cooling system component types that are within the scope of license renewal and subject to an AMR: bolting; expansion joints; flow elements; pipe; pumps; spent fuel pool heat exchangers; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the spent fuel pool cooling system. In its December 23, 2004, RAI response, the applicant identified the following component types that were added to the scope of the spent fuel pool cooling system:

- filters
- mixing tank

2.3A.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.5 and Millstone FSAR Section 9.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.2.5 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.

The Millstone FSAR states that in the event that a serious leak develops in the spent fuel pool liner, makeup water is supplied to the pool from the primary makeup water system by manual initiation from the 14-foot 6-inch level of the auxiliary building, and that should the leakage exceed the 50-GPM normal makeup capability, additional makeup is available from the RWST via the refueling water purification system and the fire protection system by temporary hose connections. The license renewal drawing for the spent fuel pool cooling system shows only the portions of the primary makeup water system and RWST that have a certain specification as subject to an AMR. It appeared to the staff that these makeup paths are required or relied upon to provide makeup capability to the spent fuel pool. In RAI 2.3.2.5-1A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the additional sources of fuel pool makeup from the primary makeup water system and from the RWST from the scope of license renewal.

In its response, dated July 26, 2004, the applicant stated that the spent fuel pool is a missile-protected, seismically-designed reinforced concrete structure with a stainless steel liner. As stated in Millstone FSAR Section 9.5.3.3, failure of the structure is not considered credible. All connections to the spent fuel pool penetrate the pool walls near the normal operating level, or are provided with anti-siphon devices, to prevent gravity draining of the pool due to system leaks. The applicant stated that the spent fuel pool liner is within the scope of license renewal and is managed for the effects of aging, as described in LRA Section 2.4.2.2, such that significant leakage is not expected. The loss of inventory from the spent fuel pool is not analyzed as an accident for the plant. The FSAR discusses the possibility of spent fuel pool inventory loss and lists several sources of make-up water for completeness. The RWST has been identified with the intended function to provide spent fuel inventory control in LRA Section 2.3.2.3. Additionally, the components that comprise the make-up flow path from the refueling water storage tank via the safety injection pumps and the shutdown cooling system, as discussed in Millstone FSAR Section 9.5.3.3, are included within the scope of license renewal. Other sources of make-up water are available but are not assigned spent fuel pool make-up as an intended function. Consequently, the spent fuel pool make-up flow paths from the primary makeup water system and from the RWST via the refueling water purification system are not within the scope for their spent fuel pool make-up capability.

The staff finds the applicant's response to RAI 2.3.2.5-1A acceptable, because the applicant explained that a source of make-up to the fuel pool from the refueling water storage tank is credited for this purpose in the FSAR and is within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.2.5-1A is resolved.

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and

December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the spent fuel pool cooling system is acceptable.

2.3A.2.5.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the spent fuel pool cooling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the spent fuel pool cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3 Auxiliary Systems

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

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

- 2.3.3.1 circulating water system
- 2.3.3.2 screen wash system
- 2.3.3.3 service water system
- 2.3.3.4 sodium hypochlorite system
- 2.3.3.5 reactor building closed cooling water system
- 2.3.3.6 chilled water system
- 2.3.3.7 instrument air system
- 2.3.3.8 nitrogen system
- 2.3.3.9 station air system
- 2.3.3.10 hydrogen system
- 2.3.3.11 chemical and volume control system
- 2.3.3.12 sampling system
- 2.3.3.13 primary makeup water system
- 2.3.3.14 access control area air conditioning system
- 2.3.3.15 main condensers evacuation system
- 2.3.3.16 containment air recirculation and cooling system
- 2.3.3.17 containment and enclosure building purge system
- 2.3.3.18 containment penetration cooling
- 2.3.3.19 containment post-accident hydrogen control
- 2.3.3.20 control room air conditioning system
- 2.3.3.21 control element drive mechanism cooling system
- 2.3.3.22 diesel generator ventilation system
- 2.3.3.23 ESF room air recirculation system

- 2.3.3.24 enclosure building filtration system
- 2.3.3.25 fuel handling area ventilation system
- 2.3.3.26 main exhaust ventilation system
- 2.3.3.27 non-radioactive area ventilation system
- 2.3.3.28 process and area radiation monitoring system
- 2.3.3.29 radwaste area ventilation system
- 2.3.3.30 turbine building ventilation system
- 2.3.3.31 vital switchgear ventilation system
- 2.3.3.32 Unit 2 fire protection system
- 2.3.3.33 Unit 3 fire protection system
- 2.3.3.34 domestic water system
- 2.3.3.35 diesel generator system
- 2.3.3.36 diesel generator fuel oil system
- 2.3.3.37 station blackout diesel generator system
- 2.3.3.38 security system
- 2.3.3.39 clean liquid waste processing
- 2.3.3.40 gaseous waste processing system
- 2.3.3.41 post-accident sampling system
- 2.3.3.42 station sumps and drains system

The corresponding subsections of this SER (2.3A.3.1 - 2.3A.3.42, respectively) present the staff's review findings.

2.3A.3.1 Circulating Water System

2.3A.3.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.1, the applicant described the circulating water system. The circulating water system provides a supply of cooling water to the main condenser via four one-fourth capacity vertical wet-pit pumps, which circulate water from the intake structure through the main condenser to the discharge structure. The circulating water pumps take suction on Long Island Sound. A warm water recirculation flowpath is provided to circulate condenser outlet water to the intake structure to reduce ice formation.

The circulating water system provides warm water recirculation to the intake structure for de-icing to ensure service water system availability and contains level switches that are used to shut down the circulating water pumps to prevent flooding in the turbine building. The system also contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity

In LRA Table 2.3.3-1, the applicant identified the following circulating water system component types that are within the scope of license renewal and subject to an AMR: expansion joints; pipe; and valves.

2.3A.3.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.1 and Millstone FSAR Section 9.7.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.1.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the circulating water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the circulating water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.2 Screen Wash System

2.3A.3.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.2, the applicant described the screen wash system. The screen wash system provides a source of water to clear debris from the traveling water screens at the intake structure. The system is comprised of two screen wash pumps, strainers, piping, and valves.

The screen wash system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-2, the applicant identified the following screen wash system component types that are within the scope of license renewal and subject to an AMR: pipe; pumps; strainers; tubing; and valves.

2.3A.3.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.2 and Millstone FSAR Section 9.7.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.2.2 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 its review the staff noted that a license renewal drawing showed screen wash pump casing drain lines outside the scope of license renewal and excluded from being subject to an AMR. The drain lines serve a pressure boundary intended function, and are passive and long-lived and should be within scope for license renewal and subject to an AMR. In RAI 2.3.3.2-1A, the staff requested the applicant to clarify that these components are within the scope of license renewal and subject to an AMR, or explain their exclusion.

In its response, dated July 26, 2004, the applicant concluded that the pump casing drain lines shown on the license renewal drawing are pump shaft packing leak-off lines and are normally dry and not pressurized. Upon further review, the applicant concluded that these lines should be included within the scope of license renewal for 10 CFR 54.4(a)(2) and revised Table 2.3.3-2 to include the lines. The applicant stated that the aging effect of loss of material (external) will be managed with the general condition monitoring AMP and the aging effect of loss of material (internal) will be managed with the work control process AMP.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.2-1A acceptable, because the pump casing drain lines are included in the scope of license renewal and will be managed appropriately. Therefore, the staff's concern described in RAI 2.3.3.2-1A is resolved.

2.3A.3.2.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the screen wash water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the screen wash water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.3 Service Water System

2.3A.3.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.3, the applicant described the service water (SW) system. The purpose of the SW system is to provide a dependable flow of cooling water to the following safety-related and NSR loads:

- reactor building closed cooling water heat exchangers
- turbine building closed cooling water heat exchangers
- emergency diesel generator heat exchangers
- vital AC switchgear room cooling coils
- DC switchgear room vital chillers

The SW system provides cooling water flow to safety-related heat loads to transfer rejected heat to the ultimate heat sink and isolation of NSR heat loads in the event of a design basis accident. The SW system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system also contains NSR components credited for mitigating a high-energy line break (HELB) accident. The SW system contains environmental qualification equipment and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides filtration
- provides limited structural integrity
- restricts flow

In LRA Table 2.3.3-3, the applicant identified the following SW system component types that are within the scope of license renewal and subject to an AMR: expansion joints; filter/strainers; flow elements; flow indicators; flow orifices; pipe; pumps; restricting orifices; SW pump motor protective tank; tubing; and valves.

2.3A.3.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.3 and Millstone FSAR Sections 6.1.2.1, 8.2.3.3, 8.3.2.2, 9.4.3.1, 9.7.2, and 14.8.2.2.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.3 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 RAI as discussed below.

In its review, the staff noted that a license renewal drawing shows the SW strainer overflow lines outside the scope of license renewal and excluded from being subject to an AMR. Failure of the overflow line may cause the SW to flow to the outside of the strainer and on safety-related components in the intake structure. In RAI 2.3.3.3-1A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of these drain lines from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the overflow lines are the service water strainers' packing leakoff lines, which direct strainer shaft leakage to a floor drain. These lines are in a normally dry condition. However, if a packing leak does occur, moisture will be present, creating the potential to wet safety-related components. The applicant concluded that these lines should be included within the scope of license renewal and revised LRA Table 2.3.3-3 to include the packing leakoff lines. The applicant stated that the aging effect of loss of material (external) will be managed with the general condition monitoring AMP and the aging effect of loss of material (internal) will be managed with the service water system (Open-Cycle Cooling) AMP.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.3-1A acceptable, because the strainer leakoff lines are included within the scope of license renewal and will be managed appropriately. Therefore, the staff's concern described in RAI 2.3.3.3-1A is resolved.

Table 2.3.3-3 lists "SW Pump Motor Protective Tank" as a component type within the scope of license renewal and subject to an AMR. This stored component protects the SW pumps or other safety-related components from failing to perform their intended functions. In RAI 2.3.3.3-2A dated June 9, 2004, the applicant was asked to provide drawings or descriptive information that would allow the staff to determine whether the subcomponents of the "SW Pump Motor Protective Tank," were adequately identified in Table 2.3.3-3.

In its response, dated July 26, 2004, the applicant stated that the SW pump motor is protected from flooding by shrouding the motor with a fiberglass tank "can" that fits over the vertical motor. The SW pump motor protective tank is a stored piece of equipment that is designed to protect one SW pump motor from damage due to flooding during a postulated maximum hurricane. The fiberglass tank is equipped with a steel lifting rig to facilitate installation of the tank. The fiberglass tank provides the flood protection intended function. The lifting rig is not required to prevent flooding damage to the SW pump motor and is not within the scope of license renewal.

The staff finds the applicant's response to RAI 2.3.3.3-2A acceptable, because it adequately describes the SW pump motor protective tank and its use. The description allows the staff to conclude that this component was correctly identified within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.3-2A is resolved.

2.3A.3.3.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the SW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the SW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.4 Sodium Hypochlorite System

2.3A.3.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.4, the applicant described the sodium hypochlorite system. The sodium hypochlorite system provides a source of sodium hypochlorite to minimize marine growth in the SW system and the circulating water system.

The sodium hypochlorite system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

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

2.3A.3.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.4 and Millstone FSAR Section 9.7.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.4.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the sodium hypochlorite system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the sodium hypochlorite system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.5 Reactor Building Closed Cooling Water System

2.3A.3.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.5, the applicant described the reactor building closed cooling water (RBCCW) system. The RBCCW system is a closed loop cooling system that transfers heat from reactor auxiliaries to the service water system during plant operation and accident conditions.

The RBCCW system transfers heat from safety-related heat loads to the ultimate heat sink, providing automatic and manual isolation of non-essential heat loads in the event of a design basis accident, and providing containment pressure boundary integrity. The reactor building closed cooling water system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- restricts flow
- provides limited structural integrity
- provides for heat transfer

In LRA Table 2.3.3-5, the applicant identified the following reactor building closed cooling water system component types that are within the scope of license renewal and subject to an AMR: flow elements; flow indicators; flow orifices; flow switches; pipe; pumps; RBCCW heat exchangers; RBCCW surge tank; reactor vessel support concrete cooling coils; tubing; and valves.

2.3A.3.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.5 and Millstone FSAR Sections 9.2.2.2, 9.3.2.2, 9.4, 9.7.2.1.1, 9.9.1.2.1, and 9.10.6.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.5 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 RAI as discussed below.

One of the license renewal drawings reviewed by the staff shows flexible hoses and a sample cooler within the RBCCW system within the scope of license renewal and subject to an AMR. However, these components were not listed in LRA Table 2.3.3-5 as a component type subject to an AMR. In RAI 2.3.3.5-A, dated June 9, 2004, the staff requested the applicant to explain whether these components were included with another component type or to explain their exclusion from the scope of license renewal.

In its response, dated July 26, 2004, the applicant stated that flexible hoses are within the scope of license renewal, but have been determined to be short-lived components. As described in LRA Section 2.1 5.1, short-lived components are shown on the license renewal drawings. However, the applicant stated that these short-lived components are not subject to an AMR and are not included in the screening results tables provided in Section 2 of the LRA. The applicant further stated that modified preventive maintenance program procedures will require the periodic replacement of the flexible hoses based on a specified time frequency. Also, the applicant stated that the sample cooler is within the scope of license renewal and is included in the component type "Sample Coolers" in LRA Table 2.3.4-10, which is within the plant heating and condensate recovery system.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.5-1A acceptable because the applicant clarified that the flexible hoses and sample cooler are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a) and the flexible hoses will be replaced by preventive maintenance program procedures that have been modified such that the replacement is performed at a specified time frequency. Also, the applicant clarified that the sample cooler is included in the component type "Sample Coolers" in LRA Table 2.3.4-10 subject to an AMR. Based upon the applicant's response, the components discussed in this RAI adequately meet the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.5-1A is resolved.

Another license renewal drawing showed lines to several temperature indicating controllers (TICs) within the RBCCW system, that appeared to fall within the scope of license renewal and subject to an AMR. The lines provide a temperature signal to the controls of several temperature control valves. These lines appear to be electrical wires. In RAI 2.3.3.5-2A dated June 9, 2004, the staff requested the applicant to clarify whether the lines have been correctly included within the scope of license renewal.

In its response, dated July 26, 2004, the applicant stated that the temperature sensing lines highlighted between the RBCCW system piping and the respective temperature control valves are capillary tubing. The capillary tubing performs its function without penetrating the RBCCW piping. The lines highlighted between the control circuits of the temperature control valves and the temperature indicating controllers are pneumatic signal tubing. Failure of neither the capillary tubing, the temperature control valve positioners, nor the pneumatic circuits affect the ability of the RBCCW system from performing its intended functions and are therefore not within the scope of license renewal. The applicant explained that the capillary tubing and pneumatic signal tubing were inadvertently highlighted on the license renewal drawings.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.5-2A acceptable because it provided adequate explanation of the capillary and pneumatic tubing functions and how it was inadvertently highlighted on the license renewal drawing. The staff concludes that the tubing was scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.5-2A is resolved.

2.3A.3.5.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the RBCCW components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the RBCCW components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.6 Chilled Water System

2.3A.3.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.6, the applicant described the chilled water system. The chilled water system consists of the auxiliary chilled water subsystem that functions during normal operation and the vital chilled water subsystem that is normally in stand-by for use in the event of an accident. The chilled water system is a closed-loop system that provides cooling water for the vital switchgear ventilation system and various NSR plant cooling requirements. The auxiliary chilled water subsystem automatically isolates from the vital chilled water subsystem in an emergency, and the vital chilled water subsystem supplies the vital switchgear ventilation system.

The chilled water system provides chilled water to the vital switchgear ventilation system and isolation of the NSR portion of the system during an accident. The chilled water system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides for heat transfer
- provides a pressure boundary
- provides filtration
- provides limited structural integrity

In LRA Table 2.3.3-6, the applicant identified the following chilled water system component types that are within the scope of license renewal and subject to an AMR: chilled water chillers; chilled water evaporators; chilled water surge tank; compressor casings; filter/strainers; flow elements; level indicators; moisture indicators; pipe; pumps; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the chilled water system. In its December 3, 2004, RAI response, the applicant identified the non-vital chiller component type that was added to the scope of the chilled water system.

2.3A.3.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.6 and Millstone FSAR Sections 9.7.2.1.1, 9.9.16, and 9.9.17. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.6 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In its review, the staff noted that a license renewal drawing for the chilled water system showed a symbol representing components that is not identified on the license renewal drawing legend. Therefore, the staff was not able to ensure that LRA Table 2.3.3-6 is complete. In RAI 2.3.3.6-1A, dated June 9, 2004, the staff requested the applicant to define the symbol for these components and to clarify whether they penetrate the chilled water system piping pressure boundary.

In its response, dated July 26, 2004, the applicant stated that the unidentified components are moisture filters and that they are part of the chilled water system pressure boundary. The applicant stated that the components are within the scope of license renewal and are included in the component type "Filters/Strainers" in LRA Table 2.3.3-6.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.6-1A acceptable because the moisture filters were identified and properly placed within the scope of license renewal. The staff concludes that the moisture filters were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.6-1A is resolved.

LRA Table 2.3.3-6 listed "Chilled Water Chillers" and "Chilled Water Evaporators" as component types subject to an AMR. During its review, the staff determined that evaporator and chiller shells, shown on a license renewal drawing for the chilled water system, perform a pressure boundary intended function and are within the scope of license renewal and subject to an AMR. In RAI 2.3.3.6-2A, dated June 9, 2004, the staff requested the applicant to confirm that the evaporator and chiller shells are included with the components listed in LRA Table 2.3.3-6.

In its response, dated July 26, 2004, the applicant stated that the component types "Chilled Water Chillers" and "Chilled Water Evaporators" include the chiller and evaporator shells in LRA Table 2.3.3-6. The tubing and shell of the chilled water chillers and chilled water evaporators are identified as individual components for aging management in LRA Table 3.3.2-6.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.6-2A acceptable because the shells of the chillers and evaporators were considered to be part of the components in the chilled water system. The staff concludes that the shells were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.6-2A is resolved.

In its review, the staff noted that a license renewal drawing for the chilled water system showed that the lower half of the chilled water surge tank is divided into two equal sections by a vertical weir. The surge tank weir was not shown to be within the scope of license renewal and was excluded from being subject to an AMR. The vertical weir in the surge tank assures that chilled water will be available to supply vital portions of the system, if one of the two independent supply lines ruptures. In RAI 2.3.3.6-3A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the vertical weir from the scope of license renewal.

In its response, dated July 26, 2004, the applicant stated that the vertical weir located inside of the chilled water surge tank was inadvertently not highlighted, but is within the scope of license renewal. The applicant stated that the vertical weir was evaluated as an integral part of the component type, "Chilled Water Surge Tank" shown in LRA Table 2.3.3-6.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.6-3A acceptable because the vertical weir within the chilled water surge tank was considered as a component in the chilled water system. The staff concludes that the vertical weir was scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.6-3A is resolved.

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the chilled water system is acceptable.

2.3A.3.6.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the chilled water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified chilled water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.7 Instrument Air System

2.3A.3.7.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.7, the applicant described the instrument air system. The instrument air system provides a reliable source of clean, dry, oil-free compressed air at the proper pressure to supply air-operated valves, instruments, and other miscellaneous components in the plant. The instrument air system is cross-connected with the station air system.

The instrument air system provides containment pressure boundary integrity and backup compressed air for operation of certain safety-related components. The instrument air system also includes environmental qualification equipment and supports fire protection.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-7, the applicant identified the following instrument air system component types that are within the scope of license renewal and subject to an AMR: accumulators; hoses; pipe; regulators; tubing; and valves. In addition, as a result of the scoping methodology changes in response to RAI 2.1-1, described in the November 9, 2004, response, the applicant expanded the system boundaries for the instrument air system. Specifically, in its December 3, 2004, response, the applicant identified the following component types that were added to the scope of the instrument air system:

- compressors
- compressor aftercoolers
- containment instrument air receiver tank

2.3A.3.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.7 and Millstone FSAR Sections 5.2 and 9.1.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.7 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 RAI as discussed below.

LRA Section 2.3.3.7 states that the instrument air system is within the scope of license renewal because it provides containment pressure boundary integrity and backup compressed air for the operation of certain safety-related components. Where required, the backup compressed air source is supplied from an installed accumulator. The Millstone FSAR references a list of all safety-related pneumatically actuated valves including those with an air accumulator. In RAI 2.3.3.7-1A, the staff requested additional information to complete its review:

- The staff requested the applicant to identify those listed valves that have accumulators.
- The accumulator and associated tubing was shown in the application to be subject to an AMR for eight valves not identified in the list. The staff requested the applicant to verify the accuracy of the list.
- A license renewal drawing for the instrument air system showed accumulators and associated tubing leading to a note stating, "TO 2-MS-64A and "TO 2-MS-64B." The staff took the position that these valves are provided with backup air accumulators and should be identified with within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a). However, the instrument air line to these valves was not shown to be subject to an AMR. The staff requested the applicant to explain the apparent exclusion of the instrument air line from the scope of license renewal.

In its response, dated July 26, 2004, the applicant stated:

(1) The valves listed are the safety-related pneumatic actuated valves necessary for safe shutdown. The applicant reviewed the list of values and determined that there are no additional valves with air accumulators other than those listed in the RAI.

(2) The eight valves identified in the RAI that have air accumulators and tubing subject to AMR, but are not identified in the list represented a discrepancy that has been documented in the plant Corrective Action System.

(3) The pneumatic lines shown on an instrument air license renewal drawing are an extension of "test lines" that originate on another drawing that is not a license renewal drawing. The applicant stated that these "test lines" do not perform an intended function and are not within the scope of license renewal.

The staff finds the applicant's response to RAI 2.3.3.7-1A acceptable because the questions arising from the comparison of the list of air operated valves and those found on license renewal drawings were adequately resolved by the applicant. The staff concludes that the components in the instrument air system were scoped in accordance with the requirements of

10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concerns described in RAI 2.3.3.7-1A are resolved.

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the instrument air system is acceptable.

2.3A.3.7.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the instrument air system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the instrument air system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.8 Nitrogen System

2.3A.3.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.8, the applicant described the nitrogen system. The nitrogen system provides clean, dry gas that is utilized in multiple applications throughout the plant. The nitrogen system provides a pressure boundary for the safety injection system.

The intended function within the scope of license renewal includes providing a pressure boundary.

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

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the nitrogen system. In its December 3, 2004, RAI response, the applicant identified the flow indicators component type that was added to the scope of the nitrogen system.

2.3A.3.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.8 and Millstone FSAR Section 6.3.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the nitrogen system is acceptable.

2.3A.3.8.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the nitrogen system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the nitrogen system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.9 Station Air System

2.3A.3.9.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.9, the applicant described the station air system. The station air system provides a source of clean, oil-free compressed air at the proper pressure to support the operation of air-operated tools and other devices. The station air system can be used as a source of compressed air to the instrument air system. The station air system also provides air pressure to support dry pipe fire protection sprinkler systems.

The station air system provides a containment pressure boundary integrity. The station air system also provides a pressure boundary for the fire protection water suppression system.

The intended function within the scope of license renewal includes providing pressure boundary.

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

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the station air system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the station air system:

- compressors
- air compressor aftercoolers
- air compressor intercoolers

2.3A.3.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.9 and Millstone FSAR Section 9.1.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the station air system is acceptable.

2.3A.3.9.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the station air system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the station air system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.10 Hydrogen System

2.3A.3.10.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.10, the applicant described the hydrogen system. The hydrogen system provides a source of hydrogen gas for the main generator and volume control tank. The system is comprised of primary and reserve gas cylinders located outside of the turbine building on the hydrogen bulk storage skid. An excess flow valve, located outside of the turbine building, isolates hydrogen flow in the event of a line failure within the turbine building in order to mitigate the spread of fire.

The hydrogen system provides for fire mitigation.

The applicant identified no component groups that require aging management review.

2.3A.3.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.10 and Millstone FSAR Section 10.2.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.10.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant adequately identified that the hydrogen system is within the scope of license renewal, as required by 10 CFR 54.4(a), but there are no components subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.11 Chemical and Volume Control System

2.3A.3.11.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.11, the applicant described the CVCS. The CVCS provides a method for controlling the inventory and chemistry of the RCS. During normal operation, reactor coolant letdown flow is cooled; conditioned via ion exchangers, filters, and chemical addition; heated; and returned to the RCS. The system also provides the capability to adjust reactor coolant soluble boron concentration in order to effect reactivity changes within the reactor core. During emergency conditions, the CVCS provides a high-pressure source of borated water injection to the RCS.

The CVCS provides a borated water flowpath to the RCS for reactivity control and for make-up in the event of an accident. The system also provides an RCS pressure boundary at system interfaces; safety-related RG 1.97 indications; and containment penetration pressure boundary integrity. The CVCS contains NSR components credited for mitigating the effects of a high-energy line break and NSR components spatially oriented such that a failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The CVCS also contains environmental qualification equipment and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-10, the applicant identified the following CVCS component types that are within the scope of license renewal and subject to an AMR: bolting; boric acid tanks; filter/strainers; flow elements; flow indicators; letdown heat exchanger; level indicators; lube oil reservoirs; pipe; pulsation dampeners; pumps; regenerative heat exchanger; suction stabilizers; sump tanks; tubing; valves; and volume control tank.

2.3A.3.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.11 and Millstone FSAR Section 9.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.11.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the CVCS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the CVCS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.12 Sampling System

2.3A.3.12.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.12, the applicant described the sampling system. The sampling system provides the means for determining chemical and radiological conditions of plant processes and environments.

The sampling system provides the capability to obtain post-accident samples, providing a pressure boundary at interfaces with safety-related systems, and providing safety-related RG 1.97 indications. The sampling system contains NSR components spatially oriented such that a failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The sampling system also contains environmental qualification equipment.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-11, the applicant identified the following sampling system component types that are within the scope of license renewal and subject to an AMR: bolting; pipe, sample coolers; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the sampling system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the sampling system:

- sample chiller
- secondary sample station/sink

2.3A.3.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.12 and Millstone FSAR Section 9.6. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the sampling system is acceptable.

2.3A.3.12.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the sampling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the sampling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.13 Primary Makeup Water System

2.3A.13.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.13, the applicant described the primary makeup water system. The primary makeup water system, which is part of the water treatment system, provides demineralized water for use in primary and auxiliary systems in the plant.

The primary makeup water system provides containment penetration pressure boundary integrity and safety-related RG 1.97 indications. The primary makeup water system contains NSR components spatially oriented such that a failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The primary makeup water system also contains environmental qualification equipment.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-12, the applicant identified the following primary makeup water system component types that are within the scope of license renewal and subject to an AMR: bolting; flow elements; pipe; primary water head tank; pumps; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the primary makeup water system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the primary makeup water system:

- makeup water vacuum dearator
- primary water storage tank
- dearator water transfer pump

2.3A.3.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.13 and Millstone FSAR Section 9.12. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the primary makeup water system is acceptable.

2.3A.3.13.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the primary makeup water components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the primary makeup water components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.14 Access Control Area Air Conditioning System

2.3A.3.14.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.14, the applicant described the access control area air conditioning system. The access control area air conditioning system provides for heating and cooling of office spaces. The system contains fire dampers to prevent the spread of fire. Therefore, the access control area air conditioning system supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-13, the applicant identified the following access control area air conditioning system component type that is within the scope of license renewal and subject to an AMR: damper housings.

2.3A.3.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.14 and Millstone FSAR Section 9.9.13. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

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

functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.14.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the access control area air conditioning system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the access control area air conditioning system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.15 Main Condensers Evacuation System

2.3A.3.15.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.15, the applicant described the main condensers evacuation system. The main condensers evacuation system includes two steam-jet air ejector units, complete with inter- and after-condensers, which remove air and noncondensable gases from the main condenser. A mechanical vacuum pump is provided for use during startup. Air ejector condenser cooling is provided by condensate flow. Air in-leakage and noncondensable gases are removed from the condenser and discharged to the stack, which is continuously monitored for radioactivity.

The main condensers evacuation system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-14, the applicant identified the following main condensers evacuation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; fan/blower housings; and pipe and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the main condensers evacuation system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the main condensers evacuation system:

- flow orifices
- flow switches
- filter/strainers
- steam jet air ejector vent condenser

2.3A.3.15.2 Staff Evaluation

The staff reviewed LRA Section. 2.3.3.15 and Millstone FSAR Section 10.4.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the containment air recirculation and cooling system is acceptable.

2.3A.3.15.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the main condensers evacuation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the main condensers evacuation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.16 Containment Air Recirculation and Cooling System

2.3A.3.16.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.16, the applicant described the containment air recirculation and cooling system. The function of the containment air recirculation and cooling system is to remove heat from the containment atmosphere during normal operation and after an accident. In the event of a LOCA or MSLB accident, the system provides a means of cooling the containment atmosphere to reduce containment pressure, which minimizes the potential for leakage of airborne particulate and gaseous radioactivity from containment.

The containment air recirculation and cooling system provides heat removal from the containment after an accident, providing containment pressure boundary integrity, and RG 1.97 safety-related indications and signals. The containment air recirculation and cooling system also contains environmental qualification equipment and supports fire protection.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-15, the applicant identified the following containment air recirculation and cooling system component types that are within the scope of license renewal and subject to an AMR: containment air recirculation cooling unit coils; containment air recirculation cooling unit housings; damper housings; ductwork; fan/blower housings; flow elements; pipe; tubing; and valves.

2.3A.3.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.16 and Millstone FSAR Section 6.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.16.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment air recirculation and cooling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment air recirculation and cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.17 Containment and Enclosure Building Purge System

2.3A3.17.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.17, the applicant described the containment and enclosure building purge system. The containment and enclosure building purge system functions to maintain a suitable environment for personnel access into the containment and enclosure building. The purge system provides fresh air ventilation, and heating when required; and it is balanced to maintain a negative pressure in the area being purged. The system contains fire dampers to mitigate a fire.

The containment and enclosure building purge system provides automatic isolation and alignment of the system on an actuation signal and provides containment pressure boundary integrity. The containment and enclosure building purge system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-16, the applicant identified the following containment and enclosure building purge system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; ductwork joint seals; flex connections; pipe; and valves.

2.3A.3.17.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.17 and Millstone FSAR Section 9.9.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.17.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment and enclosure building purge system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment and enclosure building purge system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.18 Containment Penetration Cooling System

2.3A.3.18.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.18, the applicant described the containment penetration cooling system. The containment penetration cooling system functions to limit the temperature of containment structure concrete to 150 °F in the vicinity of hot piping penetrations. The system consists of two vane-axial fans and the associated system ductwork and dampers. The system contains fire dampers to prevent the spread of a fire.

The containment penetration cooling system provides cooling air to the concrete area surrounding the containment piping penetrations. The containment penetration cooling system also supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-17, the applicant identified the following containment penetration cooling system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; ductwork joint seals; fan/blower housings; and flex connections.

2.3A.3.18.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.18 and Millstone FSAR Section 9.9.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.18.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment penetration cooling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment penetration cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.19 Containment Post-Accident Hydrogen Control System

2.3A.3.19.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.19, the applicant described the containment post-accident hydrogen control system. The containment post-accident hydrogen control system includes independent, fully redundant subsystems to mix, monitor, and reduce the hydrogen concentration in containment following a loss-of-coolant accident (LOCA). The system functions to maintain the concentration of hydrogen in the containment below the lower flammability limit following a LOCA.

The containment post-accident hydrogen control system is within the scope of license renewal because the system controls the concentration of hydrogen in containment after an accident to below the lower flammability limit following a LOCA, provides containment pressure boundary integrity, and provides RG 1.97 safety-related indications and signals. The containment post-accident hydrogen control system also contains environmental qualification equipment.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-18, the applicant identified the following containment post-accident hydrogen control system component types that are within the scope of license renewal and subject to an AMR: detection chambers; fan/blower housings; flexible hoses; flow elements; flow orifices; hydrogen recombiner housings; pipe; tubing; and valves.

2.3A.3.19.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.19 and Millstone FSAR Section 6.6. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.19.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment post-accident hydrogen control system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment post-accident hydrogen control system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.20 Control Room Air Conditioning System

2.3A.3.20.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.20, the applicant described the control room air conditioning system. The control room air conditioning system functions to maintain a suitable environment for personnel and for safety-related control and electrical equipment during normal and accident operations. The control room air conditioning system consists of two full-capacity, independent air-handling and mechanical refrigeration systems. The system contains fire dampers to prevent the spread of fire.

The control room air conditioning system provides heat removal from the control room envelope for equipment cooling and personnel habitability, provides radiological control of the control room envelope for personnel habitability in the event of an accident, and provides RG 1.97

safety-related indications. The control room air conditioning system also supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides filtration
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.3.3-19, the applicant identified the following control room air conditioning system component types that are within the scope of license renewal and subject to an AMR: control room air handling units; control room filter banks, compressor casings; damper housings; ductwork; ductwork joint seals; fan/blower housings; filter dryer; moisture indicators; mufflers; pipe; tubing; and valves.

2.3A.3.20.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.20 and Millstone FSAR Sections 9.9.10, 14.8.4.1 and 14.8.4.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.20 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.

For the control room air conditioning system, described on LRA drawing 25203-LR26027, sheet 3, at C-4 and D-4, items X-42A and X-42B include cooling coils but no heating coils. Neither cooling nor heating coils are included in Table 2.3.3-19. In RAI SPSB-1, the applicant was requested to clarify whether these heating and cooling coils and the associated housings are within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If they are, they should be included in Table 2.3.3-19.

In a response dated November 9, 2004, the applicant stated that items X-42A and X-42B on license renewal drawing 25203-LR26207, sheet 3, at C-4 and D-4 were the control room air conditioning system, air-handling units cooling coils. The air-handling units are not equipped with heating coils. The applicant further stated that cooling coil performs a pressure boundary intended function and is included in the component type "Control Room Air Handling Units" in LRA Table 2.3.3-19. The housing and coil are evaluated separately in LRA Table 3.3.2-19 as

"Control Room Air Handling Units (Housing)" and "Control Room Air Handling Units (Coils)." The staff finds this acceptable.

2.3A.3.20.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and the RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. 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 that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the control room air conditioning system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.21 Control Element Drive Mechanism Cooling System

2.3A.3.21.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.21, the applicant described the control element drive mechanism cooling system. The control element drive mechanism (CEDM) cooling system consists of three fan-coil units that draw containment air across finned-tube cooling coils and supply the cooled air to the CEDM shroud. The cooling coils are cooled by the reactor building closed cooling water system. The control element drive mechanism cooling system provides a pressure boundary for the reactor building closed cooling water system.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-20, the applicant identified the CEDM cooling coils within the scope of license renewal and subject to an AMR.

2.3A.3.21.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.21 and Millstone FSAR Section 9.9.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.21.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the CEDM cooling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the CEDM cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.22 Diesel Generator Ventilation System

2.3A.3.22.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.22, the applicant described the diesel generator ventilation system. The diesel generator ventilation system maintains a suitable environment for equipment and personnel during emergency diesel generator operation. The diesel generator ventilation system consists of a direct drive, in-line, vane-axial fan for each diesel generator room. The system contains fire dampers to prevent the spread of fire.

The diesel generator ventilation system provides heat removal to maintain a suitable environment for the operation of the emergency diesel generators. The diesel generator ventilation system contains NSR components used to mitigate the effects of a high-energy line break (HELB). The diesel generator ventilation system also supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-21, the applicant identified the following diesel generator ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; ductwork joint seals; fan/blower housings; and flex connections.

2.3A.3.22.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.22 and Millstone FSAR Section 9.9.11. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.22.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the diesel generator ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a); and that the applicant has adequately identified the diesel generator ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.23 ESF Room Air Recirculation System

2.3A.3.23.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.23, the applicant described the ESF room air recirculation system. The ESF room air recirculation system functions to maintain a suitable environment for operation of the safety injection and containment spray pumps. The ESF room air recirculation system consists of two redundant, independent subsystems, each capable of maintaining the required temperature in their associated ESF pump room. Each ESF pump room contains one full capacity ESF room air recirculation system fan and cooling coil. The third pump room is served by both fans and coil units. The system contains fire dampers to prevent the spread of fire.

The ESF room air recirculation system provides heat removal from the ESF room atmosphere for ESF equipment cooling. The ESF room air recirculation system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-22, the applicant identified the following ESF room air recirculation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; ductwork joint seals; ESF room air recirculation unit cooling coils; ESF room air recirculation unit housings; fan/blower housings; flex connections; and pipe.

2.3A.3.23.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.23 and Millstone FSAR Section 9.9.7. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then

reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.23.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the ESF room air recirculation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the ESF room air recirculation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.24 Enclosure Building Filtration System

2.3A.3.24.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.24, the applicant described the enclosure building filtration system. The functions of the enclosure building filtration system are to collect and process any radioactivity released to the enclosure building filtration region from the containment after a LOCA, or from the auxiliary building after a fuel handling accident in the spent fuel pool.

The enclosure building filtration region includes the region between the penetration rooms, the ESF equipment rooms, and the containment and the enclosure building. The system may be used in conjunction with the backup hydrogen purge to process containment air in order to reduce airborne activity, reduce hydrogen concentration, or reduce pressure in containment by either venting or purging the containment. The system exhausts to either the unit vent stack or the stack.

The enclosure building filtration system provides for the collection and filtration of radioactive effluents from the enclosure building filtration region or the spent fuel pool area during radiological events in order to maintain releases to the environment below 10 CFR 100 limits, provides a negative pressure in the enclosure building filtration region in the event of a LOCA or rod ejection accident, and provides a flowpath for backup hydrogen purge to the stack. The enclosure building filtration system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary
- provides filtration

In LRA Table 2.3.3-23, the applicant identified the following enclosure building filtration system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; ductwork joint seals; enclosure building filtration filter bank housings; fan/blower housings; flex connections; flow elements; pipe; tubing; and valves.

2.3A.3.24.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.24 and Millstone FSAR Sections 5.2.1, 5.2.8.4.1, 5.3.4, 6.7, 9.9.5.4.1, 9.9.8.3.2, 9.9.10.2.1, and 14.8.4.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.24 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.

For the enclosure building filtration system, described on LRA drawing 25203-LR26028, sheet 5, at J-10 and F-10; items X-61A and X-61B include heating and cooling coils that are not listed in LRA table 2.3.3-23. In RAI SPSB-2, dated June 25, 2004, the applicant was requested to clarify whether these heating and cooling coils and the associated housings are within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to aging management review in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

In a response dated November 9, 2004, the applicant stated that items X-61A and X-61B shown on license renewal drawing 25203-LR26028, sheet 5, at J10 and F-10 are the enclosure building filtration system filter bank dehumidifier heaters. There are no cooling coils associated with these filter banks. The electric dehumidifier heaters are designed to maintain the relative humidity of the air stream entering the charcoal filters at less than 90 percent. As stated in FSAR Section 6.7.2.1, an analysis has been performed that shows the relative humidity of the entering air stream will remain less than 90 percent regardless of heater operation. Therefore, the applicant concluded that the dehumidifier electric heaters are not within the scope of license renewal. The housings associated with the filter banks are within the scope of license renewal and are identified as "Enclosure Building Filtration Filter Bank Housing" in LRA Table 2.3.3-23. The staff finds this acceptable.

On the basis of its review and resolution of RAI SPSB-2, the staff found that the applicant has identified those portions of the enclosure building filtration system that meet the scoping requirements of 10 CFR 54.4 and has included them within the scope of license renewal in LRA Section 2.3.3.24. The applicant has also included enclosure building filtration system components that are subject to an AMR in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) in LRA Table 2.3.3-23 "Enclosure Building Filtration."

2.3A.3.24.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the enclosure building filtration system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the enclosure building filtration system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.25 Fuel Handling Area Ventilation System

2.3A 3.25.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.25, the applicant described the fuel handling area ventilation system. The fuel handling area ventilation system provides a suitable environment for equipment and fresh air ventilation for personnel within the fuel handling area of the auxiliary building, while preventing cross-contamination with surrounding areas. The fuel handling area ventilation system is balanced to maintain a negative pressure in the area. Before irradiated fuel is handled, the fuel handling area ventilation system exhaust air is diverted through the enclosure building filtration system. In the event of a fuel handling accident, the enclosure building filtration system processes the fuel handling area exhaust to ensure that accident doses at the site boundary are well below 10 CFR 100 guidelines. The fuel handling area ventilation system also contains fire dampers to prevent the spread of fire.

The fuel handling area ventilation system provides an enclosure building filtration system flow path from the fuel handling area in the event of a fuel handling accident. The fuel handling area ventilation system also contains components that support fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-24, the applicant identified the following fuel handling area ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; ductwork joint seals; flow elements; pipe; and valves.

2.3A.3.25.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.25 and Millstone FSAR Section 9.9.8. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.25.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the fuel handling area ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the fuel handling area ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.26 Main Exhaust Ventilation System

2.3A.3.26.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.26, the applicant described the main exhaust ventilation system. The main exhaust ventilation system is designed to exhaust air from areas of the auxiliary building and provide a clean-up and exhaust flowpath for the containment and enclosure building purge system. The system contains fire dampers to prevent the spread of a fire.

The main exhaust ventilation system provides system isolation upon receipt of a containment isolation signal and RG 1.97 safety-related indications. The main exhaust ventilation system also supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-25, the applicant identified the following main exhaust ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; filter bank housing; pipe; tubing; and valves.

2.3A.3.26.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.26 and Millstone FSAR Section 9.9.9. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.26.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the main exhaust ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the main exhaust ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.27 Non-Radioactive Area Ventilation System

2.3A.3.27.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.27, the applicant described the non-radioactive area ventilation system. The non-radioactive area ventilation system provides a suitable environment for equipment and fresh air ventilation for personnel within the clean areas of the auxiliary building, including the east and west turbine building cable vaults and the battery rooms. The system contains fire dampers to prevent the spread of a fire.

The non-radioactive area ventilation system contains NSR components that are used to mitigate the effects of a HELB, and the system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The non-radioactive area ventilation system also supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.3.3-26, the applicant identified the following non-radioactive area ventilation system component types that are within the scope of license renewal and subject to an AMR: cable vault recirculation unit cooling coils; damper housings; ductwork; and fan/blower housings.

2.3A.3.27.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.27 and Millstone FSAR Section 9.9.6. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.27.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the non-radioactive area ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the non-radioactive area ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.28 Process and Area Radiation Monitoring System

2.3A.3.28.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.28, the applicant described the process and area radiation monitoring system. The process and area radiation monitoring system provides radioactivity monitoring for liquid and gaseous process fluids and plant areas. The system is designed to detect and measure radiation conditions in the plant for personnel protection and to prevent releases in excess of allowable limits.

The process and area radiation monitoring system provides a pressure boundary for interfacing systems, providing containment pressure boundary integrity, an actuation of certain systems or components in response to detected radiation conditions, and RG 1.97 safety-related indications. The process and area radiation monitoring system also contains environmental qualification equipment and supports station blackout.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-27, the applicant identified the following process and area radiation monitoring system component types that are within the scope of license renewal and subject to an AMR: bolting; pipe; tubing; and valves.

2.3A.3.28.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.28 and Millstone FSAR Section 7.5.6. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.28 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 particular, LRA Section 2.3.3.28 states that this system is within the scope of license renewal because it meets the requirements of 10 CFR 54.4(a)(1) by providing "actuation of certain systems or components in response to detected radiation conditions." In order to perform this function, a section of piping connecting the radiation detectors to the system being monitored is required to serve as a pressure boundary. This section of piping was not shown on license renewal drawings for the process area and radiation monitoring systems as being within the scope of license renewal. In RAI 2.3.3.28-1A, dated June 9, 2004, the staff requested the applicant to explain how the system-level intended function is performed without this section of piping included within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

In its response, dated July 26, 2004, the applicant stated that this specific section of piping and components was omitted from inclusion within the scope of license renewal. The applicant stated that these components support the radiation monitor actuation function to secure containment purge flow in the event of a fuel handling accident within the containment and, therefore, are within the scope of license renewal. The applicant stated that it updated the process and area radiation monitoring system screening results and AMR results to include the additional component types.

The staff did not find the applicant's response to RAI 2.3.3.28-1A adequate because the updated LRA Table 2.3.3.27, including additional in-scope component types, was not provided in the July 26, 2004, RAI response for the staff to review. Therefore, during a teleconference between the staff and the applicant on November 1, 2004, the staff requested that the applicant provide the updated Table 2.3.3.27 with the information related to the added components in response to RAI 2.3.3.28-1A.

In its response dated December 3, 2004, the applicant stated that the necessary additions to the LRA table were included in a supplement to the application dated July 7, 2004, that included additions to Table 3.3.2-27. The added component types were the fan/blower housing, filter housings, and radiation detectors, with a pressure boundary intended function.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.28-1A acceptable because (1) the applicant agreed that the specific section of piping connecting the radiation detectors to the system being monitored, with its associated components, supports the radiation monitor actuation function to secure containment purge flow within the containment in the event of a fuel handling accident, and is within the scope of license renewal; and (2) the applicant adequately identified the component types that were added to the LRA table in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.28-1A is resolved.

2.3A.3.28.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and the RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the process and area radiation monitoring system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the process and area radiation monitoring system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.29 Radwaste Area Ventilation System

2.3A.3.29.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.29, the applicant described the radwaste area ventilation system. The radwaste area ventilation system provides a suitable environment for equipment and fresh air ventilation for personnel within the potentially radioactive areas of the auxiliary building. These areas are maintained at a slightly negative pressure and air flow is maintained in the direction of areas with potentially higher radioactivity. The system contains fire dampers to prevent the spread of a fire.

The radwaste area ventilation system isolates normal ventilation from the engineered safety features pump rooms on an enclosure building filtration system actuation signal. The radwaste area ventilation system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-28, the applicant identified the following radwaste area ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; and ductwork joint seals.

2.3A.3.29.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.29 and Millstone FSAR Section 9.9.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.29.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the radwaste area ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the radwaste area ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.30 Turbine Building Ventilation System

2.3A.3.30.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.30, the applicant described the turbine building ventilation system. The turbine building ventilation system provides a suitable environment for the equipment and personnel within the turbine building. The turbine building ventilation system contains fire dampers to prevent the spread of fire.

The turbine building ventilation system provides an automatic trip of the steam-driven auxiliary feedwater pump room exhaust fan in the event of a steam line break in the room. The turbine building ventilation system also supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-29, the applicant identified the following turbine building ventilation system component type that is within the scope of license renewal and subject to an AMR: damper housings.

2.3A.3.30.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.30 and Millstone FSAR Section 9.9.12. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.30.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the turbine building ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the turbine building ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.31 Vital Switchgear Ventilation System

2.3A.3.31.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.31, the applicant described the vital switchgear ventilation system. The vital switchgear ventilation system functions to maintain a suitable environment for safety-related equipment during normal operation, loss of offsite power, and post-accident conditions. This system consists of independent subsystems, each capable of removing 100 percent of the heat generated in the associated vital electrical equipment room. The east and west vital DC switchgear rooms are provided with closed-cycle air subsystems utilizing mechanical refrigeration to maintain the ambient conditions within these areas. The motor control center (MCC) B51 and B61 enclosures are provided with self-contained air conditioning units. The 4160V switchgear rooms and east and west 480V switchgear rooms are cooled by water-to-air cooling units. The vital switchgear ventilation system contains fire dampers to prevent the spread of a fire.

The vital switchgear ventilation system provides cooling to maintain a suitable environment for the operation of safety-related electrical equipment. The vital switchgear ventilation system also contains environmental qualification equipment and supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

- provides a pressure boundary
- provides for heat transfer

In LRA Table 2.3.3-30, the applicant identified the following vital switchgear ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; DC switchgear (SWGR) air conditioning unit cooling coils; DC SWGR air conditioning unit housings; ductwork; ductwork joint seals; fan/blower housings; MCC air conditioning units; pipe; tubing; valves; vital SWGR cooling unit coils; vital SWGR cooling unit housings; west 480V LCR cooling unit coils; and west 480V LCR cooling unit housings.

2.3A.3.31.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.31 and Millstone FSAR Section 9.7.2, 9.9.15 and 9.9.17. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.31.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the vital switchgear ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the vital switchgear ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.32 Unit 2 Fire Protection System

2.3A.3.32.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.32, the applicant described the fire protection system. The MPS fire protection system is a shared system that provides intended functions for both Millstone Unit 2 and Millstone Unit 3. This section addresses those portions of the fire protection system that are specifically designated as Unit 2 components. Since this is a shared system, this section is duplicated in the Millstone Unit 3 license renewal application.

The Unit 2 fire protection system provides containment pressure boundary integrity. The fire protection system also provides fire detection and suppression capability to protect safe shutdown or safety-related equipment, provides oil collection for the prevention of an oil fire around the reactor coolant pumps, supports station blackout, provides emergency lighting, and provides backup cooling water to the emergency diesel generators in response to a fire event.

Intended functions within the scope of license renewal include the following:

- provides enclosure, shelter, or protection for in-scope equipment (including radiation shielding and pipe whip restraint)
- provides a pressure boundary
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- restricts flow
- provides a spray pattern

In LRA Table 2.3.3-31, the applicant provided the screening results for the fire protection system components, identifying those components that require aging management review. Similarly, LRA Table 2.4.2-25 provides the screening results for the miscellaneous structural commodities. Table 2.4.2-25 includes fire barrier penetration seals and fire doors.

In LRA Table 2.3.3.31, the applicant identified the following fire protection system component types that are within the scope of license renewal and subject to an AMR: drip pans; fire hydrants; flame arrestors; flex connections; flow indicators; flow orifices; nozzles; pipe; pumps; RCP oil collection tanks; retard chambers; sprinkler heads; strainers; tubing; valves; and water motor gongs.

2.3A.3.32.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.32 and Millstone FSAR Section 9.10. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.32 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The staff noted that virtually all fire protection subsystems, including those protecting NSR areas, were identified on the fire protection system piping and instrumentation diagrams as being within scope of license renewal. However, systems for Warehouse #9, the craft assembly building and the maintenance shop were indicated as not being within the scope of license renewal.

In RAI 2.3.3.32-2, the staff requested an explanation for why these structures were excluded from the scope of license renewal. In its response dated November 9, 2004, the applicant stated that the excluded systems are not part of the plant fire protection licensing basis. The staff finds the applicant's response to RAI 2.3.3.32-2 acceptable because protection of these areas is not required by regulation. Therefore, the staff's concern described in RAI 2.3.3.32-2 is resolved.

Drawing 25203-LR26011, sheet 1 of 6, shows an automatic suppression system for STG governor housing and oil lines identified as a preaction type system, but does not show an air supply for system monitoring. The suppression system is indicated as being within the scope of license renewal. In RAI 2.3.3.32-3 the NRC requested that the applicant explain the omission of the air supply for this system from the scope of license renewal. (The air supply to other in-scope preaction suppression systems are included within scope of license renewal.)

In its response, dated November 9, 2004, the applicant stated that this preaction suppression system is not an air supervised system. Based on its review, the staff finds the applicant's response to RAI 2.3.3.32-3 is acceptable, because air supervision of this suppression system is not required by regulation. Therefore, the staff's concern described in RAI 2.3.3.32-3 is resolved.

In RAI 2.3.3.32-4, the NRC requested information on the applicant's program to ensure continued access to an adequate supply of Halon for the extended life of the plant and/or plans to convert or replace the systems when a supply is no longer available.

In its response dated November 9, 2004, the applicant noted that there is no established program credited for license renewal to ensure the continued access to an adequate supply of Halon for the gaseous suppression systems. The applicant noted that in the event that the supply of Halon becomes inadequate during the period of extended operation, appropriate actions would be initiated to maintain compliance with the fire protection licensing basis. Based on its review, the staff finds the applicant's response to RAI 2.3.3.32-4 is acceptable, because an established program to address a possible inadequate supply of Halon is not required by NRC regulation. The staff recommends that the applicant make provisions to ensure continuous protection for areas protected by Halon extinguishing systems. However, this issue is considered closed with respect to the license renewal application.

2.3A.3.32.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the MPS fire protection system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the MPS fire protection system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.33 Unit 3 Fire Protection System

2.3A.3.33.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.33, the applicant described the Unit 3 fire protection system. The MPS fire protection system is a shared system that provides intended functions for both Millstone Unit 2 and Millstone Unit 3. This section addresses those portions of the fire protection system that are specifically designated as Unit 3 components. Since this is a shared system, this section is duplicated in the Millstone Unit 2 license renewal application.

The Unit 3 fire protection system provides containment pressure boundary integrity, RG 1.97 safety-related indications, and pressure relief for tornado protection in the cable spreading area. The Unit 3 fire protection system also provides fire detection and suppression capability to protect safe shutdown or safety-related equipment, provides oil collection for the prevention of an oil fire around the RCPs, supports station blackout, and contains environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides for heat transfer
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides enclosure, shelter, or protection for in-scope equipment (including radiation shielding and pipe whip restraint).
- provides filtration
- provides a spray pattern
- restricts flow
- provides for vortex suppression

In LRA Table 2.3.3-32, the applicant provided the screening results for Unit 3 fire protection system components (shared with Unit 2), identifying those components that require an AMR. Similarly, LRA Table 2.4.2-8 provides the screening results for the Unit 3 fire pump house.

In LRA Table 2.3.3-32, the applicant identified the following Unit 3 fire protection system component types that are within the scope of license renewal and subject to an AMR: CO_2 storage tank; CO_2 tank cooling coils; coolant heat exchanger; damper housings; diesel fuel storage tank; drip pans; ductwork; exhaust silencer; expansion tank overflow container; fan/blower housings; filter/strainers; fire hydrants; fire protection RCP oil collection tanks; fire water storage tank; flame arrestors; flex connections; flexible hoses; flow switches; heater unit; hydropneumatic tank; instrument snubbers; level indicators; lube oil; nozzles; odorizers; oil mist recovery unit; oil reservoirs; pipe; pumps; restricting orifices; sprinkler heads; tubing; vacuum limiter; valves; vortex breaker assembly; water cooled exhaust manifold; water manifold; pipe; and valves.

2.3A.3.33.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.33 and Millstone FSAR Section 9.10. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.33 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.

The staff noted that while, in general, wall hydrants are included within scope of license renewal, the wall hydrant at elevation 24 feet 6 inches of the control building is not included within scope according to piping and instrumentation diagram No. 25212-LR26946, sheet 4. In RAI 2.3.3.33-1, the NRC requested the basis for not including this hydrant.

In its response, by letter dated November 9, 2004, the applicant noted that the wall hydrant in question was installed recently and is not permanently connected to a water supply. According to the applicant, the hydrant does not perform a license renewal function. Based on its review, the staff finds the applicant's response to RAI 2.3.3.33-1 is acceptable, because no protection function is claimed for the hydrant.

2.3A.3.33.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the Unit 3 fire protection system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the Unit 3 fire protection system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.34 Domestic Water System

2.3A.3.34.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.34, the applicant described the domestic water system. The purpose of the domestic water system is to provide potable water for various uses. The domestic water system is supplied by the public water system from the town of Waterford, CT.

The domestic water system provides control room envelope pressure-boundary integrity. The domestic water system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-33, the applicant identified the following domestic water system component types that are within the scope of license renewal and subject to an AMR: pipe; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the domestic water system. In its December 3, 2004, RAI response, the applicant identified the domestic water hot water tank component type that was added to the scope of the domestic water system.

2.3A.3.34.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.34 and Millstone FSAR Section 9.12. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the Unit 3 fire protection system is acceptable.

2.3A.3.34.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the domestic water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the domestic water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.35 Diesel Generator System

2.3A.3.35.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.35, the applicant described the diesel generator system. The purpose of the diesel generator system is to provide a dependable onsite AC power source capable of automatically starting and supplying the loads necessary to safely shut down the plant and maintain it in a safe shutdown condition.

The diesel generator system provides a reliable source of emergency power for the required loads. The diesel generator system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The diesel generator system supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides for heat transfer
- provides a pressure boundary
- provides filtration
- restricts flow
- provides limited structural integrity

In LRA Table 2.3.3-34, the applicant identified the following diesel generator system component types that are within the scope of license renewal and subject to an AMR: after-filter housings; air cooling heat exchangers; air intercoolers; air start distributors; expansion joints; filter/strainers; flow orifices; governor hydraulic oil; jacket water expansion tanks; jacket water heat exchangers; level indicators; lube oil heat exchangers; lube oil heaters; oil pans; pipe; pumps; silencers; stand-by jacket coolant heaters; starting air tanks; tubing; turbochargers; and valves.

2.3A.3.35.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.35 and Millstone FSAR Section 8.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.35 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 RAI as discussed below.

In its review, the staff noted that a license renewal drawing for the diesel generator system shows that the governors are not subject to an AMR. Although the governor itself is an active component, its housing serves a pressure boundary intended function. The governor housing was not, however, listed in LRA Tables 2.3.3-34 or 3.3.2-34 as a component within the scope of license renewal. In RAI 2.3.3.35-1A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the diesel generator governor from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that, consistent with the industry guideline for implementing the requirements of 10 CFR 54 (NEI 95-10), the emergency diesel generators are considered active and do not meet the criteria of 10 CFR 54.21(a)(1)(i). Additionally, the emergency diesel generator is considered a "complex assembly." The governor actuator unit shown in the license renewal drawing is a component of the "complex assembly." Thus, the applicant concluded that the governor actuator, including the housing, falls within the scope of license renewal, but does not require an AMR since the governor is considered an active component.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.35-1A acceptable, because the staff agrees that the governors and their sub-components are "complex assemblies" and, although they meet the requirements of 10 CFR 54.4(a), they do not require an AMR in accordance with 10 CFR 54.21(a)(1). Therefore, the staff's concern set forth in RAI 2.3.3.35-1A is resolved.

The staff also noted that a license renewal drawing for the diesel generator system shows level glasses and sight glasses as being subject to an AMR. However, these components are not listed in LRA Table 2.3.3-34. These components provide a pressure boundary intended function. In RAI 2.3.3.35-2A, dated June 9, 2004, the staff requested the applicant to confirm that level glasses and sight glasses are included with the components listed in LRA Table 2.3.3-34.

In its response, dated July 26, 2004, the applicant stated that the subject level glasses and sight glasses shown on license renewal drawings for the diesel generator system are within the scope of license renewal and included in the component type, "Level Indicators," in LRA Table 2.3.3-34. Additionally, the applicant described the documentation used to describe the aging effects of glass and that no aging management for glass is required.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.35-2A acceptable. The applicant states that level glasses and sight glasses were considered part of the component type, "Level Indicators," in LRA Table 2.3.3-34. Further, the applicant describes the method for evaluating the aging effects of glass and its aging management. Although glass is passive and long-lived, it has no aging effects and is subject to an AMR in accordance with 10 CFR 54.21(a)(1). The staff's concern described in RAI 2.3.3.35-2A is resolved.

A license renewal drawing for the diesel generator system has unidentified components that are shown to be subject to an AMR. As such, the staff was not able to confirm whether LRA Table 2.3.3-34 is complete. In RAI 2.3.3.35-3A, dated June 9, 2004, the staff requested the applicant to define the unidentified components and to indicate where they are listed in Table 2.3.3-34.

In its response, dated July 26, 2004, the applicant stated that the unidentified components are the in-line pilot air filters in the diesel air start system. The applicant further stated that they are included in the component type, "Filter/strainers," in LRA Table 2.3.3-34 Diesel Generator.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.35-3A acceptable, because the air filters were identified. The staff concludes that the air filters were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.35-1A is resolved.

2.3A.3.35.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the diesel generator system components that are 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 components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.36 Diesel Generator Fuel Oil System

2.3A.3.36.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.36, the applicant described the diesel generator fuel oil system. The diesel generator fuel oil system provides fuel oil to the diesel engine cylinders. The diesel generator fuel oil system includes fuel oil tanks, transfer pumps, strainers, piping, and valves.

The diesel generator fuel oil system provides adequate fuel oil to support the safety function of the diesel generators. The diesel generator fuel oil system contains an NSR fuel oil storage tank and transfer system and contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The diesel generator fuel oil system supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- provides filtration
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.3.3-35, the applicant identified the following diesel generator fuel oil system component types that are within the scope of license renewal and subject to an AMR: clean oil storage tanks; diesel fuel oil storage tank; diesel oil supply tanks; filter/strainers; flame arrestors; level indicators; pipe; pumps; tubing; and valves.

2.3A.3.36.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.36 and Millstone FSAR Section 8.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.36 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.

During its review, the staff noted that a license renewal drawing shows flexible hoses that are within the diesel generator fuel oil system to be within the scope of license renewal and subject to an AMR. However, flexible hose was not included in LRA Table 2.3.3-35. In RAI 2.3.3.36-1A, dated June 9, 2004. The staff requested the applicant to explain whether flexible hoses were included with another component type or to explain their exclusion.

In its response, dated July 26, 2004, the applicant stated that flexible hoses are within the scope of license renewal, but have been determined to be short-lived components. As described in LRA Section 2.1.5.1, short-lived components are shown on the license renewal drawings. However, these short-lived components are not subject to an AMR and are not included in the screening results tables provided in Section 2 of the LRA. The applicant further stated that modified preventive maintenance program procedures will require the periodic replacement of the flexible hoses based on a specified time frequency.

The staff finds the applicant's response to RAI 2.3.3.36-1A acceptable, because the flexible hoses will be replaced by preventive maintenance program procedures that have been modified such that the replacement is performed at a specified time frequency. Therefore, the flexible hoses in the diesel generator fuel oil system have been adequately evaluated in accordance with the criterion of 10 CFR 54.21(a)(1)(ii). The staff's concern described in RAI 2.3.3.36-1A is resolved.

2.3A.3.36.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the diesel generator fuel oil system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the diesel generator fuel oil system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.37 Station Blackout Diesel Generator System

2.3A.3.37.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.37, the applicant described the station blackout (SBO) diesel generator system. The MPS SBO diesel generator system is a shared system that provides intended functions for both Millstone Unit 2 and Millstone Unit 3. Since this is a shared system, this section is duplicated in the Millstone Unit 3 license renewal application.

The SBO diesel generator system supports SBO and fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides filtration
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- restricts flow

In LRA Table 2.3.3-36, the applicant identified the following SBO diesel generator system component types that are within the scope of license renewal and subject to an AMR: aftercoolers; air receivers; aspirators; expansion joints; expansion tanks; filter/strainers; flame arrestors; flow indicators; fuel heaters; fuel oil day tanks; fuel oil storage tanks; immersion heaters; injectors; lube oil coolers; lubricators; oil sumps; pipe; pulsation dampeners; pumps; radiators; restricting orifices; silencers; tubing; turbo chargers; and valves.

2.3A.3.37.2 Staff Evaluation

The Millstone SBO diesel generator system is a shared system that provides intended functions for both Millstone Unit 2 and Millstone Unit 3. The staff reviewed LRA Section 2.3.3.37, Millstone Unit 2 FSAR Section 1.2.9, and Millstone Unit 3 FSAR Section 8.3.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.37 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 RAI as discussed below.

In its review, the staff noted that a license renewal drawing for the station SBO generator system shows a 28-inch exhaust rain cap to be subject to an AMR. The rain cap appears to provide a pressure boundary. Unit 2 LRA Table 2.3.3-36 and Unit 3 LRA Table 2.3.3-41 do not list rain cap as a component type requiring an AMR. In RAI 2.3.3.37-1A, dated June 9, 2004, the staff requested the applicant to explain whether the rain cap was included with another component type or to explain its exclusion from the scope of license renewal.

In its response dated July 26, 2004, the applicant stated that the subject rain cap, shown on the SBO diesel generator system license renewal drawing, is an integral part of the exhaust silencer. The exhaust silencer with the integral rain cap is within the scope of license renewal and included in the component type, "Silencers," in Unit 2 LRA Table 2.3.3-36 and Unit 3 LRA Table 2.3.3-41.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.37-1A acceptable, because the rain cap was identified. The staff concludes that the rain cap was scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.37-1A is resolved.

The Millstone Unit 3 FSAR states that all safety-related lines or valves, which are subject to freezing, are electrically heat-traced and insulated. A license renewal drawing for the SBO fuel oil system shows a line going from the fuel oil storage tank to the fuel oil day tank that is within the scope of license renewal. It appears that the line in question is insulated. Thermal insulation is not listed as within the scope of license renewal and subject to an AMR for any Unit 2 or Unit 3 systems, nor is it discussed in the Unit 2 or Unit 3 LRA. In RAI 2.3.3.37-2A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of pipe insulation from the scope of license renewal.

In its response dated July 26, 2004, the applicant stated that the subject fuel line is heat-traced and thermally insulated. This insulation does not perform an intended function since the effectiveness of the heat trace system on the fuel temperatures in the subject fuel line and fuel tank is monitored. In the event of low fuel temperatures, a heat-trace trouble alarm is activated in the control room. Insulation-related problems would be rapidly identified and repaired. Therefore, the applicant concluded that the thermal insulation is not within the scope of license renewal.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.37-2A acceptable based on operator actions to respond to a heat-trace trouble alarm and initiate the subsequent corrective actions. The ability of the system's temperature monitoring instrumentation to localize a low temperature along the length of the piping would allow differentiation between thermal insulation or heat-trace circuit problems. Therefore, the cause of the trouble alarm would be localized such that identification and appropriate repair would be made before loss of system-level intended function would occur. Therefore, the staff's concern described in RAI 2.3.3.37-2A is resolved.

2.3A.3.37.3 Conclusion

The staff reviewed the LRA and the accompanying scoping boundary drawings, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the SBO diesel generator system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the SBO diesel generator system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.38 Security System

2.3A.3.38.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.38, the applicant described the security system. The Millstone security system is a shared system that provides intended functions for both Millstone Unit 2 and Millstone Unit 3. Since this is a shared system, this section is duplicated in the Millstone Unit 3 license renewal application.

The security system provides yard lighting, and backup electrical power for yard lighting, in support of fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides filtration

In LRA Table 2.3.3-37, the applicant identified the following security system component types that are within the scope of license renewal and subject to an AMR: coolers; diesel fuel oil storage tank; fan/blower housings; filter/strainers; heaters; oil pans; pipe; pumps; radiators; tubing; and valves.

2.3A.3.38.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.38. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.38.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the security system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the security system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.39 Clean Liquid Waste Processing System

2.3A.3.39.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.39, the applicant described the clean liquid waste processing system. The clean liquid waste processing system collects, stores, processes, recycles, and disposes of liquid radioactive waste.

The clean liquid waste processing system provides pressure boundary integrity and isolation for the containment and interfacing safety-related systems, and RG 1.97 safety-related indications. The clean liquid waste processing system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The clean liquid waste processing system also contains environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity

In LRA Table 2.3.3-38, the applicant identified the following clean liquid waste processing system component types that are within the scope of license renewal and subject to an AMR: degasifier after cooler; degasifier effluent cooler; degasifier preheater; flow elements; primary drain tank and quench tank cooler; pipe; primary drain tank; pumps; strainers; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the clean liquid waste processing system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the clean liquid waste processing system:

- conductivity element
- degasifiers
- degasifier vent condenser
- equipment drain sump tank
- flexible hose
- flow indicator

2.3A.3.39.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.39 and Millstone FSAR Section 11.1.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.39 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 its review, the staff noted that a license renewal drawing for the clean liquid waste processing system shows that the license renewal system boundary extends to another drawing that was not provided in the LRA. The piping at this location is shown to extend to the pre-degasifier filter. Degasifier components are listed in LRA Table 2.3.3-38 as being within the scope of license renewal and subject to an AMR. In order for the staff to complete its review, more information was necessary to ensure that all the components performing the system-level intended functions were included within the scope of license renewal. In RAI 2.3.3.39-1A, dated June 9, 2004, the staff requested the applicant to supply the drawing that contains the remainder of the clean liquid waste processing system.

In its response, dated July 26, 2004, the applicant stated that the license renewal boundary of the clean liquid waste processing system does not extend to other drawings. The highlighted portion of the clean liquid waste processing system piping stops at a "T" junction before leaving its license renewal drawing. The applicant further stated that this is consistent with the drawing highlighting convention described in LRA Section 2.1.5.1 for identifying components for inclusion within the scope of license renewal for 10 CFR 54.4(a)(2). The "T" junction is an identifiable component on the drawing that is known to be outside the area of concern for spatially oriented NSR components near safety-related components.

The staff finds the applicant's response to RAI 2.3.3.39-1A acceptable, because the applicant verified that all the components within the license renewal system evaluation boundary for the clean liquid waste processing system have been shown on its license renewal drawing. The staff concludes that all components of the clean liquid waste processing system were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.39-1A is resolved.

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the clean liquid waste processing system is acceptable.

2.3A.3.39.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the clean liquid waste processing system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the clean liquid waste processing system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.40 Gaseous Waste Processing System

2.3A.3.40.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.40, the applicant described the gaseous waste processing system. The gaseous waste processing system processes and controls the release of potentially radioactive waste gases.

The gaseous waste processing system provides pressure boundary integrity and isolation for the containment and interfacing safety-related systems, and provides RG 1.97 safety-related indications. The gaseous waste processing system also contains environmental qualification components.

Intended functions within the scope of license renewal include providing a pressure boundary.

In LRA Table 2.3.3-39, the applicant identified the following gaseous waste processing system component types that are within the scope of license renewal and subject to an AMR: aftercoolers; pipe; valves; and waste gas compressor seal coolers.

2.3A.3.40.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.40 and Millstone FSAR Section 11.1.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.3.40.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the gaseous waste processing system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the gaseous waste processing system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.41 Post-Accident Sampling System

2.3A.3.41.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.41, the applicant described the post-accident sampling system. The post-accident sampling system is designed to obtain samples of the reactor coolant, the containment sump fluid, and the containment atmosphere under accident conditions.

The post-accident sampling system provides the capability to obtain a post-accident sample of the containment atmosphere and the primary coolant. The post-accident sampling system contains NSR components essential for the operation of the system and components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity
- provides filtration

In LRA Table 2.3.3-40, the applicant identified the following post-accident sampling system component types that are within the scope of license renewal and subject to an AMR: accumulators; bolting; filter/strainers; flow elements; pumps; reservoir; sample chambers; tubing; and valves.

2.3A.3.41.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.41 and Millstone FSAR Section 9.6.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.41 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 RAI as discussed below.

In its review, the staff noted that a license renewal drawing for the post-accident sampling system shows pH probes, nitrogen gas bottles, nitrogen gas flasks, and other unidentified components shown as being within the scope of license renewal and subject to an AMR. The components do not appear as component types in LRA Table 2.3.3-40. Therefore the staff was not able to ensure that LRA Table 2.3.3-40 is complete. In RAI 2.3.3.41-1A, dated June 9, 2004, the staff requested the applicant to define where these components are included in LRA Table.

In its response, dated July 26, 2004, the applicant supplied a table that defined each of the unidentified components and stated where each was represented in the component types on LRA Table 2.3.3-40. The applicant further stated that the some of the components are penetration points and are included in the commodity group, "Panels and Cabinets," in LRA Table 2.4.2-25. Additionally, the gas bottle has been determined to be a short-lived component.

The staff finds the applicant's response to RAI 2.3.3.41-1A acceptable, because the unidentified components were adequately identified and shown where they appeared in LRA tables for screening results as applicable. The staff concludes that the post-accident sampling system components in question were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.41-1A is resolved.

Another license renewal drawing for the post-accident sampling system depicts temperature measuring components. Sensing devices connected to these instruments denote either a thermowell or a resistance bulb and head suitable for use with a secondary instrument, indicating that the instruments form part of the pressure boundary for the post-accident sampling system. In RAI 2.3.3.41-2A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the pressure retaining components from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that one type of temperature measuring components in question is a surface-mounted temperature detector that does not penetrate the system pressure boundary and is therefore not within the scope of license renewal. However, another type of temperature measuring component is installed in a tubing tee-fitting which does provide a pressure boundary function and is therefore within the scope of license renewal. The applicant further stated that tubing fittings are represented by the component type, "Tubing," in LRA Table 2.3.3-40.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.41-2A acceptable, because the applicant adequately identified the types of temperature measuring components in the post-accident sampling system and specified how they were represented in LRA Table 2.3.3-40. The staff concludes that the post-accident sampling system temperature measuring components were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.41-2A is resolved.

2.3A.3.41.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the post-accident sampling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the post-accident sampling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.42 Station Sumps and Drains System

2.3A.3.42.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.42, the applicant described the station sumps and drains system. The station sumps and drains system removes wastewater from various buildings and locations via floor drains, drain headers, and sump tanks. The system collects both radioactive and non-radioactive waste water and discharges directly to either the liquid waste system or to the yard drainage system.

The station sumps and drains system provides containment pressure boundary integrity, isolation between the emergency diesel generator rooms, and RG 1.97 safety-related indications. The station sumps and drains system provides both flood protection for safety-related areas and provides loop seals to maintain ventilation zone separation. The system also contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The station sumps and drains system contains environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- provides a protective barrier for internal/external flooding events

In LRA Table 2.3.3-41, the applicant identified the following station sumps and drains system component types that are within the scope of license renewal and subject to an AMR: pipe; pumps; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the station sumps and drains system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the station sumps and drains system:

- collection section tank
- flow indicators
- filter

2.3A.3.42.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.42. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the aerated liquid radwaste system is acceptable.

2.3A.3.42.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the station sumps and drains system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the station sumps and drains system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.43 Aerated Liquid Radwaste System

2.3A.3.43.1 *Summary of Technical Information in the Application*

The aerated liquid radwaste system is an NSR system that was previously excluded from the scope of license renewal. As a result of the revised scoping methodology set forth in the applicant's November 9, 2004, RAI response, the applicant added portions of the aerated liquid radwaste system that could spatially interact with safety-related SSCs. The applicant provided descriptions of the systems that were added to the scope of license renewal in response to RAI 2.1-1 in its December 3, 2004, RAI response.

The applicant stated that the aerated liquid radwaste system provides controlled handling, processing, monitoring, and disposal of low-level radioactive liquids that are collected by open drains in the plant. It is a non-safety, low-energy system that contains components that have been identified to affect a function of a safety-related system due to the proximity of this system to the safety-related system. Additional details of the aerated liquid radwaste system can be found in FSAR Section 11.1.3.

In accordance with the revised scoping methodology, the applicant identified the following component types for the aerated liquid radwaste system as being within the scope of license renewal and subject to an AMR:

- conductivity element
- flow elements
- flow indicators
- pipe
- pumps
- tubing
- valves

2.3A.3.43.2 Staff Evaluation

The staff reviewed the information that the applicant provided in the November 9, 2004, response along with the clarifications added in the December 3, 2004, response for the aerated liquid radwaste system using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with guidance described in SRP-LR Section 2.3.

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

2.3A.3.43.3 Conclusion

Based on its review of the RAI responses, FSAR Section 11.1.3, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the aerated liquid radwaste system. Therefore, the staff concludes that the applicant adequately identified the aerated liquid radwaste system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the aerated liquid radwaste system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.44 Solid Waste Processing System

2.3A.3.44.1 Summary of Technical Information in the Application

The solid waste processing system is an NSR system that was previously excluded from the scope of license renewal. As a result of the revised scoping methodology set forth in the applicant's November 9, 2004, RAI response, the applicant added portions of the solid waste processing system that could spatially interact with safety-related SSCs. The applicant provided descriptions of the systems that were added to the scope of license renewal in response to RAI 2.1-1 in its December 3, 2004, RAI response.

In its December 3, 2004, RAI response, the applicant stated that the solid waste processing system provides controlled handling, processing, monitoring, and packaging of radioactive-spent resins, from demineralizers and ion exchangers, and radioactive filter cartridges generated during plant operation. The system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SCC. Additional details of the solid waste processing system can be found in FSAR Section 11.1.5.

In accordance with the revised scoping methodology, the applicant identified the following component types for the solid waste processing system as being within the scope of license renewal and subject to an AMR:

- flow indicators

- pipe
- pumps
- spent resin fill head tank
- tubing
- valves

2.3A.3.44.2 Staff Evaluation

The staff reviewed the information that the applicant provided in its RAI responses dated November 9, 2004, and December 3, 2004, for the solid waste processing system using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions for the solid waste processing system in accordance with the requirements of 10 CFR 54.4(a), to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 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 did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3A.3.44.3 Conclusion

Based on its review of the information that the applicant provided in the responses dated November 9, 2004, and December 3, 2004, FSAR Section 11.1.5, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the solid waste processing system. Therefore, the staff concludes that the applicant adequately identified the solid waste processing system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the solid waste processing system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.45 Turbine Building Closed Cooling Water System

2.3A.3.45.1 Summary of Technical Information in the Application

The turbine building closed cooling water system (TBCCW) is an NSR system that was previously excluded from the scope of license renewal. As a result of the revised scoping methodology set forth in the applicant's November 9, 2004, RAI response, the applicant added portions of the TBCCW that could spatially interact with safety-related SSCs. The applicant provided descriptions of the systems that were added to the scope of license renewal in response to RAI 2.1-1 in its December 3, 2004, RAI response.

The applicant stated that the TBCCW system is a closed-loop cooling water system that transfers heat from NSR turbine plant components and sample coolers to the SW system, via the TBCCW heat exchangers. The system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SCC. Additional details of the TBCCW system can be found in FSAR Section 9.7.3.

In accordance with the revised scoping methodology, the applicant in Attachment 1 identified the following component types for the TBCCW system as being within the scope of license renewal and subject to an AMR:

- chemical addition tank
- chiller condensers tubes
- exciter air coolers tubes
- flexible hoses
- flow elements
- flow indicators
- flow orifices
- pipe
- TBCCW pumps
- spent fuel pool area supplemental cooling heat exchangers tubes
- TBCCW heat exchangers channel heads
- TBCCW heat exchangers shell
- TBCCW heat exchangers tubes
- TBCCW heat exchangers tubesheet
- tubing
- valves

2.3A.3.45.2 Staff Evaluation

The staff reviewed the information that the applicant provided in the November 9, 2004, and December 3, 2004, RAI responses for the TBCCW system using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

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

2.3A.3.45.3 Conclusion

Based on its review of the information that the applicant provided in the responses dated November 9, 2004, and December 3, 2004, FSAR Section 9.7.3, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the TBCCW system. Therefore, the staff concludes that the applicant adequately identified the TBCCW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the TBCCW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.3.46 Water Box Priming System

2.3A.3.46.1 Summary of Technical Information in the Application

The water box priming system is an NSR system that was previously excluded from the scope of license renewal. As a result of the revised scoping methodology set forth in the applicant's November 9, 2004, RAI response, the applicant added portions of the water box priming system that could spatially interact with safety-related SSCs. The applicant provided descriptions of the systems that were added to the scope of license renewal in response to RAI 2.1-1 in its December 3, 2004, RAI response.

The applicant stated that the water box priming system provides a vacuum source for priming the condenser water boxes in order to keep the condenser tubes full of water. The system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SCC.

In accordance with the revised scoping methodology, the applicant identified the following component types for the water box priming system as being within the scope of license renewal and subject to an AMR:

- filters/strainers
- flow orifices
- flow switches
- pipe
- valves

2.3A.3.46.2 Staff Evaluation

The staff reviewed the information that the applicant provided in the November 9, 2004, and December 3, 2004, RAI responses for the water box priming system using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the November 9, 2004, RAI response, along with the clarifications added in the December 3, 2004, RAI response for the water box priming system in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as being within the scope of license renewal to verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3A.3.46.3 Conclusion

During its review of the information that the applicant provided in the responses dated November 9, 2004, and December 3, 2004, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the water box priming system. Therefore, the staff concludes that the applicant adequately identified the water box priming system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the water box priming system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4 Steam and Power Conversion Systems

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

The applicant described the supporting structures and components of the steam and power conversion systems in the following sections of the LRA:

- 2.3.4.1 main steam system
- 2.3.4.2 extraction steam system
- 2.3.4.3 feedwater system
- 2.3.4.4 condensate system
- 2.3.4.5 condensate storage and transfer system
- 2.3.4.6 condensate demin mixed bed system
- 2.3.4.7 auxiliary feedwater system
- 2.3.4.8 feedwater heater vents and drains system
- 2.3.4.9 moisture separation and reheat system
- 2.3.4.10 plant heating and condensate recovery system
- 2.3.4.11 secondary chemical feed system
- 2.3.4.12 turbine gland sealing system

The corresponding subsections of this SER (2.3A.4.1 - 2.3A.4.12, respectively) present the staff's related review findings.

2.3A.4.1 Main Steam System

2.3A.4.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.1, the applicant described the main steam system. The main steam system transports steam from the steam generators to the turbine-generator. This system also provides a means of controlled heat release from the nuclear steam supply system during periods of station electrical load rejection or when the condenser is not available. The system provides steam for various auxiliary services including the steam generator auxiliary feedwater pump turbine, turbine gland sealing, and auxiliary steam.

The main steam system provides a steam flow path to remove heat from the reactor coolant system (RCS), overpressure protection for the steam generators, steam to the steam generator auxiliary feedwater pump turbine, isolation at system interfaces, containment pressure boundary integrity, and RG 1.97 safety-related indications. The main steam system also prevents uncontrolled blowdown of more than one steam generator following a main steam line break (MSLB), limits the maximum steam flow rate from a faulted steam generator, and provides steam generator isolation. The main steam system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC and NSR components credited for mitigating a HELB outside containment. The system also provides environmental qualification components and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity
- provides structural and/or functional support related to mechanical components
- provides filtration

In LRA Table 2.3.4-1, the applicant identified the following main steam system component types that are within the scope of license renewal and subject to an AMR: condensing pots; expansion joints; flexible hoses; flow elements; flow orifices; moisture separators/reheaters; pipe; quench tank heat exchangers; silencers; steam traps; strainers; tubing; turbine casings; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the main steam system. In its December 3, 2004, RAI response, the applicant identified the steam generator blowdown tank component type that was added to the scope of the main steam system.

2.3A.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.1 and Millstone FSAR Sections 7.2.3, 7.5.6, 10.3, 10.4.5, 10.4.6, and 14.0. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the main steam system is acceptable.

2.3A.4.1.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the main steam system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the main steam system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.2 Extraction Steam System

2.3A.4.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.2, the applicant described the extraction steam system. The extraction steam system provides steam from the main steam system to the feedwater heaters to improve plant efficiency.

The extraction steam system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-2, the applicant identified the following extraction steam system component types that are within the scope of license renewal and subject to an AMR: expansion joints; pipe; steam traps; strainers; tubing; and valves.

2.3A.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.2 and Millstone FSAR Sections 10.1 and 10.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.4.2.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the extraction steam system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the extraction steam system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.3 Feedwater System

2.3A.4.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.3, the applicant described the feedwater system. The feedwater system heats and supplies condensate-quality water to the secondary-side of the steam generators to support heat removal from the RCS. A portion of the system provides the flowpath for auxiliary feedwater flow to the steam generators.

The feedwater system provides a flow path for auxiliary feedwater to the steam generators, containment pressure boundary integrity, and RG 1.97 safety-related indications. The feedwater system provides isolation of feed flow in the response to an MSLB and the system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system also contains NSR components credited with mitigating the effects of a HELB. The system contains environmental qualification components and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity

In LRA Table 2.3.4-3, the applicant identified the following feedwater system component types that are within the scope of license renewal and subject to an AMR: flow elements; flow orifices; heaters; pipe; pumps; tubing; and valves.

2.3A.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.3 and Millstone FSAR Sections 10.1, 10.4, and 14.8.2.1.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.4.3.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the feedwater system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the feedwater system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.4 Condensate System

2.3A.4.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.4, the applicant described the condensate system. The condensate system provides condensate flow from the main condenser to the suction of the feedwater pumps and provides feedwater heating to improve plant efficiency.

The condensate system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-4, the applicant identified the following condensate system component types that are within the scope of license renewal and subject to an AMR: condensers; drains coolers; expansion joints; flow elements; flow orifices; heat exchanger steam jet air ejectors; heaters; pipe; pumps; steam packing exhauster; tubing; and valves.

2.3A.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.4 and Millstone FSAR Sections 10.1, 10.4, and 14.8.2.1.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.4 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 RAI as discussed below.

In its review, the staff noted that a license renewal drawing for the condensate system shows low-pressure main turbine exhaust hoods and the main condensers into which they exhaust as within the scope of license renewal and subject to an AMR. However, LRA Table 2.3.4-4 did not list exhaust hoods as a component type subject to an AMR. In RAI 2.3.4.4-1A, dated June 9, 2004, the staff requested the applicant to confirm that the low-pressure main turbine exhaust hoods are included with the components listed in LRA Table 2.3.4-4.

In its response, dated July 26, 2004, the applicant stated that the low-pressure main turbine exhaust hoods shown on the license renewal drawing for the condensate system are included in the component type, "Condensers," in LRA Table 2.3.4-4.

The staff finds the applicant's response to RAI 2.3.4.4-1A acceptable, because the low-pressure main turbine exhaust hoods were considered part of the component type, "Condensers," in LRA Table 2.3.4-4. The staff concludes that the low-pressure main turbine exhaust hoods in the condensate system were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.4.4-1A is resolved.

Another license renewal drawing for the condensate system shows an analysis sample nozzle as within the scope of license renewal and subject to an AMR. However, this component was not listed in LRA Table 2.3.4-4 as a component type requiring an AMR. In RAI 2.3.4.4-2A, dated June 9, 2004, the staff requested the applicant to confirm that the analysis sample nozzle is included with the components listed in LRA Section 2.3.4-4.

In its response, dated July 26, 2004, the applicant stated that the analysis sample nozzle shown on license renewal drawing 25203-LR26005, sheet 1 (location B-9), for the condensate system is included in the component type, "Pipe," in LRA Table 2.3.4-4.

The staff finds the applicant's response to RAI 2.3.4.4-2A acceptable, because the analysis sample nozzle was considered part of the component type, "Pipe," in LRA Table 2.3.4-4. The staff concludes that the analysis sample nozzle in the condensate system was scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.4.4-2A is resolved.

Another license renewal drawing for the condensate system shows a water trough as within the scope of license renewal and subject to an AMR. However, this component was not listed in LRA Table 2.3.4-4 as a component type requiring an AMR. In RAI 2.3.4.4-3A, dated June 9, 2004, the staff requested the applicant to confirm that the "water trough" is included with the components listed in LRA Table 2.3.4-4.

In its response, dated July 26, 2004, the applicant stated that the water trough shown on the license renewal drawing for the condensate system was inadvertently highlighted and is not within the scope of license renewal. Therefore, it is not listed in LRA Table 2.3.4-4.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.4-3A acceptable, because the water trough was highlighted in error and is not within the scope of license renewal and therefore does not need to appear in LRA Table 2.3.4-4. Therefore, the staff's concern described in RAI 2.3.4.4-3A is resolved.

2.3A.4.4.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the condensate system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the condensate system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.5 Condensate Storage and Transfer System

2.3A.4.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.5, the applicant described the condensate storage and transfer system. The condensate storage and transfer system provides the missile-protected water source for the auxiliary feedwater pumps.

The condensate storage and transfer system provides a protected water source for the auxiliary feedwater pumps and RG 1.97 safety-related indications. The condensate storage and transfer system contains NSR components credited with mitigating the effects of a HELB. The system supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- restricts flow

In LRA Table 2.3.4-5, the applicant identified the following condensate storage and transfer system component types that are within the scope of license renewal and subject to an AMR: condensate storage tank; pipe; rupture disks; siphon breaker; tubing; and valves.

2.3A.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.5 and Millstone FSAR Sections 10.1 and 10.4.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.5 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 RAI as discussed below.

The FSAR states that the condensate storage tank is equipped with a recirculation heating subsystem to prevent freezing within the tank during cold weather. The components of this subsystem located outside the tank were shown to be outside the scope of license renewal in a license renewal drawing for the condensate storage and transfer system. The condensate storage tank is within the scope of license renewal because it provides a protected water source for the auxiliary feedwater pumps. Since the presence of ice in the condensate storage tank has the potential of hampering flow to the auxiliary feedwater pumps, the recirculation heating subsystem should be within the scope of license renewal. In RAI 2.3.4.5-1A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the recirculation heating subsystem components located outside the condensate storage tank from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that although the condensate storage tank is provided with a recirculation heating subsystem, the installed low-temperature alarm and associated actions initiated in response to the alarm, together with the thermal inertia associated with such a large tank, provide assurance that freezing of the tank contents will not occur. Therefore, the applicant stated that the condensate storage tank recirculation heating subsystem is not required for the tank to perform its intended function and it is not within the scope of license renewal.

The staff finds the applicant's response to RAI 2.3.4.5-1A acceptable, because the applicant's explanation of the condensate storage tank low-temperature alarm and associated actions to ensure that condensate storage tank contents not freeze was adequate. Therefore, the staff agrees that the recirculation heating subsystem is not within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.4.5-1A is resolved.

The FSAR states that the condensate storage tank discharges are protected by screens that will prevent the blockage of flow to the auxiliary feedwater pumps in the event of a postulated free-falling fragment caused by a missile impacting the tank. However, the license renewal drawing for the condensate storage and transfer system does not show the existence of screens at the two condensate storage tank discharges, nor did LRA Table 2.3.4.5 include screens as a component type subject to an AMR. These screens should be within the scope of license renewal because they ensure unrestricted flow to the auxiliary feedwater pumps. In RAI 2.3.4.5-2A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the screens located at the discharge piping in the condensate storage tank from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the internal screens described in the FSAR are within the scope of license renewal. The screens were evaluated as an integral part of the condensate storage tank and are not listed separately in LRA Table 2.3.4.5.

The staff finds the applicant's response to RAI 2.3.4.5-2A acceptable, because the applicant's explanation that the condensate storage tank discharge screens were within the scope of license renewal and subject to an AMR was adequate. Therefore, the staff's concern described in RAI 2.3.4.5-2A is resolved.

In its review, the staff noted that the license renewal drawing for the condensate storage and transfer system shows a series of 1-inch pipes located inside the condensate storage tank. The piping is shown outside the scope of license renewal. However it is part of the nitrogen sparger system used to lower the oxygen concentration in the tank. A potential failure and possible fragmentation of this piping could introduce a source of flow blockage to the auxiliary feedwater pumps and therefore should be within the scope of license renewal and subject to an AMR. In RAI 2.3.4.5-3A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the nitrogen sparger piping located inside the condensate storage tank from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the nitrogen sparger lines internal to the condensate storage tank are not within the scope of license renewal. The screens that are within the scope of license renewal are installed to protect the tank discharge piping leading to the auxiliary feedwater pumps. Therefore, the applicant stated that failure of the internal nitrogen piping will not impede the operation of the auxiliary feedwater pumps.

The staff finds the applicant's response to RAI 2.3.4.5-3A acceptable, because the applicant's explanation that the condensate storage tank discharge screens that are within the scope of license renewal protect the auxiliary feedwater pump suction from debris, including that caused by failure of nitrogen sparger piping, was adequate. Therefore, the staff's concern described in RAI 2.3.4.5-3A is resolved.

2.3A.4.5.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the condensate storage and transfer system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the condensate storage and transfer system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.6 Condensate Demin Mixed Bed System

2.3A.4.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.6, the applicant described the condensate demin mixed bed system. The condensate demin mixed bed system is used to maintain secondary system water chemistry.

The condensate demin mixed bed system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-6, the applicant identified the following condensate demin mixed bed system component types that are within the scope of license renewal and subject to an AMR: pipe; tubing; and valves.

2.3A.4.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.6 and Millstone FSAR Sections 10.1 and 10.4.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.4.6.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the condensate demin mixed bed system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the condensate demin mixed bed system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.7 Auxiliary Feedwater System

2.3A.4.7.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.7, the applicant described the auxiliary feedwater system. The auxiliary feedwater system provides a supply of feedwater to the secondary-side of the steam generators for RCS heat removal if normal feedwater flow is unavailable. The system consists of two motor-driven pumps powered from the emergency busses, and a steam turbine-driven pump that provides feedwater flow upon a loss of all AC power. The normal source of water to the auxiliary feedwater pumps is the condensate storage tank in the condensate storage and transfer system. The fire protection system can provide an alternate source of water to the pumps.

The auxiliary feedwater system provides feedwater to the steam generators for removal of sensible and decay heat from the RCS, isolation of auxiliary feedwater flow to a faulted or ruptured steam generator, auxiliary feedwater flow limitation to prevent pump runout, and RG

1.97 safety-related indications. The auxiliary feedwater system contains NSR components that mitigate the effects of a HELB outside containment. The system provides environmental qualification components and supports fire protection, anticipated transient without scram, and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- restricts flow

In LRA Table 2.3.4-7, the applicant identified the following auxiliary feedwater system component types that are within the scope of license renewal and subject to an AMR: flow elements; flow orifices; pipe; pumps; tubing; turbine casings; and valves.

2.3A.4.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.7 and Millstone FSAR Sections 7.9 and 10.4.5 The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.4.7.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the auxiliary feedwater system components that are 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 components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.8 Feedwater Heater Vents and Drains System

2.3A.4.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.8, the applicant described the feedwater heater vents and drains system. The feedwater heater vents and drains system collects condensed extraction steam drains and provides a flowpath to the condenser for steam vents from the shell-side of the feedwater heaters.

The feedwater heater vents and drains system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-8, the applicant identified the following feedwater heater vents and drains system component types that are within the scope of license renewal and subject to an AMR: condensing pots; expansion joints; flow elements; flow orifices; gland seal coolers; heater drains tank; level indicators; pipe; pumps; restricting orifices; tubing; and valves.

2.3A.4.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.8 and Millstone FSAR Sections 10.1 and 10.4.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.4.8.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the feedwater heater vents and drains system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the feedwater heater vents and drains system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.9 Moisture Separation and Reheat System

2.3A.4.9.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.9, the applicant described the moisture separation and reheat system. The moisture separation and reheat system removes entrained moisture from the high-pressure turbine exhaust steam and provides superheated steam to the low-pressure turbine inlets.

The moisture separation and reheat system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-9, the applicant identified the following moisture separation and reheat system component types that are within the scope of license renewal and subject to an AMR: condensing pots; drain pots; drain tanks; flow elements; pipe; tubing; and valves.

2.3A.4.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.9 and Millstone FSAR Sections 10.1, 10.2, and 10.4.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.4.9.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the moisture separation and reheat system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the moisture separation and reheat system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.10 Plant Heating and Condensate Recovery System

2.3A.4.10.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.10, the applicant described the plant heating and condensate recovery system. The plant heating and condensate recovery system provides low-pressure steam for various plant loads and collects the condensed steam drains for reprocessing.

The plant heating and condensate recovery system provides detection and isolation of a HELB in the steam portion of the system and provides a pressure boundary for the reactor building closed cooling water system. The plant heating and condensate recovery system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system contains environmental qualification components and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-10, the applicant identified the following plant heating and condensate recovery system component types that are within the scope of license renewal and subject to an AMR: heating and ventilation units; heating coils; pipe; reservoir; sample coolers; steam traps; strainers; tubing; and valves.

2.3A.4.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.10 and Millstone FSAR Section 9.13.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.10 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 its review, the staff noted that a license renewal drawing for the plant heating and condensate recovery system does not show the refueling water storage tank (RWST) heat exchanger and attached piping as part of the evaluation boundary. A potential leak in this heat exchanger or the attached piping inside of the RWST could potentially reduce the boron concentration in the tank and thereby impact the safe shutdown boric acid requirements. Therefore, the staff concluded that this heat exchanger and the attached piping inside of the RWST has a passive pressure boundary function. In RAI 2.3.4.10-1A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the RWST heating system from the scope of license renewal.

In its response, dated July 26, 2004, the applicant stated that the RWST fluid temperature is maintained within requirements by the subject heat exchanger. RWST fluid is on the tube-side of the heat exchanger and heating is provided by plant auxiliary steam on the shell-side. The normal pressure of the shell-side of the heat exchanger is less than that of the RWST fluid on the tube-side such that any tube leakage would be expected to be from the tubes into the shell. Operating experience with past heat exchanger tube leakage confirms that leakage has been from the tube-side to the shell-side of the heat exchanger. In the event that steam pressure were to be higher than tube-side fluid pressure, the steam environment would result in limited leakage of liquid volume into the RWST such that significant dilution of the greater than 420,000-gallon volume of borated water in the tank would not be expected. In addition, drainage of the RWST below the minimum required volume, due to heat exchanger tube leakage, is prevented by a siphon breaker in the supply line internal to the tank. Therefore, the applicant concluded that since the failure of the RWST heat exchanger cannot have a significant effect on the boron concentration of its contents or the level of the tank, the heat exchanger was not included within the scope of license renewal for boron dilution concerns. In addition, the piping internal to the RWST and the siphon breaker are included within the scope of RWST and are subject to an AMR.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.10-1A acceptable, because the applicant's explanation that the RWST heating system could not result in a dilution event or loss of inventory due to a piping failure was adequate. Further, the applicant explained that piping and the siphon breaker internal to the RWST are within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.3.4.10-1A is resolved.

2.3A.4.10.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the plant heating and condensate recovery system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the plant heating and condensate recovery system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.11 Secondary Chemical Feed System

2.3A.4.11.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.11, the applicant described the secondary chemical feed system. The secondary chemical feed system provides the capability to inject chemicals into the secondary cycle flowstream to maintain water chemistry within desired limits.

The secondary chemical feed system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-11, the applicant identified the following secondary chemical feed system component types that are within the scope of license renewal and subject to an AMR: tubing; and valves.

2.3A.4.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.11 and Millstone FSAR Section 10.4.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3A.4.11.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the secondary chemical feed system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the secondary chemical feed system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.12 Turbine Gland Sealing System

2.3A.4.12.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.12, the applicant described the turbine gland sealing system. The turbine gland sealing system provides low-pressure steam for sealing the turbine shaft casing penetrations and valve stem packing glands from air in-leakage or steam out-leakage.

The turbine gland sealing system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-12, the applicant identified the following turbine gland sealing system component types that are within the scope of license renewal and subject to an AMR: flow orifices; pipe; tubing; valves; and water pot.

2.3A.4.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.12 and Millstone FSAR Sections 10.2 and 10.4.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.12 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

Specifically, the staff noted that the license renewal drawing shows two plugs as not being within the scope of license renewal. The plugs are on the gland seal piping coming to the steam packing exhauster. The staff determined that the piping to which the plugs are attached is within the scope of renewal because it meets 10 CFR 54.4(a)(2). Failure of the plugs may have the same effect as failure of the piping. Therefore, in RAI 2.3.4.12-1A, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the plugs from the scope of license renewal.

In its response, dated July 26, 2004, the applicant stated that the subject plugs on license renewal drawing are considered pipe fittings and are within the scope of license renewal, but were inadvertently not highlighted on the license renewal drawing. The applicant further stated the plugs are included in the component type, "Pipe," in LRA Table 2.3.4-12 and are therefore subject to an AMR.

The staff finds the applicant's response to RAI 2.3.4.12-1A acceptable, because the applicant explained that the plugs were within the scope of license renewal and are included in LRA Table 2.3.4-12. Therefore, the staff's concern described in RAI 2.3.4.12-1A is resolved.

2.3A.2.12.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the turbine gland sealing system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the turbine gland sealing system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.13 Auxiliary Steam Reboiler and Deaerating Feedwater System

2.3A.4.13.1 Summary of Technical Information in the Application

The auxiliary steam reboiler and deaerating feedwater system is an NSR system that was previously excluded from the scope of license renewal. As a result of the revised scoping methodology set forth in the applicant's November 9, 2004, RAI response, the applicant added portions of the auxiliary steam reboiler and deaerating feedwater system that could spatially interact with safety-related SSCs. The applicant provided descriptions of the systems that were added to the scope of license renewal in response to RAI 2.1-1 in its December 3, 2004, RAI response.

In the December 3, 2004, RAI response, the applicant stated that the auxiliary steam reboiler and deaerating feedwater system provides a source of auxiliary steam for house heating loads. It is a non-safety, low-energy system that contains components that have been identified to affect a function of a safety-related system due to the proximity of this system to the safety-related system and are attached to safety-related piping. Additional details of the auxiliary steam reboiler and deaerating feedwater system can be found in FSAR Section 10.3.1.1.

In accordance with the revised scoping methodology, the applicant identified the following component types for the auxiliary steam reboiler and deaerating feedwater system as falling within the scope of license renewal and subject to an AMR:

- auxiliary steam feedwater surge tank
- pipe
- sample coolers
- valves

2.3A.4.13.2 Staff Evaluation

The staff reviewed the information that the applicant provided its November 9, 2004, and December 3, 2004, RAI responses for the auxiliary steam reboiler and deaerating feedwater system using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the November 9, 2004, and December 3, 2004, submittals for the auxiliary steam reboiler and deaerating feedwater system in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as being within the scope of license renewal to verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3A.4.13.3 Conclusion

Based on its review of the supplemental information that the applicant provided in its responses dated November 9, 2004, and December 3, 2004, FSAR Section 10.3.1.1, and licensing basis information; the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the auxiliary steam reboiler and deaerating feedwater system. Therefore, the staff concludes that the applicant adequately identified the auxiliary steam reboiler and deaerating feedwater system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the auxiliary steam reboiler and deaerating feedwater system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.14 Exciter Air Cooler System

2.3A.4.14.1 Summary of Technical Information in the Application

The exciter air cooler system is an NSR system that was previously excluded from the scope of license renewal. As a result of the revised scoping methodology set forth in the applicant's November 9, 2004, RAI response, the applicant added portions of the exciter air cooler system that could spatially interact with safety-related SSCs. The applicant provided descriptions of the systems that were added to the scope of license renewal by response dated December 3, 2004.

In the December 3, 2004, RAI response, the applicant stated that the exciter air cooler system provides air cooling to the main generator exciter and isophase bus duct. Turbine building component cooling water serves as the heat sink for the system. Heat transfer occurs in the isolated phase bus cooler. It is a non-safety, low-energy system that contains components that have been identified to affect a function of a safety-related system due to the proximity of this system to the safety-related system. Additional details of the exciter air cooler system can be found in FSAR Sections 9.7.3.2.1 and 10.2.

In accordance with the revised scoping methodology, the applicant identified the main transformer and generator isophase bus duct cooling exchangers coils as the one component type for the exciter air cooler system as being within the scope of license renewal and subject to an AMR.

2.3A.4.14.2 Staff Evaluation

The staff reviewed the information that the applicant provided in the November 9, 2004, and December 3, 2004, RAI responses for the exciter air cooler system using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the November 9, 2004, and December 3, 2004, RAI responses for the exciter air cooler system in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as being within the scope of license renewal to verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3A.4.14.3 Conclusion

Based on its review of the supplemental information that the applicant provided in the responses dated November 9, 2004, and December 3, 2004, FSAR Sections 9.7.3.2.1 and 10.2, and licensing basis information; the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the exciter air cooler system. Therefore, the staff concludes that the applicant adequately identified the exciter air cooler system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the exciter air cooler system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.15 Stator Liquid Cooler System

2.3A.4.15.1 Summary of Technical Information in the Application

The stator liquid cooler system is an NSR system that was previously excluded from the scope of license renewal. As a result of the revised scoping methodology set forth in the applicant's November 9, 2004, RAI response, the applicant added portions of the stator liquid cooler system that could spatially interact with safety-related SSCs. The applicant provided descriptions of the systems that were added to the scope of license renewal by response dated December 3, 2004.

In the December 3, 2004, response, the applicant stated that the stator liquid cooler system provides a source of cooling to the main generator stator. Turbine building component cooling water serves as the heat sink for the system. It is a non-safety, low-energy system that contains components that have been identified to affect a function of a safety-related system due to the proximity of this system to the safety-related system. Additional details of the stator liquid cooler system can be found in FSAR Sections 9.7.3.2.1 and 10.2.

In accordance with the revised scoping methodology, the applicant, in its November 9, 2004, RAI response, identified the following component types for the stator liquid cooler system as being within the scope of license renewal and subject to an AMR:

- deionizer
- filter/strainers
- flow indicators
- flow orifices
- level indicators
- pipe
- pumps
- stator liquid coolers (channel head)
- stator liquid coolers (shell)
- stator liquid coolers (tube sheet)
- stator liquid cooling water storage tank
- tubing
- valves

2.3A.4.15.2 Staff Evaluation

The staff reviewed the information that the applicant provided in the November 9, 2004, and December 3, 2004, responses for the stator liquid cooler system using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the November 9, 2004, and December 3, 2004, responses for the stator liquid cooler system in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as being within the scope of license renewal to verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3A.4.15.3 Conclusion

Based on its review of the information that the applicant provided in its responses dated November 9, 2004, and December 3, 2004, FSAR Sections 9.7.3.2.1 and 10.2, and licensing basis information; the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the stator liquid cooler system. Therefore, the staff concludes that the applicant adequately identified the stator liquid cooler system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the stator liquid cooler system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.16 Turbine Lube Oil System

2.3A.4.16.1 Summary of Technical Information in the Application

The turbine lube oil system is an NSR system that was previously excluded from the scope of license renewal. As a result of the revised scoping methodology set forth in the applicant's November 9, 2004, RAI response, the applicant added portions of the turbine lube oil system that could spatially interact with safety-related SSCs. The applicant provided descriptions of the systems that were added to the scope of license renewal in response to RAI 2.1-1 in its December 3, 2004, RAI response.

In the December 3, 2004, response, the applicant stated that the turbine lube oil system provides lubricating oil to the main turbine generator bearings. It is a non-safety, low-energy system that contains components that have been identified to affect a function of a safety-related system due to the proximity of this system to the safety-related system. Additional details of the turbine lube oil system can be found in FSAR Section 10.2.

In accordance with the revised scoping methodology, the applicant, in its November 9, 2004, RAI response, identified the following component types for the turbine lube oil system as being within the scope of license renewal and subject to an AMR:

- filter/strainers
- flow indicators
- flow orifices
- level indicators
- pipe
- steam generator feedwater pump lube oil cooler shell
- SGFP turbine lube oil reservoir
- tubing
- valves

2.3A.4.16.2 Staff Evaluation

The staff reviewed the information that the applicant provided in the November 9, 2004, and December 3, 2004, RAI responses for the turbine lube oil system using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the November 9 and December 3, 2004, RAI responses for the turbine lube oil system in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as being within the scope of license renewal to verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3A.4.16.3 Conclusion

Based on its review of the supplemental information that the applicant provided in its responses dated November 9, 2004, and December 3, 2004, FSAR Section 10.2, and licensing basis information; the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the turbine lube oil system. Therefore, the staff concludes that the applicant adequately identified the turbine lube oil system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the turbine lube oil system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3A.4.17 Electro Hydraulic Control System

2.3A.4.17.1 Summary of Technical Information in the Application

The electro hydraulic control system is included in LRA Table 2.2-1 as within the scope of license renewal. However, the applicant under Note 1 to the Table 2.2-1 stated that this system does not contain any mechanical components that require an AMR. Therefore, there was no screening results table and system description for this system in the LRA. Resulting from the revised scoping methodology described in the November 9, 2004, RAI response, the applicant added portions of the electro hydraulic control system that could spatially interact with safety-related SSCs.

The applicant provided the electro hydraulic control systems description and a list of mechanical component types that were added to the scope of license renewal for electro hydraulic control system in its RAI 2.1-1 response, dated December 3, 2004. The applicant stated that the electro hydraulic control system provides high-pressure hydraulic fluid for the operation of the main turbine valves. The electro hydraulic control system provides signals to trip the turbine and provides a signal, which is based on turbine first-stage pressure, to the reactor regulating system as a load reference. It provides turbine-trip signal input to the reactor protection system and is a non-safety, low energy system that contains components that have been identified to affect a function of a safety-related system due to the proximity of this system to the safety-related system. Additional details of the electro hydraulic control system can be found in FSAR Section 10.2.

In the December 3, 2004, response, the applicant identified the following component types that were added to the scope of the electro hydraulic control system due to the changed scoping methodologies:

- filters/strainers
- flexible hoses
- flow indicators

- pipe
- pumps
- tubing
- hydraulic fluid coolers
- valves

2.3A.4.17.2 Staff Evaluation

The staff reviewed the supplemental information that the applicant provided in the November 9, 2004, and December 3, 2004, RAI responses for the electro hydraulic control system using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the November 9 and December 3, 2004, responses for the electro hydraulic control system in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as being within the scope of license renewal to verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3A.4.17.3 Conclusion

Based on its review of the information that the applicant provided in its responses dated November 9, 2004, and December 3, 2004, FSAR Section 10.2, and licensing basis information; the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the electro hydraulic control system. Therefore, the staff concludes that the applicant adequately identified the electro hydraulic control system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the electro hydraulic control system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B Unit 3 System Scoping and Screening Results – Mechanical Systems

2.3B.1 Reactor Coolant System

In LRA Section 2.3B.1, the applicant identified the structures and components of the reactor coolant system (RCS) that are subject to an AMR for license renewal.

The applicant described the supporting structures and components of the reactor coolant system in the following sections of the LRA:

- 2.3.1.1 reactor vessel
- 2.3.1.2 reactor vessel internals
- 2.3.1.3 reactor coolant system
- 2.3.1.4 steam generator

The corresponding subsections of this SER (2.3B.1.1 - 2.3B.1.4, respectively) present the staff's related review findings.

2.3B.1.1 Reactor Vessel

2.3B.1.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.1, the applicant described the reactor vessel. The reactor vessel is a Westinghouse-designed, four-loop pressure vessel consisting of a cylindrical shell with a welded, hemispherical lower head and a flanged, hemispherical upper head. The reactor vessel provides a container for the reactor core and the primary coolant in which the core is submerged.

The reactor vessel directly maintains the RCS pressure boundary and supports and contains the reactor core and core support structures. Additionally, the reactor vessel provides a function that supports pressurized thermal shock.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides structural and/or functional support related to mechanical components

In LRA Table 2.3.1-1 the applicant identified the following reactor vessel component types that are within the scope of license renewal and subject to an AMR: bottom-mounted instrumentation (BMI) flux thimble tubes; BMI guide tubes; bottom head; closure head dome; closure head flange; closure head lifting lugs; closure head stud assembly; core support pads; control rod drive mechanism (CRDM) head penetration nozzle; CRDM head penetration nozzle flange; CRDM pressure housings; head vent pipe; instrument tubes; instrument tubes extension; instrumentation tubes (bottom head); intermediate and lower shell; primary nozzles; primary nozzle safe end; seal table and fittings; upper shell; vessel flange and core support ledge.

2.3B.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.1 and Millstone FSAR Sections 3.9N.4, 4.5.1, 5.1, 5.2, and 5.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.1 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.1.1-1(b), the staff requested the applicant to verify whether nozzle support pads, which are located below the primary nozzles and provide support for the reactor vessel, were included within the scope of license renewal and subject to an AMR, or to provide an explanation for the exclusion. In response, the applicant stated the reactor nozzle support pads are integral with four of the eight primary nozzles and are within the scope of license renewal and subject to aging management review. The nozzle support pads are included in the "Primary Nozzles" subcomponents in LRA Table 2.3.1-1. Based on the inclusion of the above components, the staff finds the applicant's response acceptable.

In RAI 2.3.1.1-3, the staff requested the applicant to verify whether the lower internals assembly, which hangs from the core's support ledge and provides structural support for in-scope components, has been included within the scope of license renewal and is subject to an AMR, or to provide an explanation for the exclusion. In response, the applicant stated the reactor vessel lower internals assembly is included within the scope of license renewal and subject to an AMR. The components of the lower internals assembly are included in LRA Section 2.3.1-2, "Reactor Vessel Internals." Based on the inclusion of the above component, the staff finds the applicant's response acceptable.

2.3B.1.1.3 Conclusion

The staff reviewed the LRA and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the reactor vessel components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the reactor vessel components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.1.2 Reactor Vessel Internals

2.3B.1.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.2, the applicant described the reactor vessel internals (RVIs). The RVIs are designed to provide a passageway for the distribution of reactor coolant flow to the reactor core; support and orientation of the reactor core; support, orientation, guidance, and protection of the rod cluster control assemblies (RCCAs); gamma and neutron shielding for the reactor vessel; a passageway for support, guidance, and protection of incore instrumentation; and a secondary support structure for limiting the core support structure downward displacement.

The RVIs support the reactor core in a coolable geometry and provide a RCCA insertion path.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support related to mechanical components
- provides for flow distribution

In LRA Table 2.3.1-2, the applicant identified the following RVI component types that are within the scope of license renewal and subject to an AMR: baffle/former bolts; baffle/former plates; BMI columns; clevis insert bolts; clevis inserts; core barrel; core barrel flange; core barrel outlet nozzles; head and vessel alignment pins; head cooling spray nozzles; hold-down spring; lower core plate; lower fuel alignment pins; lower support forging; lower support plate column bolts;

lower support plate columns; neutron panels; radial; RCCA guide tube bolts; RCCA guide tube support pins; RCCA guide tubes; secondary core support; upper core plate; upper core plate alignment pins; upper fuel alignment pins; upper instrumentation columns; upper support column bolts; upper support columns; and upper support plate.

2.3B.1.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.2, Millstone FSAR Sections 3.9N.5 and 4.5.2, FSAR Table 5.2-3, and FSAR Figures 3.9N-8 through 3.9N-12. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.2 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 2.3.1.2-2, the staff requested the applicant to verify whether the core support, which is welded to the core barrel and provides structural support for in-scope equipment, is within the scope of license renewal and subject to an AMR or to provide an explanation for its exclusion. The applicant confirmed the core support is within the scope of license renewal and identified as the "Lower support forging" in LRA Table 2.3.1-2. Based on the inclusion of the above component, the staff finds the applicant's response acceptable.

2.3B.1.2.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the RVI components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the RVI components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.1.3 Reactor Coolant System

2.3B.1.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.3, the applicant described the RCS. The RCS is designed to contain pressurized treated water and transfer heat produced in the reactor core to the steam generators. Borated 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 pressure boundary for containing the primary coolant, serves to confine radioactive material, and limits the uncontrolled release of radioactive material.

The safety-related intended functions of the RCS are to provide a closed pressure boundary for containing the primary coolant, transfer heat from the reactor core to the steam generator, provide system over-pressure protection, provide RG 1.97 safety-related indications, provide a reactor plant component cooling system pressure boundary, provide a letdown path via the head vent system under post-accident conditions, and provide a means of venting non-condensable gases from system high points after an accident. The RCS contains NSR components credited for mitigating a high-energy line break (HELB) and NSR components spatially oriented such that a failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The RCS contains environmental qualification components and supports fire protection, station blackout, and pressurized thermal shock.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- restricts flow
- provides a spray pattern
- provides structural and/or functional support related to mechanical components
- limits thermal cycling

In LRA Table 2.3.1-3, the applicant identified the following RCS component types that are within the scope of license renewal and subject to an AMR: bolting; flow elements; flow indicators; flow orifices; pipe; pressurizer; pressurizer heaters; reactor coolant pump (RCP) motor lower lube oil coolers; RCP motor stator coolers; RCP thermal barriers; RCP motor upper lube oil coolers; reactor coolant pressurizer relief tank; RCPs; rupture discs; thermal sleeves; tubing; and valves.

2.3B.1.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.3, Millstone FSAR Chapter 5, and FSAR Figures 5.1-1, 5.1-2, 5.2-3, and 5.4-1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.3 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 RAI as discussed below.

In RAI 2.3.1.3-1, the staff requested the applicant to verify whether the following pressurizer components set forth in Table 2.3B-1 were included within the scope of license renewal and require an AMR or, alternately, to provide an explanation for their exclusion.

Table 2.3B-1 Pressurizer Components that Require Additional Scoping Status Information

Subcomponent	Intended Function
Pressurizer - Nozzles (Surge, Spray, Safety, Relief, Instrument)	Pressure Boundary
Pressurizer - Nozzle Safe Ends	Pressure Boundary
Pressurizer - Heater Sheath	Pressure Boundary
Pressurizer - Manway and Cover	Pressure Boundary
Pressurizer - Surge Line	Pressure Boundary
Pressurizer - Spray Head Assembly	Spray Pattern
Pressurizer - Support Lugs	Structural Support
Pressurizer - Support Skirt and Flange	Structural Support

In a response dated November 9, 2004, the applicant confirmed that the pressurizer, including all subcomponents that perform intended functions, is included within the scope of license renewal and is subject to an AMR. The applicant further stated that the pressurizer was evaluated as part of the RCS and is not considered a major component. Therefore, pressurizer subcomponents are not listed separately in LRA Table 2.3.1-3. The applicant stated that the subcomponents listed in the table above are included in the component types "Pressurizer" and "Pressurizer Heaters" in LRA Table 2.3.1-3. Subcomponents of the pressurizer are set forth in LRA Table 3.1.2-3. Based on the inclusion of the above components, the staff finds the applicant's response acceptable.

In RAI 2.3.1.3-2(b), the staff requested the applicant to verify whether the pump casing and main flange, which provide a RBCCW system pressure boundary, are within the scope of license renewal and subject to an AMR. The RCP casing, cover (main flange), thermal barrier (including the integral heat exchanger) and closure bolting are considered part of the RCS boundary. The upper and lower reactor coolant pump motor lube oil coolers and the outer tubes of the seal cooler provide a reactor building closed-cooling-water-system pressure boundary. In response dated November 9, 2004, the applicant confirmed the RCP casing and main flange are within the scope of license renewal and subject to an AMR. The applicant stated that these items are considered subcomponents of the RCP and are included in the component type, "Reactor Coolant Pump," in LRA Table 2.3.1-3. The pump casing is identified in LRA Table 3.1.2-3 as "Reactor Coolant Pumps (Casing)." The RCP cover (main flange) and thermal barrier are an integral part and are identified as "RCP Thermal Barriers" in Table 3.1.2-3.

In RAI 2.3.1.3-3, the staff requested the applicant to verify whether the RCS welds, which are included in the evaluation boundary for the RCS, are within the scope of license renewal and subject to an AMR. In a response dated July 26, 2004, the applicant confirmed that the RCS welds are within the scope of license renewal and require an AMR. Welds are considered a part of the host component (e.g., pipe, nozzle) and are not uniquely identified in LRA Table 2.3.1-3. Based on the inclusion of the above component, the staff finds the applicant's response acceptable.

2.3B.1.3.3 Conclusion

The staff reviewed the LRA and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the RCS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the RCS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.1.4 Steam Generator

2.3B.1.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.4, the applicant described the steam generator. The nuclear steam supply system (NSSS) utilizes four Westinghouse Model F steam generators to transfer the heat generated in the RCS to the secondary system and produce steam at the warranted steam pressure and quality.

The steam generator directly maintains the RCS pressure boundary, supports the capability to shut down the reactor and maintain it in a safe shutdown condition, and supports the capability to prevent or mitigate the discharge of radioactive coolant into the secondary cycle. Additionally, the steam generator provides for core heat removal in support of station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support related to mechanical components
- provides for flow distribution
- provides a pressure boundary
- restricts flow

In LRA Table 2.3.1-4, the applicant identified the following steam generator component types that are within the scope of license renewal and subject to an AMR: anti-vibration bars; divider plate; feedwater inlet ring and support; feedwater nozzle and safe end; lower head; lower head drain nozzle; primary manway bolting; primary manway cover and diaphragm; primary nozzle and safe end; secondary-manway and handhole bolting; secondary manway and handhole covers; secondary-side nozzles (except steam and feedwater); stay rods; steam nozzle and safe end; steam nozzle flow restrictor; top head; transition cone; tube plugs; tube support plates; tubes; tubesheet; upper and lower shell; upper support trunnions; and wrapper.

2.3B.1.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.4, Millstone FSAR Section 5.4.2, and FSAR Figure 5.4-3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.1.4.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the steam generator components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the steam generator components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.2 Engineered Safety Features Systems

In LRA Section 2.3.2, the applicant identified the structures and components of the engineered safety features (ESF) systems that are subject to an AMR for license renewal.

The applicant described the supporting structures and components of the ESF systems in the following sections of the LRA:

- 2.3.2.1 containment recirculation system
- 2.3.2.2 quench spray system
- 2.3.2.3 safety injection system
- 2.3.2.4 residual heat removal system
- 2.3.2.5 fuel pool cooling and purification system

The corresponding subsections of this SER (2.3B.2.1 - 2.3B.2.5, respectively) present the staff's related review findings.

2.3B.2.1 Containment Recirculation System

2.3B.2.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.1, the applicant described the containment recirculation system. The containment recirculation system, in conjunction with the quench spray system, removes heat from the containment atmosphere following a major primary or secondary pipe rupture inside the containment. Heat is transferred to the service water (SW) system via the containment recirculation system coolers.

The containment recirculation system provides heat removal from the containment, a source of water to the safety injection pumps and charging pumps during the recirculation phase, sump water pH control, RG 1.97 safety-related indications, and containment pressure boundary integrity. The containment recirculation system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The containment recirculation system also contains environmental qualification components and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- provides a spray pattern
- restricts flow
- provides structural and/or functional support related to mechanical components

In LRA Table 2.3.2-1, the applicant identified the following containment recirculation system component types that are within the scope of license renewal and subject to an AMR: bolting; containment recirculation coolers; expansion joints; flow elements; flow indicators; hoses; pipe; pump seal coolers; pump seal head tanks; pumps; restricting orifices; spray nozzles; TSP baskets; tubing; and valves.

2.3B.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.1 and Millstone FSAR Section 6.2.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.2.1.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment spray system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment spray system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.2.2 Quench Spray System

2.3B.2.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.2., the applicant described the quench spray system. The quench spray system, in conjunction with the containment recirculation system, removes heat from the containment atmosphere during the injection phase following a major primary or secondary pipe rupture in containment. The quench spray system pumps cooled water from the refueling water storage tank (RWST) through the spray nozzles within the containment. The spray nozzles direct cooled, borated water spray downward from the upper regions of the containment to cool and depressurize the containment. The RWST includes an internal weir to prevent debris from entering the quench spray system pumps suction and a vortex breaker to prevent pump suction air entrainment at low-RWST water levels.

The quench spray system provides heat removal from containment; removal of fission products from the post-accident containment atmosphere via spray; and a source of borated water from the RWST to the residual heat removal pumps, the safety injection pumps, and the charging pump. Also, the system provides RG 1.97 safety-related indications and containment pressure boundary integrity. The quench spray system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The quench spray system also contains environmental qualification components and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- provides for vortex suppression
- restricts flow
- provides a spray pattern

In LRA Table 2.3.2-2, the applicant identified the following quench spray system component types that are within the scope of license renewal and subject to an AMR: bolting; flow elements; pipe; pumps; RWST; restricting orifices; spray nozzles; tubing; and valves.

2.3B.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.2 and Millstone FSAR Section 6.2.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.2.2 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 SPSB-5, the staff requested the applicant to verify whether the refueling water coolers 3-QSS-E1A and EIB in the quench spray system, described on LRA drawing 25212-LR26915 sheet 1, refueling water recirculating pumps, have been included in the scope of license renewal and subject to an AMR, or to provide an explanation for their exclusion. In its response dated November 9, 2004, the applicant stated that the NSR RWST coolers shown on LR drawing 25212-LR26915, sheet 1, were not originally included within the scope of license renewal because the RWST temperature is maintained within limits in accordance with TS requirements. However, these coolers and associated piping and valves, were added to scope as NSR components spatially oriented such that their failure could prevent the function of safety-related SSCs. The stainless steel RWST cooler channel heads, piping, and valves are subject to loss of material in a treated water internal environment and in an atmosphere/weather external environment. This aging effect is managed by the chemistry control for primary systems program internally and the general condition monitoring AMP externally. The cooler shell, and cooling water piping, and valves, are carbon steel and are subject to loss of material in the treated water internal environment and in the atmosphere/weather external environment. The loss of material of internal surfaces is managed by the closed-cycle cooling water system AMP and external aging is managed by the general condition monitoring AMP. The staff finds this acceptable.

The staff found the applicant's response to RAI SPSB-5 acceptable, and the refueling water coolers and associated components are within the scope of license renewal. Therefore, the staff considers its concern described in RAI SPSB-5 resolved.

2.3B.2.2.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the quench spray system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the quench spray system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.2.3 Safety Injection System

2.3B.2.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.3, the applicant described the safety injection (SI) system. The purpose of the SI system is to provide a source of borated water to the RCS to ensure that the reactor is shutdown and to cool the core in the event of a design-basis accident. The SI system consists of the SI pumps, accumulators, and associated piping and components. The centrifugal charging pumps, described In LRA Section 2.3.3.15 Chemical and Volume Control System; and the residual heat removal pumps, described In LRA Section 2.3.2.4 Residual Heat Removal System, also provide SI flow to the RCS.

The SI system provides injection of borated water into the RCS following an accident, control of reactor core boron precipitation during long-term LOCA recovery, RCS pressure boundary integrity, containment pressure boundary integrity, and RG 1.97 safety-related indications. The SI system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The SI system also contains environmental qualification components and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- restricts flow

In LRA Table 2.3.2-3, the applicant identified the following SI system component types that are within the scope of license renewal and subject to an AMR: bolting; filter/strainers; flow elements; pipe; pumps; restricting orifices; SI accumulator tanks; SI pump lube oil coolers; SI pump lube oil reservoirs; tubing; and valves.

2.3B.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.3 and Millstone FSAR Section 6.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.2.3.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. 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 that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the safety injection system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.2.4 Residual Heat Removal System

2.B3.2.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.4, the applicant described the residual heat removal system. The residual heat removal system transfers heat from the RCS to the reactor plant component cooling system via the residual heat removal system heat exchangers during plant cooldown and cold shutdown operations. The residual heat removal system pumps also provide low-pressure SI flow from the RWST in response to a major primary system pipe rupture within the containment.

The residual heat removal system provides SI flow following a LOCA, a flow path for cold-leg and hot-leg recirculation during long-term accident recovery, heat removal from the RCS for plant cooldown, overpressure protection for the RCS during shutdown conditions, RG 1.97 safety-related indications, RCS pressure boundary integrity, and containment pressure boundary integrity. The residual heat removal system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The residual heat removal system also contains environmental qualification components and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.2-4, the applicant identified the following residual heat removal system component types that are within the scope of license renewal and subject to an AMR: bolting; flow elements; pipe; pump seal coolers; pumps; residual heat removal heat exchangers; tubing; and valves.

2.3B.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.4 and Millstone FSAR Section 5.4.7. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.2.4.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the residual heat removal system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the residual heat removal system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.2.5 Fuel Pool Cooling and Purification System

2.3B.2.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.5, the applicant described the fuel pool cooling and purification system. The fuel pool cooling and purification system removes decay heat generated by spent fuel assemblies stored in the spent fuel pool. Heat is transferred from the pool water to the reactor plant component cooling system.

The fuel pool cooling and purification system provides heat removal from the spent fuel pool, containment pressure boundary integrity, and RG 1.97 safety-related indications. The fuel pool cooling and purification system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The fuel pool cooling and purification system also contains environmental qualification components and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- provides for vortex suppression

In LRA Table 2.3.2-5, the applicant identified the following fuel pool cooling and purification system component types that are within the scope of license renewal and subject to an AMR: bolting; flow elements; fuel pool coolers; pipe; pumps; tubing; valves; and vortex suppressor.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the fuel pool cooling and purification system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the fuel pool cooling and purification system:

- fuel pool demineralizer
- fuel pool post filter
- strainers

2.3B.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.5 and Millstone FSAR Section 9.1.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.2.5 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.

The Millstone FSAR states that water from the safety-related SW system can be used as an emergency supply to the spent fuel pool. In addition, water from the fire protection system and borated water from the refueling water storage tank, a Seismic Category-I tank, is available. A license renewal drawing shows the portion of the SW system as within the scope of license renewal and subject to an AMR. However, only a portion of the quench spray from the refueling water storage tank is shown to be within the scope of license renewal and subject to an AMR. The piping and valves that lead to the fuel pool from this location are not shown to be within the scope of license renewal and subject to an AMR. In RAI 2.3.2.5-1B, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the sources of make-up water to the fuel pool from the various sources from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that, as stated in the Millstone Unit 3 FSAR, the spent fuel pool is a missile-protected, seismically-designed, reinforced concrete structure with a stainless steel liner. Each pipe that enters the fuel pool has an anti-siphoning device or terminates at an elevation above the minimum fuel pool water level to prevent siphoning the fuel pool water and uncovering the spent fuel. The combination of these design features makes significant loss of fuel pool water extremely unlikely. In addition, the spent fuel pool liner is within the scope of license renewal and is managed for the effects of aging, as described in the Section 2.4.2.4, such that significant leakage is not expected. FSAR Section 9.1.3.2 discusses each of the sources of make-up water to the spent fuel pool for completeness. The safety-related SW system has been identified with the intended function to provide an emergency supply of fuel pool make-up in the LRA Section 2.3.3.2. Other fuel pool make-up sources discussed in the FSAR are available but are not assigned a fuel pool make-up intended function. Consequently, the applicant concluded that the fuel pool make-up flow path from the refueling water storage tank via quench spray is not within the scope of license renewal for its fuel pool make-up capability.

The staff finds the applicant's response to RAI 2.3.2.5-1B acceptable, because adequate explanation that a source of make-up water to the fuel pool from the SW system is credited for this purpose in the Millstone FSAR and is within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.2.5-1B is resolved.

The staff also reviewed the results of the scoping methodology changes, due to response to RAI 2.1-1 that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the fuel pool cooling and purification system expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included the NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the fuel pool cooling and purification system is acceptable.

2.3B.2.5.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawing, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the fuel pool cooling and purification system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the fuel pool cooling and purification system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3 Auxiliary Systems

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

The applicant described the supporting structures and components of the auxiliary systems in the following sections of the LRA:

- 2.3.3.1 circulating water system
- 2.3.3.2 service water system
- 2.3.3.3 sodium hypochlorite system
- 2.3.3.4 reactor plant component cooling system
- 2.3.3.5 turbine plant component cooling water system
- 2.3.3.6 chilled water system
- 2.3.3.7 charging pumps cooling system
- 2.3.3.8 safety injection pumps cooling system
- 2.3.3.9 neutron shield tank cooling system
- 2.3.3.10 containment atmosphere monitoring system
- 2.3.3.11 containment instrument air system
- 2.3.3.12 instrument air system
- 2.3.3.13 nitrogen system
- 2.3.3.14 service air system
- 2.3.3.15 chemical and volume control system
- 2.3.3.16 reactor plant sampling system
- 2.3.3.17 primary grade water system
- 2.3.3.18 auxiliary building ventilation system
- 2.3.3.19 circulating and service water pumphouse ventilation system
- 2.3.3.20 containment air filtration system
- 2.3.3.21 containment air recirculation system
- 2.3.3.22 containment purge air system
- 2.3.3.23 containment leakage monitoring system
- 2.3.3.24 containment vacuum system
- 2.3.3.25 control building ventilation system
- 2.3.3.26 CRDM ventilation and cooling system
- 2.3.3.27 emergency generator enclosure ventilation system
- 2.3.3.28 engineered safety features building ventilation system
- 2.3.3.29 fuel building ventilation system

- 2.3.3.30 hydrogen recombiner and hydrogen recombiner building HVAC system
- 2.3.3.31 main steam valve building ventilation system
- 2.3.3.32 process, effluent and airborne radiation monitoring system
- 2.3.3.33 service building ventilation and air-conditioning system
- 2.3.3.34 station blackout diesel generator building ventilation system
- 2.3.3.35 supplementary leak collection-and-release system
- 2.3.3.36 technical support center HVAC and filtration system
- 2.3.3.37 turbine building area ventilation system
- 2.3.3.38 waste disposal building ventilation system
- 2.3.3.39 Unit 2 fire protection system
- 2.3.3.40 Unit 3 fire protection system
- 2.3.3.41 domestic water system
- 2.3.3.42 emergency diesel generator system
- 2.3.3.43 emergency diesel generator fuel oil system
- 2.3.3.44 station blackout diesel generator system
- 2.3.3.45 security system
- 2.3.3.46 boron recovery system
- 2.3.3.47 radioactive liquid waste processing system
- 2.3.3.48 radioactive gaseous waste system
- 2.3.3.49 post-accident sampling system
- 2.3.3.50 radioactive solid waste system
- 2.3.3.51 reactor plant aerated drains system
- 2.3.3.52 reactor plant gaseous drains system
- 2.3.3.53 sanitary water system

The corresponding subsections of this SER (2.3B.3.1 - 2.3B.3.53, respectively) present the staff's related review findings.

2.3B.3.1 Circulating Water System

2.3B.3.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.1, the applicant described the circulating water system. The circulating water system provides a supply of cooling water to the main condenser via six vertical wet-pit pumps, which circulate water from the intake structure through the main condenser to the discharge structure. The circulating water pumps take suction on Long Island Sound. A warm water recirculation flowpath is provided to circulate condenser outlet water to the intake structure to reduce ice formation.

The circulating water system provides warm water recirculation to the intake structure for de-icing to ensure service water system availability.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-1, the applicant identified the following circulating water system component types that are within the scope of license renewal and subject to an AMR: expansion joints; pipe; and valves.

2.3B.3.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.1 and Millstone FSAR Sections 2.4.11.6, 9.2.5, and 10.4.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.1.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the circulating water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the circulating water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.2 Service Water System

2.3B.3.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.2, the applicant described the service water (SW) system. The purpose of the SW system is to provide a dependable flow of cooling water to the following safety-related and NSR loads:

- reactor plant component cooling heat exchangers
- turbine plant component cooling heat exchangers
- emergency generator diesel engine coolers
- containment recirculation coolers
- control building HVAC condensers
- containment recirculation pump ventilation units
- residual heat removal pump ventilation units
- charging pump coolers
- safety injection pump coolers
- post-accident liquid sample cooler
- motor controller center and rod control area ventilation units

The system also provides a source of lubrication water for the circulating water pump bearings. The SW system also provides a back-up water source for spent fuel pool make-up, auxiliary feedwater pump suction, and control building chilled water.

The SW system provides cooling water flow to safety-related heat loads to transfer rejected heat to the ultimate heat sink; isolating NSR heat loads in the event of a design-basis accident; providing a back-up source of water for control building chilled water, spent fuel pool make-up, and auxiliary feedwater; and providing RG 1.97 safety-related indications. The SW system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The SW system also provides environmental qualification equipment and supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- provides filtration
- restricts flow

In LRA Table 2.3.3-2, the applicant identified the following SW system component types that are within the scope of license renewal and subject to an AMR: expansion joints; filter/strainers; flow elements; pipe; pumps; restricting orifices; spool piece; tubing; and valves.

2.3B.3.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.2 and Millstone FSAR Sections 6.2.2, 7.3.1.1, 8.3.1, 9.1.3, 9.2.1, 9.2.2, and 9.2.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.2 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In its review, the staff noted that a license renewal drawing for the SW system shows an in-line flow indicator within the scope of license renewal and subject to an AMR. However, this component is not listed in LRA Table 2.3.3-2 as a component type subject to an AMR. In-line flow indicators serve a pressure boundary intended function, and are passive and long-lived components. In RAI 2.3.3.2-1B, dated June 9, 2004, the staff requested the applicant to confirm that the in-line flow indicator is included with the components listed in LRA Table 2.3.3-2.

In its response, dated July 26, 2004, the applicant stated that the flow indicator incorporates a straight piece of pipe with a pilot tube for measuring differential pressure and is included in the component type, "Pipe," in LRA Table 2.3.3-2.

The staff finds the applicant's response to RAI 2.3.3.2-1B acceptable, because the flow indicator was adequately identified and shown where it appeared in LRA Table 2.3.3-2. The staff concludes that the in-line flow indicator in the SW system was scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.2-1B is resolved.

In its review, the staff also noted that a license renewal drawing for the SW system shows thermowells excluded from the scope of license renewal and from being subject to an AMR. Thermowells normally penetrate the piping pressure boundary and therefore serve a pressure boundary intended function. Thermowells are also passive and long-lived components and should be subject to an AMR. In RAI 2.3.3.2-2B, dated June 9, 2004, the staff requested the applicant to confirm that the thermowells are included with the components listed in LRA Table 2.3.3-2.

In its response, dated July 26, 2004, the applicant stated that thermowells are within the scope of license renewal and are included in component type, "Pipe," in LRA Table 2.3.3-2.

The staff finds the applicant's response to RAI 2.3.3.2-2B acceptable, because thermowells were adequately identified and specified how they were represented in LRA Table 2.3.3-2. The staff concludes that thermowells in the SW system were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.2-2B is resolved.

Another license renewal drawing for the SW system indicates that a portion of the system that extends to the plant drainage system is within the scope of license renewal and subject to an AMR. The portion of the SW system that appears on the plant drainage system drawing is not included in the LRA. In RAI 2.3.3.2-3B, dated June 9, 2004, the staff requested the applicant to supply the drawing that contains the remainder of the SW system.

In its response, dated July 26, 2004, the applicant stated that the drawing for the plant drainage system shows only miscellaneous floor drains, none of which are within the scope of license renewal. The drainage lines shown on the SW system license renewal drawing are not continued on the plant drainage drawing because the drain lines are open-ended lines that discharge to, but are not connected to, the associated floor area drains. Therefore, the license renewal boundary terminates at the discharge of the drain line.

The staff finds the applicant's response to RAI 2.3.3.2-3B acceptable, because the applicant verified that all the components within the license renewal system evaluation boundary for the service water system have been shown on the license renewal drawings. The staff concludes that all the components of the SW system were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.3-3B is resolved.

2.3B.3.2.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the SW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the SW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.3 Sodium Hypochlorite System

2.3B.3.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.3, the applicant described the sodium hypochlorite system. The sodium hypochlorite system provides a source of sodium hypochlorite to minimize marine growth in the SW system and the circulating water system.

The sodium hypochlorite system provides a safety-related pressure boundary for the SW system and provides RG 1.97 safety-related indications. The sodium hypochlorite system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The sodium hypochlorite system also supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-3, the applicant identified the following sodium hypochlorite system component types within the scope of license renewal and subject to an AMR: pipe and valves.

2.3B.3.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.3 and Millstone FSAR Sections 9.2.1 and 9.2.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.3.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the sodium hypochlorite system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the sodium hypochlorite system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.4 Reactor Plant Component Cooling System

2.3B.3.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.4, the applicant described the reactor plant component cooling (RPCC) system. The RPCC system is a closed-loop cooling system that transfers heat from reactor auxiliaries to the SW system during plant operation and accident conditions. The RPCC system also provides make-up water to various cooling subsystems.

The RPCC system transfers heat from safety-related heat loads to the ultimate heat sink, providing automatic isolation of non-essential heat loads in the event of a design-basis accident, providing a source of make-up water to essential systems, providing RG 1.97 safety-related indications, preventing an over-temperature condition at the residual heat removal heat exchanger outlet, and providing containment pressure-boundary integrity. The RPCC system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system contains environmental qualification equipment and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- provides for heat transfer

In LRA Table 2.3.3-4, the applicant identified the following RPCC system component types that are within the scope of license renewal and subject to an AMR: flow elements; flow totalizer; hoses; penetration coolers; pipe; pumps; RPCC chemical addition tank; RPCC heat exchangers; RPCC surge tank; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the RPCC system. In its December 3, 2004, RAI response, the applicant identified the radiation detectors component type that was added to the scope of the RPCC system.

2.3B.3.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.4 and Millstone FSAR Section 9.2.2.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.4 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In its review, the staff noted that a license renewal drawing for the RPCC system shows a line that ends at a relief valve. It appears that this relief valve is used to protect the in-scope piping and components from over-pressurization. Although the line is shown within the scope of license renewal, the relief valve is shown as outside the scope of license renewal. Relief valves provide pipeline isolation and serve a pressure boundary function. In RAI 2.3.3.4-1B, dated June 9, 2004, the staff requested the applicant to explain why the relief valve is not included within the scope of license renewal and subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the relief valve is within the scope of license renewal but was inadvertently not highlighted on the license renewal drawing. This relief valve is included in the component type, "Valves," in LRA Table 2.3.3-4.

The staff finds the applicant's response to RAI 2.3.3.4-1B acceptable based on inclusion of the component.

The staff also noted that a license renewal drawing for the RPCC system shows auxiliary condensate heat exchanger shells within the scope of license renewal and subject to an AMR. However, these heat exchanger shells are not listed in LRA Table 2.3.3-4 as a component type subject to an AMR. In RAI 2.3.3.4-2B, dated June 9, 2004, the staff requested the applicant to explain whether these components were included with another component type or to explain their exclusion from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the auxiliary condensate heat exchanger shells are coolers shown on the license renewal drawing and are within the scope of license renewal and subject to AMR. These coolers are part of the auxiliary boiler condensate and feedwater system and are indicated as "Sample Coolers" in LRA Table 2.3.4-7. The sample coolers were inadvertently highlighted as part of the RPCC system.

The staff finds the applicant's response to RAI 2.3.3.4-2B acceptable, because the applicant adequately explained that the auxiliary condensate heat exchanger shells are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a). The applicant further identified where the auxiliary condensate heat exchanger shells are represented in the LRA. Therefore, the staff's concern described in RAI 2.3.3.4-2B is resolved.

In RAI 2.3.3.4-3B, the staff noted that in Millstone LRA Section 2.1.5.1 states that "a normally-open manual valve may be used as a license renewal boundary in those instances where a failure downstream of the valve can be quickly detected and the valve can be easily closed by operators to establish the pressure boundary."

Another license renewal drawing for the RPCC system shows many normally open valves that are used as license renewal system boundaries. In order for the staff to complete its review to ensure that the system evaluation boundaries chosen for the RPCC system would permit successful performance of its system-level intended functions more information is needed. In RAI 2.3.3.4-2B, dated June 6, 2004, the staff requested the applicant to discuss procedures for identifying the locations of breaks and for closing the valves, the amount of time required to complete these actions, and the consequences on system inventory if the valves are not closed.

In its response, dated July 26, 2004, the applicant stated that the license renewal boundaries ending at normally open valves on the license renewal drawings for the RPCC system were not drawn using the convention from LRA Section 2.1.5.1. Instead, the components highlighted in lines associated with these normally open valves are within the scope of license renewal because they are NSR components spatially oriented near safety-related SSCs. The applicant further stated that the conventions used in license renewal drawings to highlight how to end boundaries at normally open valves is described in LRA Section 2.1 5.1. Normally open valves outside the area containing safety-related SSCs were used to identify the license renewal boundary, in accordance with the convention in LRA Section 2.1.5.1. Whether the valves are in an open or closed status is not relevant, because breaks beyond these normally open valves do not have the potential to adversely impact safety-related SSCs.

The staff finds the applicant's response to RAI 2.3.3.4-3B acceptable, because the applicant adequately explained that the normally open valves chosen as license renewal boundaries are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(2) for their potential spatial impact on safety-related equipment. The applicant further confirmed that breaks beyond the normally open valves in the RPCC system would not functionally prevent the satisfactory accomplishment of the system-level intended functions. Therefore, the staff's concern described in RAI 2.3.3.4-3B is resolved.

The staff also reviewed the results of the scoping methodology changes, due to response to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the RPCC system expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant included the NSR components with the configurations that meet the scoping criteria of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the RPCC system is acceptable.

2.3B.3.4.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawing, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the RPCC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the RPCC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.5 Turbine Plant Component Cooling Water System

2.3B.3.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.5, the applicant described the turbine plant component cooling water system. The turbine plant component cooling water system transfers heat from various turbine plant heat loads to the SW system. A portion of the system provides a flowpath for back-up cooling water flow to the instrument air compressors from the domestic water system.

The turbine plant component cooling water system provides a cooling water flowpath for the instrument air compressor that is credited for fire protection.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-5, the applicant identified the following turbine plant component cooling water system component types that are within the scope of license renewal and subject to an AMR: flow indicators; pipe; strainers; and valves.

2.3B.3.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.5 and Millstone FSAR Section 9.2.7. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.5 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 its review, the staff noted that LRA Section 2.3.3.5 states that the turbine plant component cooling water system provides a cooling water flow path for the instrument air compressor needed for fire protection. In order for the staff to complete its review of the system evaluation boundaries for the turbine plant component cooling water system more information about why only instrument air compressor train B is shown within the scope of license renewal. In RAI 2.3.3.5-1B, dated June 9, 2004, the staff requested the applicant to explain why the turbine plant component cooling water system flow path to instrument air compressor train A is excluded from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the instrument air compressor credited in the plant fire protection evaluations is compressor B. Compressor B is powered from a Class 1E power source. Instrument air compressor A has not been credited in the plant fire protection evaluations. Therefore, instrument air compressor train A and the turbine plant component cooling water to that compressor have not been included within the scope of license renewal.

The staff concluded that the applicant's July 26, 2004, response related to the scoping and screening results of the turbine plant component cooling water system is acceptable.

2.3B.3.5.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the turbine plant component cooling water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the turbine plant component cooling water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.6 Chilled Water System

2.3B.3.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.6, the applicant described the chilled water system. The chilled water system is a closed-loop system that provides cooling water for the RWST, service building air-conditioning units, MCC and rod control area air conditioning units, containment air recirculation cooling coils, and various components inside the containment.

The chilled water system provides a pressure boundary at interfaces with safety-related systems, providing containment pressure boundary integrity, and providing RG 1.97 indications. The chilled water system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system contains environmental qualification equipment and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity

In LRA Table 2.3.3-6, the applicant identified the following chilled water system component types that are within the scope of license renewal and subject to an AMR: flow elements; flow indicators; hoses; pipe; tubing; and valves.

2.3B.3.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.6 and Millstone FSAR Section 9.2.2.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.6.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the chilled water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the chilled water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.7 Charging Pumps Cooling System

2.3B.3.7.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.7, the applicant described the charging pumps cooling system. The purpose of the charging pumps cooling system is to transfer heat from the charging pump lubricating oil to the SW system.

The charging pumps cooling system provides cooling for the charging pump lubricating oil and RG 1.97 safety-related indications. The charging pumps cooling system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system contains environmental qualification equipment and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides for heat transfer
- provides a pressure boundary
- provides limited structural integrity

In LRA Table 2.3.3-7, the applicant identified the following charging pumps cooling system component types that are within the scope of license renewal and subject to an AMR: charging pump coolers; charging pumps cooling surge tank; flow elements; pipe; pumps; tubing; and valves.

2.3B.3.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.7 and Millstone FSAR Section 9.2.2.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.7 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 its review, the staff noted that the FSAR states that the charging pump's cooling system surge tank is compartmented by an internal partition so that a rapid loss of water from one compartment of the surge tank affects only one charging pump's cooling pump, leaving the other charging pump's cooling system pump unaffected and fully capable of service. However, the license renewal drawing shows the surge tank internal partition as outside the scope of license renewal and not subject to an AMR. In RAI 2.3.3.7-1B, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the internal surge tank partition from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the internal surge tank partition was inadvertently not highlighted, but is within the scope of license renewal. The partition was evaluated as an integral part of the component type, "Charging Pump's Cooling Surge Tank," shown in LRA Table 2.3.3-7.

In its review, the staff finds the applicant's response to RAI 2.3.3.7-1B acceptable based on inclusion of the component.

2.3B.3.7.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawing, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the charging pumps cooling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the charging pumps cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.8 Safety Injection Pumps Cooling System

2.3B.3.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.8, the applicant described the safety injection pumps cooling system. The purpose of the SI pumps cooling system is to transfer heat from the SI pump bearing lubricating oil to the SW system.

The SI pumps cooling system provides cooling for the SI pump lubricating oil and RG 1.97 safety-related indications. The SI pumps cooling system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity
- restricts flow
- provides for heat transfer

In LRA Table 2.3.3-8, the applicant identified the following SI pumps cooling system component types that are within the scope of license renewal and subject to an AMR: flow elements; pipe; pumps; restricting orifices; SI pump coolers; SI pumps cooling surge tank; tubing; and valves.

2.3B.3.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.8 and Millstone FSAR Section 9.2.2.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.8 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 its review, the staff noted that the FSAR states that the SI pumps cooling system surge tank is compartmented by an internal partition so that a rapid loss of water from one compartment of the surge tank affects only one SI cooling pump, leaving the other SI cooling system pump unaffected and fully capable of service. However, a license renewal drawing for the SI pumps cooling system shows the surge tank internal partition as outside the scope of license renewal and not subject to an AMR. In RAI 2.3.3.8-1B, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the internal surge tank partition from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the internal surge tank partition was inadvertently not highlighted, but is within the scope of license renewal. The partition was evaluated as an integral part of the component type, "Safety Injection Pump's Cooling Surge Tank," shown in LRA Table 2.3.3-8.

The staff concluded that the applicant's July 26, 2004, response related to the scoping results of the safety injection pumps cooling system is acceptable.

2.3B.3.8.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawing, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the SI pumps cooling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the SI pumps cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.9 Neutron Shield Tank Cooling System

2.3B.3.9.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.9, the applicant described the neutron shield tank cooling system. The purpose of the neutron shield tank cooling system is to cool the water circulated through the neutron shield tank, which is heated by neutron and gamma radiation from the reactor. The neutron shield tank cooling system also provides attenuation of neutrons via the water-filled neutron shield tank. The neutron shield tank cooling system includes the neutron shield tank, the neutron shield tank coolers, neutron shield tank cooling surge tank, and associated piping and components.

The neutron shield tank cooling system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC, provides neutron moderation in support of the nuclear instrumentation function, and provides cooling of the water surrounding the neutron detectors located in the neutron shield tank.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-9, the applicant identified the following neutron shield tank cooling system component types that are within the scope of license renewal and subject to an AMR: neutron shield tank; neutron shield tank coolers; neutron shield tank surge tank; pipe; tubing; and valves.

2.3B.3.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.9 and Millstone FSAR Section 9.2.2.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.9.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the neutron shield tank cooling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the neutron shield tank cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.10 Containment Atmosphere Monitoring System

2.3B.3.10.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.10, the applicant described the containment atmosphere monitoring system. The containment atmosphere monitoring system provides the capability to obtain, analyze, and return atmosphere samples to the containment.

The containment atmosphere monitoring system provides a containment pressure boundary integrity and isolation function and safety-related RG 1.97 indications. The containment atmosphere monitoring system contains environmental qualification equipment.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-10, the applicant identified the following containment atmosphere monitoring system component types that are within the scope of license renewal and subject to an AMR: bolting; pipes; and valves.

2.3B.3.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.10 and Millstone FSAR Section 11.5.2.2.9. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.10.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an

AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment atmosphere monitoring system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment atmosphere monitoring system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.11 Containment Instrument Air System

2.3B.3.11.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.11, the applicant described the containment instrument air system. The containment instrument air system is supplied by the instrument air system and provides a reliable source of clean, dry, oil-free compressed air at the proper pressure to supply air-operated valves, instruments, and other miscellaneous components in the containment. The system provides compressed air to operate valves associated with reactor coolant letdown and pressurizer spray for a fire in the containment.

The containment instrument air system supports fire protection.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-11, the applicant identified the following containment instrument air system component types that are within the scope of license renewal and subject to an AMR: bolting; pipe; tubing; and valves.

2.3B.3.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.11 and Millstone FSAR Section 9.3.1.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.11.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its

review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment instrument air system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment instrument air system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.12 Instrument Air System

2.3B.3.12.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.12, the applicant described the instrument air system. The instrument air system provides a reliable source of clean, dry, oil-free compressed air at the proper pressure to supply air-operated valves, instruments, and other miscellaneous components in the plant.

The instrument air system provides containment pressure boundary integrity and safety-related RG 1.97 indications. The instrument air system contains environmental qualification equipment and supports fire protection.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-12, the applicant identified the following instrument air system component types that are within the scope of license renewal and subject to an AMR: air dryers; filters; instrument air aftercooler; instrument air compressor; instrument air filter silencer; instrument air receiver; pipe; strainers; traps; tubing; and valves.

2.3B.3.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.12 and Millstone FSAR Section 9.3.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.12.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the instrument air system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the instrument air system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.13 Nitrogen System

2.3B.3.13.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.13, the applicant described the nitrogen system. The nitrogen system provides clean, dry gas that is utilized in multiple applications throughout the plant.

The nitrogen system provides containment pressure boundary integrity and safety-related RG 1.97 indications. The nitrogen system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The nitrogen system also provides environmental qualification equipment and supports fire protection.

The intended function within the scope of license renewal includes providing a pressure boundary.

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

2.3B.3.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.13 and Millstone FSAR Section 9.5.9.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.13.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the nitrogen system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the nitrogen system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.14 Service Air System

2.3B.3.14.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.14, the applicant described the service air system. The service air system provides a source of clean, oil-free compressed air at the proper pressure to support the operation of air-operated tools and other devices. The service air system can be used as a source of compressed air to the instrument air system.

The service air system provides a containment pressure boundary-integrity and a supplementary leak collection- and-release system boundary isolation function at ESF building wall penetrations.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

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

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the service air system. In its December 3, 2004, RAI response, the applicant identified the flow transmitters component type that was added to the scope of the service air system.

2.3B.3.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.14 and Millstone FSAR Section 9.3.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.14 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 its review, the staff noted that LRA Section 2.3.3.14 stated that the service air system can be used as a source of compressed air to the instrument air system. The Millstone FSAR states that during routine maintenance, the service air serves as a backup to the instrument air system. However, the only portion of service air that was shown to be within the scope of license renewal and subject to an AMR was the portion that penetrates the containment and provides a boundary-isolation function at the ESF building wall penetrations. In order to ensure that the system evaluation boundaries chosen for the service air system would permit successful performance of its system-level intended functions, the staff requires more information. In RAI 2.3.3.14-1B, dated June 9, 2004, the staff requested the applicant to explain why portions from the service air system that serve as a backup to instrument air were not included within the scope of license renewal.

In its response, dated July 26, 2004, the applicant stated that the service air system capability of providing backup air to the instrument air system does not meet the criteria of 10 CFR 54.4(a)(1) or (a)(2). The NSR instrument air system is within the scope of license renewal because it provides containment pressure boundary integrity at the piping penetration and it supports fire protection. The fire protection analysis does not credit service air as a backup. Therefore, the portions of the service air system that serve as a backup to the instrument air system are not within the scope of license renewal.

The staff finds the applicant's response to RAI 2.3.3.14-1B acceptable, because the applicant adequately explained that while the instrument air system is credited in the fire protection evaluations, backup air from the service air system is not. Therefore backup compressed air from the service air system is not required to be within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.14-1B is resolved.

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the service air system is acceptable.

2.3B.3.14.3 Conclusion

The staff reviewed the LRA and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the service air system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the service air system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.15 Chemical and Volume Control System

2.3B.3.15.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.15, the applicant described the chemical and volume control system (CVCS). The CVCS provides a method for controlling the inventory and chemistry of the RCS and supplies seal injection flow to the RCPs. During normal operation, reactor coolant letdown flow is cooled; conditioned via ion exchangers, filters, and chemical addition; heated; and returned to the RCS. The system also provides the capability to adjust reactor coolant soluble boron concentration in order to effect reactivity changes within the reactor core. During emergency conditions, the CVCS charging pumps provide a high-pressure source of borated water injection to the RCS.

The CVCS provides a borated water flowpath to the RCS for reactivity control and for safety injection in the event of an accident. The system also provides RCP seal injection flow; an RCS pressure boundary at system interfaces; boration, make-up, and RCP seal injection in support of safety-grade cold shutdown; decay heat removal, boration, and inventory control during shutdown conditions; auxiliary pressurizer spray; safety-related RG 1.97 indications; and containment penetration pressure boundary integrity. The CVCS contains NSR components credited for mitigating the effects of a high-energy line break and NSR components spatially oriented such that a failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The CVCS also contains environmental qualification equipment and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- restricts flow

In LRA Table 2.3.3-15, the applicant identified the following CVCS component types that are within the scope of license renewal and subject to an AMR: bolting; boric acid blender; boric acid tanks; charging pump lube oil coolers; chemical mixing tank; chiller surge tank; CS manifolds; demineralizers; excess letdown heat exchanger; filter/strainers; flexible hoses; flow elements; letdown chiller heat exchanger; letdown heat exchanger; letdown reheat heat exchanger; level indicators; lube oil reservoirs; moderating heat exchanger; pipe; pumps; RCP seal standpipes; regenerative heat exchanger; restricting orifices; seal water heat exchanger; thermal regeneration chiller compressor oil cooler; thermal regeneration chiller condenser; thermal regeneration chiller evaporator; tubing; valves; and volume control tank.

2.3B.3.15.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.15 and Millstone FSAR Section 9.3.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.15.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the CVCS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the CVCS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.16 Reactor Plant Sampling System

2.3B.3.16.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.16 the applicant described the reactor plant sampling system. The reactor plant sampling system provides the means for determining chemical and radiological conditions of plant processes and environments.

The reactor plant sampling system limits loss of inventory through sampling line breaks through the use of flow restrictions, providing a pressure boundary at interfaces with safety-related systems, providing containment penetration pressure boundary integrity, and providing safety-related RG 1.97 indications. The reactor plant sampling system contains NSR components spatially oriented such that a failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The reactor plant sampling system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- restricts flow

In LRA Table 2.3.3-16, the applicant identified the following reactor plant sampling system component types that are within the scope of license renewal and subject to an AMR: bolting; flexible hoses; pipe; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the reactor plant sampling system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the reactor plant sampling system:

- flow elements
- mechanical refrigeration unit condenser
- mechanical refrigeration unit evaporator/chiller
- radiation detectors

2.3B.3.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.16 and Millstone FSAR Section 9.3.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the reactor plant sampling system is acceptable.

2.3B.3.16.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the reactor plant sampling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the reactor plant sampling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.17 Primary Grade Water System

2.3B.3.17.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.17, the applicant described the primary grade water system. The primary grade water system provides demineralized water for use in primary and auxiliary systems in the plant.

The primary grade water system provides containment penetration pressure boundary integrity and safety-related RG 1.97 indications. The primary grade water system contains NSR components spatially oriented such that a failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The primary grade water system also contains environmental qualification equipment and supports station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-17, the applicant identified the following primary grade water system component types that are within the scope of license renewal and subject to an AMR: bolting; pipe; and valves.

2.3B.3.17.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.17 and Millstone FSAR Section 9.2.8. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.17 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 its review, the staff noted that a license renewal drawing for the primary grade water system shows the reactor coolant pressurizer relief tank internal spray line not within the scope of license renewal for license renewal while the shell of the tank is included within the scope of license renewal. The internal spray line appears to perform a LSI intended function. In RAI 2.3.3.17-1B, dated June 9, 2004, the staff requested the applicant to explain why the internal spray line was excluded from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the reactor coolant pressurizer relief tank is an NSR component. The pressurizer relief tank is within the scope of license renewal because it is spatially oriented such that its failure could prevent the satisfactory accomplishment of a safety-related function. The pressurizer relief tank spray line that is internal to the tank does not meet the criterion of 10 CFR 54.4(a)(2) since it is not spatially oriented near any safety-related SSCs. Therefore, the internal spray line is not within the scope of license renewal.

The staff finds the applicant's response to RAI 2.3.3.17-1B acceptable because the applicant adequately explained that the pressurizer relief tank internal spray line does not present a potential for spatially interacting with safety-related SSCs; nor does it functionally support any system-level intended functions. The staff concludes that the pressurizer relief tank internal spray line in the pressurizer relief tank was scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.17-1B is resolved.

2.3B.3.17.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawing, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the primary grade water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the primary grade water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.18 Auxiliary Building Ventilation System

2.3B.3.18.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.18, the applicant described the auxiliary building ventilation system. The auxiliary building ventilation system provides an environment suitable for personnel access and equipment operation within the building. It also controls and minimizes the potential for the spread of airborne radioactive material by maintaining a negative pressure within the building. The auxiliary building ventilation system is comprised of subsystems that provide local area cooling and heating within the building. There are two filtration units within the exhaust system that can be aligned to remove radioactive material from the ventilation exhaust flow. The system contains fire dampers to prevent the spread of a fire.

The auxiliary building ventilation system is within the scope of license renewal because the system provides an exhaust flowpath through filters and maintaining a negative pressure within the auxiliary building and other areas in the event of an accident; providing an acceptable operating environment for safety-related equipment, and providing RG 1.97 safety-related indications. The auxiliary building ventilation system provides isolation in support of the supplementary leak collection-and-release system, and the system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The auxiliary building ventilation system also contains environmental qualification equipment and supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides for heat transfer

In LRA Table 2.3.3-18, the applicant identified the following auxiliary building ventilation system component types that are within the scope of license renewal and subject to an AMR: auxiliary building filter bank housings; auxiliary building heating and ventilation air supply heating coils; damper housings; ductwork; filter bank housing; flex connections; flow elements; MCC, rod control and cable vault AC air supply cooling coils; MCC, rod control and cable vault AC air supply unit; pipe; silencers; tubing; and valves.

2.3B.3.18.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.18 and Millstone FSAR Section 9.4.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

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

functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.18.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. 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 that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the auxiliary building ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.19 Circulating and Service Water Pumphouse Ventilation System

2.3B.3.19.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.19, the applicant described the circulating and service water (SW) pumphouse ventilation system. The circulating and SW pumphouse ventilation system provides a suitable environment for personnel and equipment within the pumphouse. Each SW pump cubicle has a safety-related ventilation system.

The circulating and SW pumphouse ventilation system provides an acceptable operating environment for safety-related equipment and RG 1.97 safety-related indications. The circulating and SW pumphouse ventilation system also supports fire protection and station blackout.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-19, the applicant identified the following circulating and SW pumphouse ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; fan/blower housings; flex connections; and silencers.

2.3B.3.19.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.19 and Millstone FSAR Section 9.4.8.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.19.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the circulating and SW pumphouse ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the circulating and SW pumphouse ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.20 Containment Air Filtration System

2.3B.3.20.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.20, the applicant described the containment air filtration system. The containment air filtration system filters the containment atmosphere to reduce the concentration of airborne radioactive particulates and iodine to permit containment access. The containment air filtration system includes two 100-percent capacity fans and filter banks. Each filter bank includes a heater, prefilter, carbon adsorber, and two high-efficiency particulate air filters. There are fire detectors installed on the carbon adsorber units.

The containment air filtration system supports fire protection.

The applicant identified no component groups that require aging management review.

2.3B.3.20.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.20 and Millstone FSAR Section 9.4.7.1 using the evaluation methodology described in Section 2.3 of this SER. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3, "Scoping and Screening Results - Mechanical Systems."

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

In LRA Section 2.3.3.20, the applicant stated that the containment air filtration system meets 10 CFR 54.4(a)(3) and is within the scope of license renewal because the system supports fire protection. The applicant further stated that there are no containment air filtration system components that are subject to aging management review since only the active fire detector components are within the scope of license renewal.

On the basis of its review of the applicable FSAR section, the staff determined that the containment air filtration system is not a safety-related system, and agrees with the applicant's determination that it meets 10 CFR 54.4(a)(3). The staff also determined that the acceptability of the applicant's treatment of this system will be addressed in the fire protection section of this SER.

2.3B.3.20.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment air filtration system components are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified that none of the containment air filter components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.21 Containment Air Recirculation System

2.3B.3.21.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.21, the applicant described the containment air recirculation system. The containment air recirculation system is designed to maintain the bulk air temperature in the containment suitable for personnel access and equipment operation during normal plant operation, and for equipment operation following a loss of offsite power. The containment air recirculation system supports a fire safe shutdown event.

The containment air recirculation system cooling coils are NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system also supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-20, the applicant identified the following containment air recirculation system component types that are within the scope of license renewal and subject to an AMR: containment air recirculation cooling coils; containment air recirculation cooling unit housings; damper housings; ductwork; fan/blower housings; flex connections; and tubing.

2.3B.3.21.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.21 and Millstone FSAR Section 9.4.7.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then

reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.21.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment air recirculation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment air recirculation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.22 Containment Purge Air System

2.3B.3.22.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.22, the applicant described the containment purge air system. The containment purge air system is designed to reduce the airborne radioactivity in the containment and to provide air exchange during extended periods of containment occupancy, such as during refueling outages.

The containment purge air system provides containment pressure boundary integrity and RG 1.97 safety-related indications. The containment purge air system provides isolation in support of the supplementary leak collection-and-release system, and the system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The containment purge air system also contains environmental qualification equipment and supports station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-21, the applicant identified the following containment purge air system component types that are within the scope of license renewal and subject to an AMR: containment purge heating and ventilation air supply heating coils; damper housings; ductwork; flex connections; pipe; and valves.

2.3B.3.22.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.22 and Millstone FSAR Section 9.4.7.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.22.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment purge air system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment purge air system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.23 Containment Leakage Monitoring System

2.3B.3.23.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.23, the applicant described the containment leakage monitoring system. The containment leakage monitoring system provides containment pressure signals to the ESF actuation system. The system can also be used for containment leak-rate testing.

The containment leakage monitoring system provides containment pressure boundary integrity and RG 1.97 safety-related indications and signals. The containment leakage monitoring system also contains environmental qualification equipment and supports station blackout.

Intended functions within the scope of license renewal include providing a pressure boundary.

In LRA Table 2.3.2-22, the applicant identified the following containment leakage monitoring system component types that are within the scope of license renewal and subject to an AMR: pipe; tubing; and valves.

2.3B.3.23.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.23 and Millstone FSAR Sections 6.2.6 and 7.6.7. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.23.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment leakage monitoring system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment leakage monitoring system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.24 Containment Vacuum System

2.3B.3.24.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.24, the applicant described the containment vacuum system. The containment vacuum system establishes and maintains sub-atmospheric containment internal pressure during normal operations.

The containment vacuum system provides containment pressure boundary integrity and RG 1.97 safety-related indications. The containment vacuum system also contains environmental qualification equipment and supports station blackout.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-23, the applicant identified the following containment vacuum system component types that are within the scope of license renewal and subject to an AMR: bolting; pipe; pumps and vacuum ejectors; and valves.

2.3B.3.24.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.24 and Millstone FSAR Section 9.5.10. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.24.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its

review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the containment vacuum system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the containment vacuum system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.25 Control Building Ventilation System

2.3B.3.25.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.25, the applicant described the control building ventilation system. The control building ventilation system provides heating, ventilation, and air conditioning to the control room envelope and switchgear area during normal operation. It also provides air supply, filtration, and cooling in post-accident conditions. The control room envelope consists of the control room area, shift manager's office, tagging office, viewing gallery and ramp, conference room, toilet, kitchen, instrument rack and computer room, piping/duct chase, and the mechanical and equipment room.

The control building ventilation system provides a suitable environment for equipment cooling and personnel habitability, the capability to isolate, pressurize, and control radiological conditions within the control room envelope in the event of an accident, and RG 1.97 safety-related indications. The control building ventilation system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The control building ventilation system also supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides for heat transfer
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- restricts flow
- provides limited structural integrity

In LRA Table 2.3.3-24, the applicant identified the following control building ventilation system component types that are within the scope of license renewal and subject to an AMR: air storage tanks; chiller oil coolers; chiller reservoirs; compressors; condensers; control building air handling units; control room emergency ventilation filter bank housings; damper housings; duct flow restrictors; ductwork; economizers; evaporators; expansion joints; expansion tanks; fan/blower housings; filter/strainers; flex connections; flow elements; heaters; humidifiers; level indicators; moisture indicators; pipe; pumps; tubing; and valves.

2.3B.3.25.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.25 and Millstone FSAR Section 6.4.2 and 9.4.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.25.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the control building ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the control building ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.26 CRDM Ventilation and Cooling System

2.3B.3.26.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.26, the applicant described the control rod drive mechanism (CRDM) ventilation and cooling system. The CRDM ventilation and cooling system removes heat from the CRDM magnetic coils. Containment ambient air is drawn through the CRDM shroud and ductwork, and heat from the CRDM coils is transferred to the chilled water system via the CRDM shroud cooler cooling coils. The CRDM ventilation and cooling system contains three 50-percent fans, cooling coils, and a duct plenum.

The CRDM shroud cooler cooling coils are NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-25, the applicant identified the CRDM shroud cooler cooling coils as the CRDM ventilation and cooling system component type that is within the scope of license renewal and subject to an AMR.

2.3B.3.26.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.26 and Millstone FSAR Section 9.4.7.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.26.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the CRDM ventilation and cooling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the CRDM ventilation and cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.27 Emergency Generator Enclosure Ventilation System

2.3B.3.27.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.27, the applicant described the emergency generator enclosure ventilation system. The emergency generator enclosure ventilation system provides an acceptable environment for personnel and equipment within the building. The system includes tornado dampers.

The emergency generator enclosure ventilation system provides an acceptable operating environment for safety-related equipment and providing RG 1.97 safety-related indications. The emergency generator enclosure ventilation system supports fire protection and station blackout.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-26, the applicant identified the following emergency generator enclosure ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; fan/blower housings; and flex connections.

2.3B.3.27.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.27 and Millstone FSAR Section 9.4.6. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then

reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.27.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the emergency generator enclosure ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the emergency generator enclosure ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.28 Engineered Safety Features Building Ventilation System

2.3B.3.28.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.28, the applicant described the engineered safety features (ESF) building ventilation system. The ESF building ventilation system provides a suitable environment for equipment operation and personnel within the building. The ESF building ventilation system includes normal and emergency ventilation. The normal ventilation is operated during normal plant operation. Emergency ventilation contains five safety-related subsystems and four self-contained AC chiller units serving the safety injection pump, quench spray pump, residual heat removal pump, and ESF heat exchanger areas. These emergency ventilation subsystems automatically start when the associated ESF equipment is required to operate. The ESF building ventilation system contains fire dampers to prevent the spread of fires.

The ESF building ventilation system provides ESF building isolation in the event of an accident, an acceptable operating environment for safety-related equipment, and RG 1.97 safety-related indications. The ESF building ventilation system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides for heat transfer
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.3.3-27, the applicant identified the following ESF building ventilation system component types that are within the scope of license renewal and subject to an AMR: air handling units; compressors; condensers; damper housings; ductwork; fan/blower housings; filter dryer; filter/strainers; flex connections; flow indicators; pipe; suction traps; tubing; and valves

2.3B.3.28.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.28 and Millstone FSAR Section 9.4.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.28.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the ESF building ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the ESF building ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.29 Fuel Building Ventilation System

2.3B.3.29.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.29, the applicant described the fuel building ventilation system. The fuel building ventilation system provides a suitable environment for equipment operation and personnel within the building. The system is operated to limit the potential radioactive release by maintaining a negative operating pressure within the building and processing the exhaust air flow through a charcoal filter prior to release to the atmosphere. The system contains fire dampers to prevent the spread of fires.

The fuel building ventilation system provides an exhaust flowpath through filters and maintains a negative pressure within the fuel building in the event of a contaminated fuel building atmosphere, providing isolation of the normal exhaust flowpath via supply backdraft dampers, and RG 1.97 safety-related indications. The fuel building ventilation system provides isolation in support of the supplementary leak collection-and-release system, and the system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The fuel building ventilation system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

- provides a pressure boundary
- provides limited structural integrity

In LRA Table 2.3.3-28, the applicant identified the following fuel building ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; fan/blower housings; flex connections; fuel building filter bank housings; heating coils; pipe; silencers; tubing; and valves.

2.3B.3.29.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.29 and Millstone FSAR Section 9.4.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.29.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the fuel building ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the fuel building ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.30 Hydrogen Recombiner and Hydrogen Recombiner Building HVAC System

2.3B.3.30.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.30, the applicant described the hydrogen recombiner and hydrogen recombiner building HVAC system. The hydrogen recombiner and hydrogen recombiner building HVAC system includes the hydrogen recombiner unit and the ventilation system associated with the hydrogen recombiner and the hydrogen recombiner building. The hydrogen recombiner controls the concentration of hydrogen within the containment to below the flammability limit following a LOCA. The hydrogen recombiner unit provides hydrogen recombiner return gas cooling to limit recombiner effluent temperature to 150 °F. The hydrogen recombiner building HVAC system provides hydrogen recombiner building heating and AC and hydrogen recombiner building post-accident exhaust. A high-radiation level in the hydrogen recombiner ventilation exhaust stream automatically shuts down the ventilation system and the hydrogen recombiner. The system contains fire dampers to prevent the spread of a fire.

The hydrogen recombiner and hydrogen recombiner building HVAC system limits the post-accident concentration of hydrogen in the containment, limiting the recombiner exhaust stream temperature to 150 °F, providing isolation of the ventilation system in a recombiner ventilation exhaust high-radiation condition, providing containment pressure boundary integrity, and providing RG 1.97 safety-related indications. The hydrogen recombiner and hydrogen recombiner building HVAC system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.3.3-29, the applicant identified the following hydrogen recombiner and hydrogen recombiner building HVAC system component types that are within the scope of license renewal and subject to an AMR: airblast heat exchangers; damper housings; ductwork; fan/blower housings; flex connections; flow elements; pipe; radiant heaters; reaction chamber; tubing; and valves.

2.3B.3.30.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.30 and MPS Unit 2 FSAR Sections 6.2.5 and 9.4.11. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.30.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the hydrogen recombiner and hydrogen recombiner building HVAC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the hydrogen recombiner and hydrogen recombiner building HVAC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.31 Main Steam Valve Building Ventilation System

2.3B.3.31.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.31, the applicant described the main steam valve building ventilation system. The main steam valve building ventilation system provides the environment suitable for personnel access and equipment operation within the building. The main steam valve building ventilation system also provides an isolation boundary function for the supplementary leak collection-and-release system.

The main steam valve building ventilation system provides a suitable environment for equipment cooling and personnel habitability, isolation in support of the supplementary leak collection-and-release system boundary, and RG 1.97 safety-related indications. The main steam valve building ventilation system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The main steam valve building ventilation system also contains environmental qualification equipment and supports station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity

In LRA Table 2.3.3-30, the applicant identified the following main steam valve building ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; fan/blower housings; flex connections; and heating coils.

2.3B.3.31.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.31 and Millstone FSAR Section 9.4.10. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.31.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the main steam valve building ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the main steam valve building ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.32 Process, Effluent, and Airborne Radiation Monitoring System

2.3B.3.32.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.32, the applicant described the process, effluent, and airborne radiation monitoring system. The process, effluent, and airborne radiation monitoring system provides indications and actuation signals based on detected radiation levels in plant areas and process streams.

The process, effluent, and airborne radiation monitoring system provides actuation signals in response to detected radiation levels and provides RG 1.97 safety-related indications. The process, effluent, and airborne radiation monitoring system also contains environmental qualification equipment.

The applicant identified no component groups that require aging management review.

2.3B.3.32.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.32 and Millstone FSAR Section 11.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.32.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified process, effluent, and airborne radiation monitoring system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified that there are no process, effluent, and airborne radiation monitoring components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.33 Service Building Ventilation and Air-Conditioning System

2.3B.3.33.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.33, the applicant described the service building ventilation and air-conditioning (AC) system. The service building ventilation and AC system provides an environment suitable for personnel access and equipment operation within the building. The system contains fire dampers to prevent the spread of a fire.

The service building ventilation and AC system provides an isolation boundary for the auxiliary building ventilation system. The system also supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-31, the applicant identified the following service building ventilation and AC system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; and flex connections.

2.3B.3.33.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.33 and Millstone FSAR Section 9.4.12. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.33.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the service building ventilation and AC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the service building ventilation and AC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.34 Station Blackout Diesel Generator Building Ventilation System

2.3B.3.34.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.34, the applicant described the station blackout (SBO) diesel generator building ventilation system. The SBO generator building ventilation system provides an acceptable environment for personnel and equipment within the SBO diesel generator enclosure. The system consists of a self-contained AC unit for the SBO diesel generator control room and ventilation supply fans and dampers for the diesel room.

The SBO diesel generator building ventilation system supports SBO. The evaluation boundary of the SBO diesel generator building ventilation system consists of the SBO diesel generator control room AC unit and the diesel room fan housings.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.3-32, the applicant identified the following SBO diesel generator building ventilation system component types that are within the scope of license renewal and subject to an AMR: AC units, self contained; and fan/blower housings.

2.3B.3.34.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.34 and Millstone FSAR Section 8.3.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.34.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the SBO generator building ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the SBO generator building ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.35 Supplementary Leak Collection and Release System

2.3B.3.35.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.35, the applicant described the supplementary leak collection-and-release system. The purpose of the supplementary leak collection-and-release system is to collect containment post-accident leakage from the buildings contiguous to the containment and that house the containment penetrations and ESF equipment. The system maintains negative pressure in these areas, and it filters potentially contaminated air exhausted from these areas and releases it to the atmosphere through the stack. The system also includes fire dampers.

The supplementary leak collection-and-release system provides an exhaust flowpath through filters, maintaining a negative pressure within the areas contiguous to the containment in the event of an accident, and providing RG 1.97 safety-related indications. The supplementary leak collection-and-release system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-33, the applicant identified the following supplementary leak collection-and-release system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; fan/blower housings; flex connections; flow elements; pipe; supplementary leak collection-and-release filter bank housings; tubing; and valves.

2.3B.3.35.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.35 and Millstone FSAR Section 6.2.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.35.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the supplementary leak collection-and-release system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the supplementary leak collection-and-release system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.36 Technical Support Center HVAC and Filtration System

2.3B.3.36.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.36, the applicant described the technical support center HVAC and filtration system. The technical support center HVAC and filtration system provides a suitable environment for maintaining proper equipment operation and provides for radiological protection to personnel occupying the technical support center. The system includes a heat detector for the charcoal filter.

The technical support center HVAC and filtration system supports fire protection.

The applicant identified no component groups that require aging management review.

2.B3.3.36.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.36 and Millstone FSAR Section 9.4.13. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

In LRA Section 2.3.3.36 the applicant stated that the technical support center HVAC and filtration system meets 10 CFR 54.4(a)(3) and is within the scope of license renewal because the system supports fire protection. The applicant further stated that there are no technical support center HVAC and filtration system components that are subject to aging management review since only the active fire detector components are within the scope of license renewal.

On the basis of its review of the applicable FSAR section, the staff determined that the technical support center HVAC and filtration system is not a safety-related system, and agrees with the applicant's determination that it meets 10 CFR 54.4(a)(3). The staff also determined that the acceptability of the applicant's treatment of this system will be addressed in the fire protection Section of this SER.

2.3B.3.36.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant adequately identified technical support center HVAC and filtration system components are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified there are no technical support center HVAC and filtration system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.37 Turbine Building Area Ventilation System

2.3B.3.37.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.37, the applicant described the turbine building area ventilation system. The turbine building area ventilation system provides a suitable environment for the equipment and personnel within the turbine building. The turbine building area ventilation system contains fire dampers to prevent the spread of fire.

The turbine building area ventilation system supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-34, the applicant identified the following turbine building area ventilation system component type that is within the scope of license renewal and subject to an AMR: damper housings.

2.3B.3.37.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.37 and Millstone FSAR Section 9.4.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.37.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the turbine building area ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the turbine building area ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.38 Waste Disposal Building Ventilation System

2.3B.3.38.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.38, the applicant described the waste disposal building ventilation system. The waste disposal building ventilation system provides a suitable environment for personnel access and equipment operation within the building, and minimizes the release of airborne radioactive material to the atmosphere. The system contains fire dampers to prevent the spread of fire.

The waste disposal building ventilation system provides isolation in support of the supplementary leak collection-and-release system and the auxiliary building ventilation system, and provides RG 1.97 safety-related indications. The waste disposal building ventilation system also contains environmental qualification equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a pressure boundary

In LRA Table 2.3.3-35, the applicant identified the following waste disposal building ventilation system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; and flex connections.

2.3B.3.38.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.38 and MPS Unit 2 FSAR Section 9.4.9. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.38.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the waste disposal building ventilation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the waste disposal building ventilation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.39 Unit 2 Fire Protection System

2.3B.3.39.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.39, the applicant described the Unit 2 fire protection system. The MPS fire protection system is a shared system that provides intended functions for both Millstone Unit 2 and Unit 3. This section addresses those portions of the fire protection system that are specifically designated as Unit 2 components. Since this is a shared system, this section is duplicated in the Millstone Unit 2 license renewal application.

The Unit 2 fire protection system provides for detection and suppression of fires such that plant equipment damage is minimized and safe shutdown of the plant can be achieved.

The Unit 2 fire protection system is comprised of fire and smoke detection components, water-based fire suppression components, and gas-based fire suppression components. The system also includes the RCP motor oil collection system components.

The Unit 2 fire protection system provides containment pressure boundary integrity. The fire protection system provides fire detection and suppression capability to protect safe shutdown or safety-related equipment, provides oil collection for the prevention of an oil fire around the RCPs, supports station blackout, provides emergency lighting, and provides backup cooling water to the EDGs in response to a fire event.

Intended functions within the scope of license renewal include the following:

- provides enclosure, shelter, or protection for in-scope equipment (including radiation shielding and pipe whip restraint)
- provides a pressure boundary
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- restricts flow
- provides a spray pattern

In LRA Table 2.3.3-36, the applicant provided the screening results for Unit 2 fire protection system components (shared with Unit 3), identifying those components that require aging management review. Similarly, LRA Table 2.4.2-36 provides the screening results for the Unit 2 miscellaneous structural commodities. Table 2.4.2-36 includes fire barrier penetration seals and fire doors.

In LRA Table 2.3.3-36, the applicant identified the following Unit 2 fire protection system component types that are within the scope of license renewal and subject to an AMR: drip pans; fire hydrants; flame arrestors; flex connections; flow indicators; flow orifices; nozzles; pipe; pumps; RCP oil collection tanks; retard chambers; sprinkler heads; strainers; tubing; valves; and water motor gongs.

2.3B.3.39.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.39 and Millstone FSAR Section 9.10. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.39.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the Unit 2 fire protection system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the Unit 2 fire protection system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.40 Unit 3 Fire Protection System

2.3B.3.40.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.40, the applicant described the Unit 3 fire protection system. The MPS fire protection system is a shared system that provides intended functions for both Millstone Unit 2 and Unit 3. This section addresses those portions of the fire protection system that are specifically designated as Unit 3 components. Since this is a shared system, this section is duplicated in the Millstone Unit 2 license renewal application.

The Unit 3 Fire protection system provides for detection and suppression of fires such that plant equipment damage is minimized and safe shutdown of the plant can be achieved.

The Unit 3 fire protection system is comprised of fire and smoke detection components, water-based fire suppression components, and gas-based fire suppression components. The system also includes the RCP motor oil collection system components.

The Unit 3 fire protection system provides containment pressure boundary integrity, RG 1.97 safety-related indications, and pressure relief for tornado protection in the cable spreading area. The Unit 3 fire protection system also provides fire detection and suppression capability to protect safe shutdown or safety-related equipment, provides oil collection for the prevention of an oil fire around the RCPs, supports station blackout, and contains environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides for heat transfer
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides enclosure, shelter, or protection for in-scope equipment (including radiation shielding and pipe whip restraint)
- provides filtration
- provides a spray pattern
- restricts flow

- provides for vortex suppression

In LRA Table 2.3.3-37 the applicant provided the screening results for Unit 3 fire protection system components, identifying those components that require aging management review. Similarly, LRA Table 2.4.2-36 provides the screening results for the Unit 3 miscellaneous structural commodities. Table 2.4.2-36 includes fire barrier penetration seals and fire doors.

In LRA Table 2.3.3-37, the applicant identified the following Unit 3 fire protection system component types that are within the scope of license renewal and subject to an AMR: CO_2 storage tank; CO_2 tank cooling coils; compressed air cylinders; compressed halon cylinders; coolant heat exchanger; damper housings; diesel fuel storage tank; drip pans; ductwork; exhaust silencer; expansion tank overflow container; fan/blower housings; filter/strainers; fire hydrants; fire protection RCP oil collection tanks; fire water storage tank; flame arrestors; flex connections; flexible hoses; flow indicatiors; flow switches; heater unit; hydropneumatic tank; instrument snubbers; level indicators; lube oil cooler; nozzles; odorizers; oil mist recovery unit; oil reservoirs; pipe; pumps; restricting orifices; self contained breathing apparatus; sprinkler heads; tubing; vacuum limiter; valves; vortex breaker assembly; water cooled exhaust manifold; and water manifold.

2.3B.3.40.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.40 and Millstone FSAR Section 9.10. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.40.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the Unit 3 fire protection system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the Unit 3 fire protection system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.41 Domestic Water System

2.3B.3.41.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.41, the applicant described the domestic water system. The purpose of the domestic water system is to provide potable water for various uses, including make-up water to the fire water storage tanks, and back-up cooling for the instrument air compressors. The domestic water system is supplied by the public water system from the town of Waterford, Connecticut.

The domestic water system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The domestic water system also provides makeup water to the fire water storage tanks and cooling water flow to the instrument air compressor that is credited for fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity

In LRA Table 2.3.3-38, the applicant identified the following domestic water system component types that are within the scope of license renewal and subject to an AMR: flow indicator; heater; pipe; shock absorbers; strainers; and valves.

2.3B.3.41.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.41 and Millstone FSAR Section 9.2.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.41 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 RAI as discussed below.

In its review, the staff noted that a license renewal drawing for the domestic water system shows that backflow preventors are within the scope of license renewal and subject to an AMR. However, component type "backflow preventor" is not listed in LRA Table 2.3.3-38 as a component type with intended functions. In RAI 2.3.3.41-1B, dated June 9, 2004, the staff requested the applicant to explain whether these components were included with another component type or to explain their exclusion from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the subject backflow preventors are within the scope of license renewal and are included in the component type, "Valves," in LRA Table 2.3.3-38.

In its review, the staff finds the applicant's response to 2.3.3.41-1B acceptable based on inclusion of the component.

In its review, the staff also noted that a license renewal drawing for the domestic water system indicates that showers are within the scope of the license renewal and subject to an AMR. However, component type "shower" is not listed in LRA Table 2.3.3-38 as a component type with intended functions. In RAI 2.3.3.41-2B, dated June 9, 2004, the staff requested the applicant to explain whether these components were included with another component type or to explain their exclusion from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the subject showers shown are within the scope of license renewal and are included in the component type, "Pipe," in LRA Table 2.3.3-38.

In its review, the staff finds the applicant's response to RAI 2.3.3.4-2B acceptable based on inclusion of the component.

2.3B.3.41.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the domestic water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the domestic water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.42 Emergency Diesel Generator System

2.3B.3.42.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.42, the applicant described the emergency diesel generator system. The purpose of the emergency diesel generator (EDG) system is to provide a dependable on-site AC power source capable of automatically starting and supplying the loads necessary to safely shutdown the plant and maintain it in a safe shutdown condition.

The EDG system is comprised of two identical EDGs. Each EDG supplies 4160 vac power to its respective emergency bus. The EDG system includes the starting air subsystem, lubricating oil subsystem, cooling water subsystem, and the combustion air intake and exhaust subsystem.

The EDG system provides a reliable source of emergency power for the required loads and providing RG 1.97 safety-related indications. The EDG system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The EDG system supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides for heat transfer

- provides limited structural integrity
- provides filtration
- restricts flow

In LRA Table 2.3.3-39, the applicant identified the following EDG system component types that are within the scope of license renewal and subject to an AMR: air distributors; air receiver tanks; air tanks; crankcase vacuum manometers; diesel engine jacket water cooler heat exchangers; engine air cooler water heat exchangers; engine sumps; expansion joints; filter/strainers; fresh water expansion tanks; governor lube oil coolers; jacket water heaters; level indicators; lube oil heat exchangers; oil reservoirs; oil separators; pipe; pre-lube oil heaters; pumps; restricting orifices; servo fuel rack shutdown and starting boosters; silencers; tubing; turbo chargers; and valves.

2.3B.3.42.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.42 and Millstone FSAR Sections 8.3.1, 9.5.5, 9.5.6, 9.5.7, and 9.5.8. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.B3.3.42.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the EDG system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the EDG system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.43 Emergency Diesel Generator Fuel Oil System

2.3B.3.43.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.43, the applicant described the EDG fuel oil system. The EDG fuel oil system provides fuel oil to the diesel engine cylinders. The EDG fuel oil system includes fuel oil tanks, transfer pumps, strainers, piping, and valves.

The EDG fuel oil system provides adequate fuel oil to support the safety function of the diesel generators. The EDG fuel oil system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The EDG fuel oil system supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides enclosure, shelter, or protection for in-scope equipment (including radiation shielding and pipe whip restraint)
- provides limited structural integrity
- provides filtration
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- restricts flow

In LRA Table 2.3.3-40, the applicant identified the following EDG fuel oil system component types that are within the scope of license renewal and subject to an AMR: accumulator tanks; drip pans; filter/strainers; flame arrestors; flow elements; fuel oil day tanks; fuel oil storage tanks; injectors; pipe; pumps; restricting orifices; tubing; and valves.

2.3B.3.43.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.43 and Millstone FSAR Section 9.5.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.43 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 RAI as discussed below.

In its review, the staff noted that the Millstone FSAR states that backflow prevention devices preclude oil backing up out of the floor drains in the event of a day tank rupture. These devices are not shown on license renewal drawings for the EDG fuel oil system and are not listed in LRA Table 2.3.3-40 as components requiring an AMR. In RAI 2.3.3.43-1B, dated June 9, 2004, the staff requested the applicant to explain whether these components were included with another component type or to explain their exclusion from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the subject backflow prevention devices are located in the diesel generator room floor drains to prevent the backflow of combustible liquids to safety-related areas through the interconnected drain systems. The backflow devices are part of the sanitary water system. Upon further review, the applicant concluded that the backflow prevention devices should be included within the scope of license renewal, since these components support fire protection and the sanitary water system should include an intended function that meets the criteria of 10 CFR 54.4(a)(3) for fire protection. The carbon steel backflow prevention devices are included in the component type, "Valves," in LRA Table 2.3.3-50.

In its review, the staff finds the applicant's response to RAI 2.3.3.43-1B acceptable based on inclusion of the component.

Another license renewal drawing for the EDG fuel oil system shows dewatering boxes excluded from scope and not subject to an AMR. Additionally, sump and water pumping connections are shown not to be subject to an AMR. In order for the staff to complete its review, more information was necessary to ensure that all the components performing the system-level intended functions were included within the scope of license renewal. In RAI 2.3.3.43-2B, dated June 9, 2004, the staff requested the applicant to supply the FSAR references that describe these components, or provide a summary description of their functions including any intended functions.

In its response, dated July 26, 2004, the applicant stated that the Millstone FSAR does not contain a description of the dewatering boxes. The dewatering boxes shown on the license renewal drawing for the EDG fuel oil system are used to remove water that accumulates inside each fuel oil storage tank. The dewatering tank and its components were not highlighted on the license renewal drawing. The tank well, tank well pipe, and tank well pipe cap were evaluated as an integral part of the "Fuel Oil Storage Tank" shown in LRA Table 2.3.3-40.

In its review, the staff finds the applicant's response to RAI 2.3.3.43-2B acceptable based on inclusion of the component.

2.3B.3.43.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the EDG fuel oil system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the EDG fuel oil system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.44 Station Blackout Diesel Generator System

2.3B.3.44.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.44, the applicant described the station blackout (SBO) diesel generator system. The Millstone SBO diesel generator system is a shared system that provides intended functions for both Millstone Unit 2 and Millstone Unit 3. Since this is a shared system, this section is duplicated in the Millstone Unit 2 license renewal application.

The purpose of the SBO diesel generator system, installed in response to 10 CFR 50.63, is to provide an alternate AC power source to either the Millstone Unit 2 or Unit 3 emergency bus. The SBO diesel generator system consists of the diesel generator and includes the lubricating oil subsystem, engine cooling subsystem, air intake and exhaust subsystem, fuel oil subsystem, and starting air subsystem.

The SBO diesel generator system supports station blackout and fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides filtration
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- restricts flow

In LRA Table 2.3.3-41, the applicant identified the following SBO diesel generator system component types that are within the scope of license renewal and subject to an AMR: aftercoolers; air receivers; aspirators; expansion joints; expansion tanks; filter/strainers; flame arrestors; flow indicators; fuel heaters; fuel oil day tanks; fuel oil storage tanks; immersion heaters; injectors; lube oil coolers; lubricators; oil sumps; pipe; pulsation dampeners; pumps; radiators; restricting orifices; silencers; tubing; turbo chargers; upper and lower air start motors; and valves.

2.3B.3.44.2 Staff Evaluation

The Millstone SBO diesel generator system is a shared system that provides intended functions for both Millstone Unit 2 and Millstone Unit 3. The staff reviewed the Millstone Unit 3 LRA Section 2.3.3.44, Millstone Unit 2 FSAR Section 1.2.9, and Millstone Unit 3 FSAR Section 8.3.1. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.44 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 RAI as discussed below.

In its review, the staff noted that a license renewal drawing for the SBO diesel generator system shows a 28-inch exhaust rain cap to be subject to an AMR. The rain cap appears to provide a pressure boundary function. Millstone Unit 2 LRA Table 2.3.3-36 and Millstone Unit 3 LRA Table 2.3.3-41 do not list the rain cap as a component type requiring an AMR. In RAI 2.3.3.44-1B, dated June 9, 2004, the staff requested the applicant to explain whether the rain cap was included with another component type or to explain its exclusion.

In its response, dated July 26, 2004, the applicant stated that the subject rain cap, shown on the SBO diesel generator system license renewal drawing, is an integral part of the exhaust silencer. The exhaust silencer with the integral rain cap is within the scope of license renewal and included in the component type, "Silencers," in Unit 2 LRA Table 2.3.3-36 and Unit 3 LRA Table 2.3.3-41.

The staff finds the applicant's response to RAI 2.3.3.44-1B acceptable, based on inclusion of the component.

The Millstone Unit 3 FSAR states that all safety-related lines or valves, which are subject to freezing, are electrically heat-traced and insulated. A license renewal drawing for the station blackout fuel oil system shows a line going from the fuel oil storage tank to the fuel oil day tank that is within the scope of license renewal. It appears that the line in question is insulated. Thermal insulation is not listed as within the scope of license renewal and subject to an AMR for any Unit 2 or Unit 3 systems; nor is it discussed in the Unit 2 or Unit 3 Millstone Unit 3 LRA. In RAI 2.3.3.44-2B, June 9, 2004, the staff requested the applicant to explain the apparent exclusion of pipe insulation.

In its response, dated July 26, 2004, the applicant stated that the subject fuel line is heat traced and thermally insulated. This insulation does not perform an intended function since the effectiveness of the heat trace system on the fuel temperatures in the subject fuel line and fuel tank is monitored. In the event of low fuel temperatures, a heat trace trouble alarm is activated in the control room. Insulation-related problems would be rapidly identified and repaired. Therefore, the thermal insulation is not within the scope of license renewal.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.44-2B acceptable based on operator actions respond to a heat-trace trouble alarm and initiate the subsequent corrective actions. The ability of the system's temperature monitoring instrumentation to localize a low temperature along the length of the piping would allow differentiation between thermal insulation or heat-trace circuit problems. Therefore, the cause of the trouble alarm would be localized such that identification and appropriate repair would be made before loss of system-level intended function would occur. Therefore, the staff's concern described in RAI 2.3.3.44-2B is resolved.

2.3B.3.44.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the SBO diesel generator system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the SBO diesel generator system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.45 Security System

2.3B.3.45.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.45, the applicant described the security system. The Millstone security system is a shared system that provides intended functions for both Millstone Unit 2 and Millstone Unit 3. Since this is a shared system, this section is duplicated in the Millstone Unit 2 license renewal application.

Security system lighting provides illumination for operator access routes required in response to fire protection events. The security system diesel generator provides back-up electrical power for plant security features including security perimeter lighting. The security system includes the lubricating oil subsystem, engine cooling subsystem, fuel oil subsystem, and the air intake and exhaust subsystem that support the security diesel generator.

The security system provides yard lighting, and back-up electrical power for yard lighting, in support of fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides filtration

In LRA Table 2.3.3-42, the applicant identified the following security system component types that are within the scope of license renewal and subject to an AMR: coolers; diesel fuel oil storage tank; fan/blower housings; filter/strainers; heaters; oil pans; pipe; pumps; radiators; tubing; and valves.

2.3B.3.45.2 Staff Evaluation

The staff reviewed the Millstone Unit 3 LRA Section 2.3.3.45. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.B3.3.45.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its

review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the security system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the security system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.46 Boron Recovery System

2.3B.3.46.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.46, the applicant described the boron recovery system. The boron recovery system receives reactor coolant letdown from the CVCS that has been degasified in the radioactive gaseous waste system. The liquid entering the boron recovery system is produced by the feed and bleed operations necessary to maintain the boron concentration in the reactor coolant at the desired level.

The boron recovery system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The boron recovery system also supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-43, the applicant identified the following boron recovery system component types that are within the scope of license renewal and subject to an AMR: bolting; boron recovery tanks; cesium-removal ion exchangers; filter/strainers; pipe; tubing; and valves.

2.3B.3.46 Staff Evaluation

The staff reviewed LRA Section 2.3.3.46 and Millstone FSAR Section 9.3.5. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.46.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the boron recovery system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the boron recovery system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.47 Radioactive Liquid Waste Processing System

2.3B.3.47.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.47, the applicant described the radioactive liquid waste processing system. The radioactive liquid waste processing system collects, stores, processes, recycles, and disposes of liquid radioactive waste.

The radioactive liquid waste processing system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-44, the applicant identified the following radioactive liquid waste processing system component types that are within the scope of license renewal and subject to an AMR: bolting; flow elements; pipe; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the radioactive liquid waste processing system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the radioactive liquid waste processing system:

- pumps
- radiation detectors
- tubing

2.3B.3.47.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.47 and Millstone FSAR Section 11.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the boron recovery system is acceptable.

2.3B.3.47.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the liquid waste processing system components that are 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 system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.48 Radioactive Gaseous Waste System

2.3B.3.48.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.48, the applicant described the radioactive gaseous waste system. The radioactive gaseous waste system processes and controls the release of potentially radioactive waste gases.

The radioactive gaseous waste system provides pressure boundary integrity and isolation for the containment, and by providing RG 1.97 safety-related indications. The radioactive gaseous waste system provides a pressure boundary for interfacing systems and since the system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The radioactive gaseous waste system also supports fire protection and contains environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity

In LRA Table 2.3.3-45, the applicant identified the following radioactive gaseous waste system component types that are within the scope of license renewal and subject to an AMR: damper housings; ductwork; pipe; process vent cooler; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the radioactive gaseous waste system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the radioactive gaseous waste system:

- degasifier feed preheater
- degasifiers
- degasifier condenser

- tubing

2.3B.3.48.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.48 and Millstone FSAR Section 11.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the radioactive gaseous waste system is acceptable.

2.3B.3.48.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the radioactive gaseous waste system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the radioactive gaseous waste system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.49 Post-Accident Sampling System

2.3B.3.49.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.49, the applicant described the post-accident sampling system. The post-accident sampling system is designed to obtain samples of the reactor coolant, the containment sump fluid, and the containment atmosphere under accident conditions. The post-accident sampling system includes the containment hydrogen analyzers.

The post-accident sampling system provides the capability to obtain a post-accident sample of the containment atmosphere and the primary coolant, providing pressure boundary integrity and isolation for the containment and interfacing safety-related systems, and providing RG 1.97 safety-related indications. The post-accident sampling system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The post-accident sampling system also contains environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides limited structural integrity
- provides filtration
- provides for heat transfer

In LRA Table 2.3.3-46, the applicant identified the following post-accident sampling system component types that are within the scope of license renewal and subject to an AMR: accumulators; bolting; de-ionized water flush tank; drain tanks; filter/strainers; flow elements; hoses; hydrogen sensors; hydrogen tanks; pipe; pumps; restricting orifices; sample coolers; sample cylinders/chambers; tubing; and valves.

2.3B.3.49.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.49 and Millstone FSAR Section 9.3.2.6. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.3.49.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the post-accident sampling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the post-accident sampling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.50 Radioactive Solid Waste System

2.3B.3.50.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.50, the applicant described the radioactive solid waste system. The radioactive solid waste system is designed to collect, dewater, package, and temporarily store solid radioactive waste materials prior to shipment offsite and ultimate disposal.

The radioactive solid waste system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The radioactive solid waste system also supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-47, the applicant identified the following radioactive solid waste system component types that are within the scope of license renewal and subject to an AMR: bolting; pipe; and valves.

2.3B.3.50.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.50 and Millstone FSAR Section 11.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.B3.3.50.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the radioactive solid waste system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the radioactive solid waste system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.51 Reactor Plant Aerated Drains System

2.3B.3.51.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.51, the applicant described the reactor plant aerated drains system. The reactor plant aerated drains system collects potentially contaminated effluent from sumps located inside the containment, ESF building, auxiliary building, pipe tunnel, fuel building, waste disposal building, and turbine building. The collected effluent is discharged to the radioactive liquid waste processing system for processing and disposal.

The reactor plant aerated drains system provides containment pressure boundary integrity, collection and removal of groundwater from the ESF building underdrains and porous concrete, prevention of backflow of the SW pump cubicles drains, a means to detect flooding due to leakage from emergency core cooling system components, RG 1.97 safety-related indications, and a supplemental leak collection-and-release system boundary in the ESF building. The reactor plant aerated drains system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The reactor plant aerated drains system also contains environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary
- restricts flow

In LRA Table 2.3.3-48, the applicant identified the following reactor plant aerated drains system component types that are within the scope of license renewal and subject to an AMR: expansion joints; filter/strainers; flow elements; flow indicators; groundwater sump; pipe; pumps; restricting orifices; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the plant aerated drains system. In its December 3, 2004, RAI response, the applicant identified the groundwater underdrains storage tank component type that was added to the scope of the plant aerated drains system.

2.3B.3.51.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.51, the November 9, 2004, response, and Millstone FSAR Sections 3.8.1 and 9.3.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the reactor plant aerated drains system is acceptable.

2.3B.3.51.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the reactor plant aerated drains system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the reactor plant aerated drains system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.52 Reactor Plant Gaseous Drains System

2.3B.3.52.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.52, the applicant described the reactor plant gaseous drains system. The reactor plant gaseous drains system collects primary coolant drains and hydrogenated liquids from valve and pump leakoffs, and other equipment.

The reactor plant gaseous drains system provides containment pressure boundary integrity and RG 1.97 safety-related indications. The reactor plant gaseous drains system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC. The reactor plant gaseous drains system also contains environmental qualification components and supports station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-49, the applicant identified the following reactor plant gaseous drains system component types that are within the scope of license renewal and subject to an AMR: bolting; flow indicators; pipe; pumps; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the reactor plant gaseous drains system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the reactor plant gaseous drains system:

- containment drains transfer tank
- primary drains transfer tank

2.3B.3.52.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.52 and Millstone FSAR Section 9.3.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.52 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 its review, the staff noted that a license renewal drawing for the reactor plant gaseous drains system shows containment drains transfer tanks excluded from the scope of license renewal. These tanks serve pressure boundary and limited structural support intended functions and should be included within the scope of license renewal. In RAI 2.3.3.52-1B, dated June 9, 2004, the staff requested the applicant to explain why the transfer tanks in the reactor plant gaseous drains system were excluded from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the NSR primary drains transfer tank and the NSR containment drains transfer tank are located on the lowest level of the structures that house them and neither is in the immediate vicinity of any safety-related equipment. Additionally, neither tank operates at an elevated pressure. Consequently, the primary drains transfer tank and the containment drains transfer tank are not within the scope of license renewal, since they do not meet the criteria for pressure boundary or limited structural integrity defined in Section 2.1.3.6 of the LRA. The lines attached to these tanks, however, are within the scope of license renewal because they traverse into areas that do contain safety-related equipment.

The staff finds the applicant's response to RAI 2.3.3.52-1B acceptable because the applicant adequately explained that the primary drains transfer tank and the containment drains transfer tank do not present a potential for spatially interacting with safety-related SSCs, nor do they functionally support any system-level intended functions. The staff concludes that the primary drains transfer tank and the containment drains transfer tank were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.52-1B is resolved.

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the reactor plant gaseous drains system is acceptable.

2.3B.3.52.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawing, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the reactor plant gaseous drains system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the reactor plant gaseous drains system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.3.53 Sanitary Water System

2.3B.3.53.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.53, the applicant described the sanitary water system. The sanitary water system collects drainage from sanitary components and directs non-radioactively contaminated drainage to the public sewer system. The sanitary water system directs potentially contaminated drainage to a contaminated sump for further transfer to the radioactive liquid waste processing system.

The sanitary water system contains NSR components spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function of a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.3-50, the applicant identified the following sanitary water system component types that are within the scope of license renewal and subject to an AMR: pipe and valves.

2.3B.3.53.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.53 and Millstone FSAR Section 9.2.4. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.53 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 RAI as discussed below.

The FSAR states that portions of the domestic and sanitary water systems in the control building are seismically supported, to assure that the failure of the piping will not cause a loss of positive pressure in the control building. A license renewal drawing shows sanitary water system piping running from floor drains excluded from the scope of license renewal. Sanitary system piping running through the control building from roof drains is also shown as not being within the scope of license renewal. Failure of this piping could cause the sanitary water system to fail to maintain positive pressure in the control building, whether or not seismic support is required. The subject piping should be included within the scope of license renewal because it performs a pressure boundary intended function. In RAI 2.3.3.53-1B, dated June 9, 2004, the staff requested the applicant to confirm that the piping in the domestic and sanitary water system does not perform system intended functions that would necessitate its inclusion within the scope of license renewal.

In its response, dated July 26, 2004, the applicant stated that the sanitary water floor drains and piping license renewal drawings for the sanitary water system are in the mechanical room portion of the control building and have drain traps (loop seals) installed. These drain traps are located directly below the drain opening, but are not shown on the license renewal drawing. The drain traps are currently within the scope of license renewal as part of the control building pressure boundary and are included in the component type, "Pipe," in LRA Table 2.3.3-50. The drain line pipe downstream of the drain traps is embedded in concrete and does not perform the function of maintaining a positive pressure in the control building. There is effectively no upstream piping associated with these drain traps. The roof drains shown on the license renewal drawing, are embedded in the ceiling and walls of the control building and do not penetrate into the control building pressure boundary. Since failure of the piping shown on the license renewal drawing, associated with the floor drains, and of the roof drain piping, will not cause a loss of positive pressure in the control building, the applicant stated that this piping is not the subject of the discussion in FSAR Section 9.2.4.3 and is not within the scope of license renewal.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.53-1B acceptable because the applicant adequately explained that the drain lines are embedded in concrete such that their failure would not affect the pressure boundary of the control building. The discussion in the FSAR does not describe the embedded piping which has no intended functions. Additionally, there is adequate explanation that the drain traps are associated with exposed drains are within the scope of license renewal and included in Table 2.3.3-50. The staff concludes that the drain lines associated with the sanitary water system were scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.53-1B is resolved.

A license renewal drawing for the sanitary water system shows a line to be within the scope of license renewal that is indicated to continue onto another license renewal drawing where it is stated that the subject line provides continuous drip for maintaining the house trap seal, which is shown to be within the scope of license renewal. From the drawings it does not appear that the subject line connects directly to the running trap. To maintain the trap seal, lines that carry the flow to the "in-scope" trap, should be included within the scope of license renewal. In RAI 2.3.3.53-2B, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of these lines.

In its response, dated July 26, 2004, the applicant stated that the drain line on the license renewal drawing was inadvertently highlighted and is not within the scope of license renewal. The drain trap shown on the license renewal drawing is within the scope of license renewal since it is the only component necessary to maintain the negative pressure envelope in the main steam valve house as part of the supplementary leak collection-and-release system boundary (which is further described in main steam valve building ventilation system). The in-scope drain trap is included in the component type, "Pipe," in LRA Table 2.3.3-50.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.53-2B acceptable because the applicant clarified that the drain line was inadvertently highlighted and is not within the scope of license renewal, and that the drain trap was scoped in accordance with the requirements of 10 CFR 54.4(a) and screened in accordance with the requirements of 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.3.53-1B is resolved.

2.3B.3.53.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the sanitary water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the sanitary water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4 Steam and Power Conversion Systems

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

The applicant described the supporting structures and components of the steam and power conversion systems in the following sections of the LRA:

- 2.3.4.1 main steam system
- 2.3.4.2 feedwater system
- 2.3.4.3 condensate make-up and draw-off system
- 2.3.4.4 steam generator blowdown system
- 2.3.4.5 auxiliary feedwater system
- 2.3.4.6 auxiliary steam system
- 2.3.4.7 auxiliary boiler condensate and feedwater system
- 2.3.4.8 hot water heating system
- 2.3.4.9 hot water pre-heating system
- 2.3.4.10 steam generator chemical addition system
- 2.3.4.11 turbine plant miscellaneous drains system

The corresponding subsections of this SER (2.3B.4.1 - 2.3B.4.11, respectively) present the staff's related review findings.

2.3B.4.1 Main Steam System

2.3B.4.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.1, the applicant described the main steam system. The main steam system transports steam from the steam generators to the turbine-generator. This system also provides a means of controlled heat release from the nuclear steam supply system during periods of station electrical load rejection or when the condenser is not available. The system provides steam for various auxiliary services including the steam generator auxiliary feedwater pump turbine, turbine gland sealing, and auxiliary steam.

The main steam system provides a steam flow path to remove heat from the RCS, overpressure protection for the steam generators, steam to the steam generator auxiliary feedwater pump turbine, isolation at system interfaces, containment pressure boundary integrity, and RG 1.97 safety-related indications. The main steam system also prevents uncontrolled blowdown of more than one steam generator following a main steam line break (MSLB), limits the maximum steam flow rate from a faulted steam generator, and provides steam generator isolation and RCS heat removal in the event of a high-energy line break (HELB) outside containment. The main steam system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system also includes environmental qualification components and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-1, the applicant identified the following main steam system component types that are within the scope of license renewal and subject to an AMR: expansion joints; flexible hoses; flow elements; pipe; steam traps; tubing; and valves.

2.3B.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.1 and Millstone FSAR Sections 7.1.2.5, 7.3.2, 10.3, and 15.0. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.4.1.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an

AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the main steam system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the main steam system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.2 Feedwater System

2.3B.4.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.2, the applicant described the feedwater system. The feedwater system heats and supplies condensate-quality water to the secondary-side of the steam generators to support heat removal from the RCS. A portion of the system provides the flowpath for auxiliary feedwater flow to the steam generators.

The feedwater system provides a flow path for auxiliary feedwater to the steam generators, isolation of feedwater flow in response to an MSLB accident, steam generator isolation and auxiliary feedwater flowpath in response to a HELB outside containment, containment pressure boundary integrity, and RG 1.97 safety-related indications. The feedwater system provides NSR signals to the plant process computer for calorimetric calculations. The system contains environmental qualification components and supports fire protection and station blackout.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.4-2, the applicant identified the following feedwater system component types that are within the scope of license renewal and subject to an AMR: control blocks, flow elements; hydraulic reservoirs; nitrogen accumulators; pipe; tubing; and valves.

2.3B.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.2 and Millstone FSAR Sections 7.1.2.5, 10.4.7, 15.1, and 15.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.2 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 its review, the staff noted that a license renewal drawing for the feedwater system indicates that a portion of the feedwater system is continued on another license renewal drawing. However, this drawing is not included in the LRA. Additionally, LRA Section 2.3.4.2 states that "the evaluation boundary begins at the feedwater flow elements" but does not identify the particular elements to which the LRA refers. In RAI 2.3.4.2-1B, dated June 9, 2004, the staff requested the applicant to supply the drawing that contained the remainder of the feedwater system or to describe the portions of the system that are not shown on a license renewal drawing, such as the flow elements.

In its response, dated July 26, 2004, the applicant stated that the feedwater system license renewal boundary begins at the subject flow elements shown on license renewal drawings for the feedwater system. The flow elements are FE-48A, -48B, -48C, and -48D. There are no feedwater system components within the scope of license renewal on other drawings.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.2-1B acceptable, because the applicant adequately explained that the system evaluation boundary for the feedwater system begins at flow elements FE-48A, -48B, -48C, and -48D shown on the license renewal drawings and that no other feedwater system components within the scope of license renewal exist on other drawings. Therefore, the staff's concern described in RAI 2.3.4.2-1B is resolved.

2.3B.4.2.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the feedwater system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the feedwater system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.3 Condensate Make-Up and Draw-Off System

2.3B.4.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.3, the applicant described the condensate make-up and draw-off system. The condensate make-up and draw-off system supplies make-up water to various plant systems, including condensate and feedwater.

The condensate make-up and draw-off system supports fire protection.

The intended function within the scope of license renewal includes providing a pressure boundary.

In LRA Table 2.3.4-3, the applicant identified the following condensate make-up and draw-off system component types that are within the scope of license renewal and subject to an AMR: condensate storage tank; pipe; rupture disk; tubing; and valves.

2.3B.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.3 and Millstone FSAR Sections 10.3.5, 10.4.7.2, and 10.4.8. The staff's review, using the evaluation methodology described in Section 2.3 of this

SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.3 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 its review, the staff stated that the FSAR states that a recirculation heating subsystem is provided for the condensate storage tank to maintain a minimum water temperature of 40 °F and thus prevent freezing of tank inventory. The components of this subsystem are located outside of the condensate storage tank in the yard and are heat-traced to prevent freezing. A license renewal drawing for the condensate make-up and draw-off system shows that the components downstream of valves isolating the recirculating heating system from the condensate storage tank are not within the scope of license renewal. The condensate make-up and draw-off system is within the scope of license renewal because the condensate storage tank provides a backup supply of water to the auxiliary feedwater pumps. Ice in the condensate storage tank has the potential of blocking flow to the auxiliary feedwater pumps. In RAI 2.3.4.3-1B, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the condensate storage tank recirculation heating system piping from the scope of license renewal and from being subject to an AMR.

In its response, dated June, 9, 2004, the applicant stated that the condensate storage tank is an NSR tank and is within the scope of license renewal to support operation of the auxiliary feedwater pumps during an Appendix R fire event. Although the condensate storage tank is provided with a recirculation heating subsystem, the installed low-temperature alarm and associated actions initiated in response to the alarm, together with the thermal inertia associated with such a large tank, provide assurance that freezing of the tank contents will not occur. Therefore, the condensate storage tank recirculation heating subsystem is not required for the tank to perform its intended function and is not within the scope of license renewal.

In its review, the staff finds the applicant's response to RAI 2.3.4.3-1B acceptable based on the explanation for exclusion of the component.

2.3B.4.3.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawing, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the condensate make-up and draw-off system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the condensate make-up and draw-off system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.4 Steam Generator Blowdown System

2.3B.4.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.4, the applicant described the steam generator blowdown system. The steam generator blowdown system is used in conjunction with the condensate demineralizer, chemical addition, and sample systems to control the chemistry of the steam generator shell side water. Steam generator blowdown system flow is automatically isolated upon indications of a steam generator tube leak or an event requiring conservation of steam generator secondary-side inventory.

The steam generator blowdown system provides isolation at system interfaces, automatic isolation of steam generator blowdown flow, containment pressure boundary integrity, and RG 1.97 safety-related indications. The steam generator blowdown system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system also includes environmental qualification components and supports fire protection and anticipated transient without scram.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-4, the applicant identified the following steam generator blowdown system component types that are within the scope of license renewal and subject to an AMR: flow elements; pipe; pumps; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the steam generator blowdown system. In its December 3, 2004, RAI response, the applicant identified the steam generator blowdown tank component type that was added to the scope of the steam generator blowdown system.

2.3B.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.4 and Millstone FSAR Sections 7.1.2.5, 10.4.7, 15.1, and 15.2. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.4 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In its review, the staff noted that a license renewal drawing for the steam generator blowdown system shows the license renewal boundary ending at isolation valves for sample lines and components associated with a skid-mounted radiation monitor. The radiation monitor provides one of the signals that affect steam generator blowdown system isolation, and lines and components upstream of the monitor have a pressure boundary intended function. In RAI 2.3.4.4-1B, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the radiation monitoring and sample lines and components from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the isolation of steam generator blowdown flow in response to a steam generator blowdown sample monitor signal is not a license renewal intended function as defined in 10 CFR 54.4(a). Failure to automatically isolate the flow of steam generator blowdown effluent with increased activity levels would not prevent safe shutdown of the reactor or challenge the offsite dose limits of 10 CFR 100. Therefore, the applicant concluded that the steam generator blowdown sample monitor and associated components are not within the scope of license renewal.

The staff finds the applicant's response to RAI 2.3.4.4-1B acceptable, because the applicant adequately explained exclusion of the component.

The staff also reviewed the results of the scoping methodology changes, set forth in responses to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the steam generator blowdown system is acceptable.

2.3B.4.4.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawing, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the steam generator blowdown system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the steam generator blowdown system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.5 Auxiliary Feedwater System

2.3B.4.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.5, the applicant described the auxiliary feedwater system. The auxiliary feedwater system provides a supply of feedwater to the secondary-side of the steam generators for RCS heat removal if normal feedwater flow is unavailable. The system consists of two motor-driven pumps powered from the emergency busses, and a steam turbine-driven pump that provides feedwater flow upon a loss of all AC power. The auxiliary feedwater system includes the demineralized water storage tank that provides a missile-protected source of water to the auxiliary feedwater pumps. Emergency make-up to the tank can be provided from domestic water via removable spool pieces. Additionally, the SW system can provide an alternate source of water to the pumps through removable spool pieces.

The auxiliary feedwater system provides feedwater to the steam generators for removal of sensible and decay heat from the RCS, isolation of auxiliary feedwater flow to a faulted or ruptured steam generator, auxiliary feedwater flow limitation to prevent pump runout, feedwater flow and steam generator isolation in response to a high-energy line break outside containment, containment pressure boundary integrity, and RG 1.97 safety-related indications. The auxiliary feedwater system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system contains environmental qualification components and supports fire protection, anticipated transient without scram, and station blackout.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- restricts flow
- provides limited structural integrity

In LRA Table 2.3.4-5, the applicant identified the following auxiliary feedwater system component types that are within the scope of license renewal and subject to an AMR: auxiliary feedwater (AFW) pump oil coolers; cavitating venturies; demineralized water storage tank; flow elements; level indicators; lube oil filters; oil reservoirs; pipe; pumps; restricting orifices; spool pieces; strainers; tubing; turbine casings; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the auxiliary feedwater system. In its December 3, 2004, RAI response, the applicant identified the demineralized water storage tank (DWST) heater component type that was added to the scope of the auxiliary feedwater system.

2.3B.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.5 and Millstone FSAR Sections 7.3.1 and 10.4.9. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

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

functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff also reviewed the results of the scoping methodology changes, set forth in responses to 04, and December 3, 2004. The staff finds the expanded scope of mechanical components identified in the December 3, 2004, response acceptable, because the applicant adequately included NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the auxiliary feeder system is acceptable.

2.3B.4.5.3 Conclusion

The staff reviewed the LRA and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the auxiliary feedwater system components that are 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 components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.6 Auxiliary Steam System

2.3B.4.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.6, the applicant described the auxiliary steam system. The auxiliary steam system supplies steam to various heating and processing equipment during normal plant operations.

The auxiliary steam system provides isolation in the event of a HELB. The auxiliary steam system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system also provides environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-6, the applicant identified the following auxiliary steam system component types that are within the scope of license renewal and subject to an AMR: pipe; tubing; and valves.

2.3B.4.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.6 and Millstone FSAR Section 10.4.10. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.4.6.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the auxiliary steam system provides components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the auxiliary steam system provides components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.7 Auxiliary Boiler Condensate and Feedwater System

2.3B.4.7.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.7, the applicant described the auxiliary boiler condensate and feedwater system. The auxiliary boiler condensate and feedwater system provides condensate to the auxiliary boiler for the generation of auxiliary steam when the main steam system is not available.

The auxiliary boiler condensate and feedwater system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-7, the applicant identified the following auxiliary boiler condensate and feedwater system component types that are within the scope of license renewal and subject to an AMR: auxiliary condensate cooler; auxiliary condensate flash tank; auxiliary condensate tank; level indicators; pipe; pumps; restricting orifices; sample coolers; steam traps; strainers; tubing; and valves.

As a result of the scoping methodology changes made in response to RAI 2.1-1, the applicant expanded the system boundaries for the auxiliary boiler condensate and feedwater system. In its December 3, 2004, RAI response, the applicant identified the following component types that were added to the scope of the auxiliary boiler condensate and feedwater system:

- flow elements
- radiation detectors

2.3B.4.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.7 and Millstone FSAR Section 10.4.10. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.7 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 its review, the staff noted that the LRA Table 2.3.4.7 lists "Level Indicators" as a component type subject to an AMR. A license renewal drawing for the auxiliary boiler condensate and feedwater system shows a level-observation glass for the auxiliary condensate tank as within the scope of license renewal. However, a different level-observation glass for the auxiliary condensate flash tank is shown not within the scope of license renewal. Since the line in which this component is installed is shown to be within the scope of license renewal, this results in a discontinuity of the pressure boundary. In RAI 2.3.4.7-1B, dated June 9, 2004, the staff requested the applicant to explain the apparent exclusion of the level-observation glass for the auxiliary condensate flash tank from the scope of license renewal and from being subject to an AMR.

In its response, dated July 26, 2004, the applicant stated that the level-observation glass for the auxiliary condensate flash tank is within the scope of license renewal but was inadvertently not highlighted on the license renewal drawing. The level-observation glass is included in the existing component type, "Level Indicators," in LRA Table 2.3.4-7.

The staff finds the applicant's response to RAI 2.3.4.7-1B acceptable based on inclusion of the component.

The staff also reviewed the results of the scoping methodology changes, due to response to RAI 2.1-1, that are described in the applicant's responses dated November 9, 2004, and December 3, 2004. The staff finds the auxiliary boiler condensate and feedwater system expanded scope of mechanical components identified in of the December 3, 2004, response acceptable, because the applicant adequately included the NSR components with the configurations that meet the scoping criterion of 10 CFR 54.4(a)(2) with spatial and/or attached piping interaction with safety-related SSCs. The staff concluded that the applicant's December 3, 2004, response related to the scoping and screening results of the auxiliary boiler condensate and feedwater system is acceptable.

2.3B.4.7.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the auxiliary boiler condensate and feedwater system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the auxiliary boiler condensate and feedwater system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.8 Hot Water Heating System

2.3B.4.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.8, the applicant described the hot water heating system. The hot water heating system provides hot water for heating of various plant buildings.

The hot water heating system provides isolation in the event of a HELB. The hot water heating system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system also provides environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-8, the applicant identified the following hot water heating system component types that are within the scope of license renewal and subject to an AMR: flex connections; flow elements; pipe; tubing; unit heaters; and valves.

2.3B.4.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.8 and Millstone FSAR Section 9.4.12. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.8 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 its review, the staff noted that the LRA Section 2.3.4.8 states that the hot water heating system provides isolation in the event of a HELB and that the evaluation boundary includes the valves that isolate this break. The FSAR identifies the valves that effect isolation as NSR valves. A license renewal drawing for the hot water heating system shows these valves within the scope of license renewal. In RAI 2.3.4.8-1B, dated June 9, 2004, the staff requested the applicant to explain how the selected system evaluation boundary would ensure that all the system-level intended function including HELB isolation would be effected.

In its response, dated July 26, 2004, the applicant stated that the subject valves credited with the isolation of the HELB were erroneously identified as meeting 10 CFR 54.4(a)(1) instead of meeting 10 CFR 54.4(a)(2) as these valves are NSR. Further, the applicant stated that with respect to HELBs, components are determined to be within the scope of license renewal when they are credited for isolation of pipe breaks in the Millstone 3 current licensing basis for HELBs outside of containment. Components were not determined to be within the scope of license renewal solely to provide isolation of pipe breaks of portions of plant systems that are within the scope of license renewal. Breaks in piping downstream of the subject valves on the license renewal drawing for the hot water heating system are not postulated in the HELB analysis. Therefore, no components exist within the scope of license renewal to isolate breaks in the subject piping.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.8-1B acceptable, because the applicant adequately explained that the subject valves are not credited to isolate a HELB from the piping not within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.4.8-1B is resolved.

2.3B.4.8.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the hot water heating system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the hot water heating system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.9 Hot Water Pre-heating System

2.3B.4.9.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.9, the applicant described the hot water pre-heating system. The hot water pre-heating system supplies heated water to various heating coils in the plant.

The hot water pre-heating system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC and NSR components that are used to mitigate the effects of a HELB. The system also provides environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-9, the applicant identified the following hot water pre-heating system component types that are within the scope of license renewal and subject to an AMR: flow elements; pipe; tubing; and valves.

2.3B.4.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.9 and Millstone FSAR Sections 9.2.6, 10.4.7, and 10.4.9. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.4.9 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 its review, the staff noted that the LRA Section 2.3.4.9 states that one reason the hot water pre-heating system is within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) is that it contains NSR components that are used to mitigate the effects of a HELB. In order for the staff to complete its review of the hot water pre-heating system, information about the valves credited with the isolation of a HELB was needed. In RAI 2.3.4.9-1B, dated June 9, 2004, the staff requested the applicant to provide the location of the isolation valves on a license renewal drawing and identify the high energy line where the potential break would occur.

In its response, dated July 26, 2004, the applicant stated that LRA Section 2.3.4.9 inadvertently identified a HELB function for the hot water pre-heating system. The applicant further stated that there are no hot water pre-heating system components relied upon to mitigate a HELB in this system.

Based on its review, the staff finds the applicant's response to RAI 2.3.4.9-1B acceptable, because the applicant adequately explained that the subject valves are not credited to isolate a HELB from the piping not within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.4.9-1B is resolved.

2.3B.4.9.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawing, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the hot water pre-heating system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the hot water pre-heating system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.10 Steam Generator Chemical Addition System

2.3B.4.10.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.10, the applicant described the steam generator chemical addition system. The steam generator chemical addition system is used during plant shutdown to control steam generator secondary-side water chemistry.

The steam generator chemical addition system provides containment pressure boundary integrity and RG 1.97 safety-related indications. The steam generator chemical addition system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system also provides environmental qualification components.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-10, the applicant identified the following steam generator chemical addition system component types that are within the scope of license renewal and subject to an AMR: pipe and valves.

2.3B.4.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.10 and Millstone FSAR Section 10.4.7. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.4.10.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the steam generator chemical addition system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the steam generator chemical addition system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3B.4.11 Turbine Plant Miscellaneous Drains System

2.3B.4.11.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.11, the applicant described the turbine plant miscellaneous drains system. The turbine plant miscellaneous drains system provides a flowpath for the removal of moisture from the main steam system, including steam lines to the steam-driven auxiliary feedwater pump turbine.

The turbine plant miscellaneous drains system provides a pressure boundary for the main steam system, containment pressure boundary integrity, and RG 1.97 safety-related indications. The turbine plant miscellaneous drains system contains NSR components that are spatially oriented such that their failure could prevent the satisfactory accomplishment of a safety-related function associated with a safety-related SSC. The system contains environmental qualification equipment.

Intended functions within the scope of license renewal include the following:

- provides limited structural integrity
- provides a pressure boundary

In LRA Table 2.3.4-11, the applicant identified the following turbine plant miscellaneous drains system component types that are within the scope of license renewal and subject to an AMR: pipe; steam traps; valves.

2.3B.4.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.11 and Millstone FSAR Section 10.3. The staff's review, using the evaluation methodology described in Section 2.3 of this SER, was conducted in accordance with the guidance described in Section 2.3 of NUREG-1800.

In conducting its review, the staff evaluated the system functions described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.3B.4.11.3 Conclusion

During its review of the information provided in the LRA and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the turbine plant miscellaneous drains system. Therefore, the staff concludes that the applicant has adequately identified the turbine plant miscellaneous drains system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the turbine plant miscellaneous drains system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4 Scoping and Screening Results - Structures

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

- containment
- structures and component supports
- nuclear steam supply system equipment supports
- general structural supports
- miscellaneous structural commodities
- load handling cranes and devices

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

Staff Evaluation Methodology. 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 if the components and supporting structures for a specific structure 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 components were subject to an AMR in accordance with 10 CFR 54.21(a)(1).

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

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

Tables 2.2-4 in the Millstone 2 and Millstone 3 LRAs are identical; they list the structures that are not within the scope of license renewal. The staff's review of LRA Table 2.2-4 identified several areas in which additional information was necessary to complete the review of the applicant's scoping results. Therefore, the staff issued RAI 2.4-1 and RAI 2.4-2, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4(a).

RAI 2.4-1. For most of the structures listed, there is no descriptive information in the FSARs. Consequently, the staff could not conclude that all of the structures listed in LRA Table 2.2-4 serve no intended function. For each of the following structures not described in the FSARs, the applicant was requested to submit its technical basis for concluding the structure is not within the scope of license renewal:

- above ground 6000-gallon fuel tank foundation
- above ground diesel fuel tank foundation
- above ground gasoline tank foundation
- a-frame
- block house (electric)
- chemistry safety storage building
- condensate polishing service water strainer house (Unit 2)
- flammable liquids/ hazardous material building
- flammable storage buildings
- fuel oil storage facility
- gas bottle storage building
- hazardous waste processing
- hazardous waste storage building
- hydrogen recombiner portable personnel contamination monitors (PCM) enclosure
- incompatible hazardous waste storage building
- low-level radwaste storage
- Millstone radwaste reduction facility PCM enclosure
- steel transmission towers
- Unit 1 discharge structure
- Unit 1 intake structure
- Unit 1 reactor building
- Unit 1 solid radwaste building
- Unit 1 switchyard
- Unit 1 waste surge tank foundation
- Unit 1 xenon-krypton building
- Unit 2 hydrogen cylinder storage area
- Unit 2 service water pump strainer house structure
- Unit 3 auxiliary building PCM enclosure
- Unit 3 condensate surge tank foundation
- Unit 3 domestic water storage tank foundation

- Unit 3 groundwater underdrains storage tank foundation
- Unit 3 PGST A and B nitrogen storage tank foundation
- Unit 3 water treatment storage tank foundation

The applicant was also asked to verify that a seismic II/I intended function, in accordance with 10 CFR 54.4(a)(2), is not applicable to any of the structures and structural components listed in LRA Table 2.2-4.

In its response to RAI 2.4-1, dated December 3, 2004, the applicant stated:

<u>Part 1</u>

> 6000 Gal. Above Ground Fuel Tank Foundation (bldg 484)
>
> The foundation for this tank is the concrete loading dock. This is a freestanding modular tank structure that is located on top of the concrete loading dock between buildings 409 and 410. The tank does not have a foundation designed specifically for the tank. The tank stores heating fuel oil for the heating systems in these buildings. Neither these buildings nor the loading dock or the tank has a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.
>
> Above Ground Diesel Fuel Tank Foundation (bldg 476)
>
> This is a concrete foundation that provides structural support for the tank that is used to store diesel fuel oil for the motor pool. Neither the foundation nor the tank has a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.
>
> Above Ground Gasoline Tank Foundation (bldg 474)
>
> This is a concrete foundation that provides structural support for the tank that is used to store gasoline for the motor pool. Neither the foundation nor the tank has a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.
>
> A-Frame (bldg 503)
>
> This is a freestanding structure outside the protected area that is used for meetings and administrative functions. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.
>
> Block House (Electric) (bldg 423)
>
> This is a freestanding structure that houses electrical equipment for the non-safety related off-site power supply. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

Chemistry Safety Storage Building (bldg 457)

This is a freestanding modular structure that is used for temporary storage of flammable or hazardous materials. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

Condensate Polishing Service Water Strainer House (Unit 2) (bldg 222)

This is the same structure as the "Unit 2 Service Water Pump Strainer House Structure" listed below. This Class II structure is located adjacent to and north of the Unit 2 Intake Structure and originally housed the strainer for the service water supply to the condensate polishing facility. The service water supply is no longer required, the strainer has been removed, and the associated piping is capped and abandoned. The building is currently used by the Maintenance Department for storage of maintenance equipment. It does not contain any equipment that is within the scope of license renewal. The Unit 2 Intake Structure, which is a safety related Class I structure, is within the scope of license renewal.

The Condensate Polishing Service Water Strainer House is a heavily reinforced concrete structure with 12-inch-thick walls and an 8-inch reinforced concrete roof slab that supports a built-up roofing system. The Condensate Polishing Service Water Strainer House is separated from the Intake Structure by a seismic gap filled with compressible material. This compressible material is within the scope of license renewal and subject to aging management. It is included in the Commodity Group "Expansion joint/Seismic gap material (between adjacent buildings/structures)," as indicated in LRA Table 2.4.2-25, Miscellaneous Structural Commodities.

FSAR Section 5.1.1.1 Class I Structures states that "Class I structures are designed to withstand the appropriate seismic and other applicable loads without loss of function. These Class I structures are sufficiently isolated or protected from Class II structures to ensure that their integrity are maintained at all times."

Based on the statements from FSAR Section 5.1.1.1 and on the robust design and construction of the Condensate Polishing Service Water Strainer House including the seismic gap, it is not credible to postulate failure of this structure. Even if such failure is postulated, it will not prevent the Class I Intake Structure from performing its intended function. However, to conservatively ensure the integrity of the Class 1 Intake Structure, the Condensate Polishing Service Water Strainer House will be added to the scope of license renewal. The structure consists of structural reinforced concrete in air and atmosphere/weather environment. The aging effects requiring management are loss of material, cracking, and change of material properties. These aging effects will be managed by the Structures Monitoring Program AMP that is described in LRA Section B2.1.23. The aging management review results are included in Table 1.

Flammable Liquids/ Hazardous Material Building (bldg 479)

This is a freestanding modular structure that is used for temporary storage of flammable or hazardous materials. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

Flammable Storage Buildings (bldgs 421, 477, 481)

These are freestanding structures that are used for temporary storage of flammable materials. None has a license renewal intended function. These non-safety related structures are located such that they do not affect any safety related structures.

Fuel Oil Storage Facility (bldg 128)

This is a freestanding structure that was under construction when it was abandoned in place. It was never completed and does not store any fuel oil. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

Gas Bottle Storage Building (bldg 450)

This is a freestanding structure that is used for storage of bottled gas. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

Hazardous Waste Processing (bldg 455)

This is a freestanding structure that is used for processing hazardous waste. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

Hazardous Waste Storage Bldg. (bldg 543)

This is a freestanding structure outside the protected area that is used for temporary storage of hazardous waste materials. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

Hydrogen Recombiner Portable PCM Enclosure (bldg 657)

This enclosure housed the personnel contamination monitors (PCM) used for monitoring personnel contamination when exiting the radiologically controlled area of the hydrogen recombiner building. This enclosure has been removed from the south side of the hydrogen recombiner building.

Incompatible Hazardous Waste Storage Bldg. (bldg 544)

This is a freestanding structure outside the protected area that is used for temporary storage of incompatible hazardous waste materials. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

Low Level Radwaste Storage (bldg 505)

This is a freestanding structure outside the protected area that is used for temporary storage of low-level radwaste materials. It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

MRRF PCM Enclosure (bldg 461)

This is a freestanding structure that houses the personnel contamination monitors (PCM) used for monitoring personnel contamination when exiting radiologically controlled area at the Millstone Radwaste Reduction Facility (MRRF). It does not have a license renewal intended function. This non-safety related structure is located such that it does not affect any safety related structures.

Steel Transmission Towers

These are freestanding steel towers mounted on concrete foundations. The steel transmission towers and their foundations are generally not within the scope of license renewal with one exception. The three steel transmission towers and foundations required to support the electrical lines for Station Blackout as required by 10 CFR 54.4(a)(3) are within the scope of license renewal. These towers are identified as being within the scope of license renewal in Section 2.4.2.25 of the Unit 3 LRA and Section 2.4.2.16 of the Unit 2 LRA. The remaining steel towers are those referenced in Table 2.2-4.

Of the three towers that are in scope, one tower supports the 345kV lines between the Unit 3 reserve station service transformer and the switchyard and the other two support the 345kV lines between the Unit 2 reserve station service transformer and the switchyard as shown on license renewal Site Plan 25205-LR10025.

The height of Steel Transmission Towers varies from 85 to 115 feet as indicated in the table below.

Tower No.	Height (ft)	Unit	In-scope of LR
1T-1	100	1	N
1T-2	115	1	N
1T-3	115	1	N
1G-1	105	1	N
1G-2	105	1	N
1G-3	110	1	N
2T-2	85	2	Y
2T-3	90	2	Y
2G-2	85	2	N
2G-3	90	2	N
3G-2	85	3	N
3G-3	110	3	N
3T-3	110	3	Y

All steel transmission towers are located far enough away from the plant so that if any were to fall, they would not cause any damage to any in scope structure/component that performs a safety related function.

The steel transmission tower not within the scope of license renewal that is closest to a safety related structure/component is tower number 3G-2. The safety related structure is the Unit 3 Refueling Water Storage Tank (bldg 313). This tower is 85 feet tall and is located approximately 160 feet to the east of the Refueling Water Storage Tank. All the remaining steel transmission towers that are not within the scope of license renewal are more than 360 feet away from any safety related structure/component.

Unit 1 Discharge Structure (bldg 102)

This is a reinforced concrete embedment type structure that terminates the Unit 1 condenser discharge piping where it enters the common discharge quarry. It is part of the permanently defueled boiling water reactor nuclear power complex located at the southern end of the site. It does not have a license renewal intended function. This Unit 1 non-safety related structure is located such that it does not affect any Unit 2 or Unit 3 safety related structures.

Unit 1 Intake Structure (bldg 107)

This is a freestanding reinforced concrete structure that houses the cooling water pumps that used to supply the Unit 1 condenser and service water systems. It is part of the permanently defueled boiling water reactor nuclear power complex located at the southern end of the Millstone site. It does not have a license renewal intended function. This Unit 1 non-safety related structure is located such that it does not affect any Unit 2 or Unit 3 safety-related structures.

Unit 1 Reactor Building (bldg 111)

This is a reinforced concrete structure that houses the remnants of the Unit 1 nuclear reactor, and the spent fuel pool. It is part of the permanently defueled boiling water reactor nuclear power complex located at the southern end of the Millstone site. It does not have a license renewal intended function. The Unit 1 reactor building structure is being maintained as safety-related class 1 for Unit 1 decommissioning purposes only. Therefore, it does not affect any Unit 2 or Unit 3 safety-related structures.

Unit 1 Solid Radwaste Building (bldg 119)

This is a concrete and steel structure that provides an area for indoor storage of solid radwaste for the Unit 1 radwaste processing systems. It is part of the permanently defueled boiling water reactor nuclear power complex located at the southern end of the Millstone site. It does not have a license renewal intended function. This Unit 1 non-safety-related structure is located such that it does not affect any Unit 2 or Unit 3 safety-related structures.

Unit 1 Switchyard (bldg 104)

This is a series of steel structures that supports the transmission equipment for the electrical power previously generated at Unit 1. It is part of the permanently defueled boiling water reactor nuclear power complex located at the southern end of the Millstone site. It does not have a license renewal intended function. This Unit 1 non-safety-related structure is located such that it does not affect any Unit 2 or Unit 3 safety-related structures.

Unit 1 Waste Surge Tank Foundation (bldg 115)

This is a concrete foundation that provides structural support for the waste surge tank. It is part of the permanently defueled boiling water reactor nuclear power complex located at the southern end of the Millstone site. It does not have a license renewal intended function. This Unit 1 non-safety-related structure is located such that it does not affect any Unit 2 or Unit 3 safety-related structures.

Unit 1 Xenon-Krypton Building (bldg 116)

This is a freestanding concrete structure that houses the charcoal absorption beds previously used to process effluent gases from Unit 1. It is part of the permanently defueled boiling water reactor nuclear power complex located at the southern end of the Millstone site. It does not have a license renewal intended function. This Unit 1 non-safety-related structure is located such that it does not affect any Unit 2 or Unit 3 safety-related structures.

Unit 2 Hydrogen Cylinder Storage Area (bldg 226)

This is a freestanding multi-tank structure that is used for storage and supply of hydrogen used at Unit 2. The structure consists of a concrete slab foundation on grade that supports a masonry block wall on two sides. Upon further review, the masonry block wall has been determined to function as a firewall between the storage facility and the Unit 2 turbine building and should have been identified with a fire barrier function. As a result, this structure has been added to the scope of license renewal

Unit 2 Service Water Pump Strainer House Structure (bldg 222)

This is the same structure as the "Condensate Polishing Service Water Strainer House (Unit 2)" listed above.

Unit 3 Auxiliary Building PCM Enclosure (bldg 463)

This is a wooden structure that houses the personnel contamination monitors (PCM) used for monitoring personnel contamination when exiting the radiologically controlled areas within the buildings of the Unit 3 nuclear power complex. It does not have a license renewal intended function. This non-safety-related structure is located such that it does not affect any safety-related structures.

Unit 3 Condensate Surge Tank Foundation (bldg 304)

This is a concrete foundation that provides structural support for the condensate surge tank. Neither the foundation nor the tank has a license renewal intended function. This non-safety-related structure is located such that it does not affect any safety-related structures.

Unit 3 Domestic Water Storage Tank Foundation

This item was listed in error. Unit 3 does not have a tank (or foundation) with this name. Unit 3 does have a water treatment storage tank that contains domestic water. The Water Treatment Storage Tank and its foundation are not within the scope of license renewal. This non-safety-related structure is located such that it does not affect any safety-related structures.

Unit 3 Groundwater Underdrains Storage Tank Foundation

This tank shares the concrete foundation of the refueling water storage tank (bldg 313). Note that LRA Section 2.2-4 inadvertently listed a structure "Unit 3 Groundwater Underdrains Storage Tank Foundation", although there is no such structure at Millstone Power Station. The refueling water storage tank and its foundation are within the scope of license renewal. In addition, the groundwater underdrains storage tank was added to the scope of license renewal during the 10 CFR 54.4(a)(2) review (reference RAI 2.1-1). Therefore, both tanks and the common foundation are within the scope of license renewal.

Unit 3 PGST A and B Nitrogen Storage Tank Foundation

This is a concrete foundation that provides structural support for the A & B primary grade water storage tanks nitrogen system tank. It is located adjacent to the primary grade water storage tanks foundation. Neither this tank nor its foundation has a license renewal intended function. These non-safety-related structures are located such that they do not affect any safety-related structures.

Unit 3 Water Treatment Storage Tank Foundation (bldg 306)

This is a concrete foundation that provides structural support for the water treatment storage tank. Neither this tank nor its foundation has a license renewal intended function. This nonsafety-related structure is located such that it does not affect any safety-related structures.

<u>Part 2</u>

With regard to verification of the applicability of the seismic II/I intended function for all the structures or structural components in LRA Table 2.2-4, the scoping process, outlined in Section 2.1.4.1, required review of the seismic II/I intended function of all of the structures. The structures reviewed above provide another verification through a sampling of the process and indicate that the scoping methodology is consistent with the requirements in 10 CFR 54.4.

Based on its review, the staff finds the applicant's response to RAI 2.4-1 acceptable for all of the structures listed in the RAI. The staff concurs with the applicant's decision to include several of the listed structures within the scope of license renewal. The staff also concurs with the applicant's basis for excluding the remaining listed structures from the license renewal scope. The staff evaluated the applicant's AMR results for the structures added to the license renewal scope, including Tables 1 and 2 attached to this response, in Section 3.5 of this DSER.

Therefore, the staff considers its concern described in RAI 2.4-1 resolved for all structures listed in the RAI.

In addition, the staff issued RAI 2.4-2 to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a). The staff's RAI is described below.

Based on the review of the FSAR sections referenced in LRA Table 2.2-4 and additional related sections of the FSAR, the staff could not conclude that all of the structures described in the FSAR sections serve no intended function.

<u>Part 1</u>

The Units 2 and 3 main and normal station transformers are described in Unit 2 FSAR Section 8.1.1, Unit 3 FSAR Section 8.1.7, and Unit 3 FSAR Section 8.3.1.1.1. In Unit 3 FSAR Section 8.3.1.1.1, it states:

The normal station service transformers have the capacity to supply normal auxiliaries and those emergency auxiliaries (both load groups) required during normal operation up to the full output of the main generator plus the capacity to supply Millstone Unit 2 GDC 17 requirements as an alternate offsite source for minimum post-accident loads." and "Power is supplied to the normal 6.9 kV and 4.16 kV buses through four stepdown transformers, of which two are normal station service transformers and two are reserve station service transformers. Each transformer is fully rated to carry all the loads on its buses during normal operation and any postulated design basis accident plus to carry Millstone Unit 2 minimum post-accident loads to satisfy GDC 17 requirements as a Unit 2 alternate offsite source.

In Unit 3 FSAR Section 3.1.2.5 "Sharing of Structures, Systems, and Components (Criterion 5)," it states:

The following equipment may be shared and utilized by Millstone Unit 2 to meet its GDC 17 requirements for an alternate offsite source to relieve one of its emergency diesel generators and supply power to minimum post-accident loads:

- Main Transformers 15G-3X-A and 15G-3X-B
- Normal Station Service Transformer 15G-3SA
- Reserve Station Service Transformer 15G-23SA

The sharing of this equipment does not impair its ability to perform its safety function. The transformers are adequately sized and have sufficient capacity to meet maximum postulated Unit 3 loading requirements while supplying Unit 2 General Design Criterion-17 (GDC-17) minimum loads.

Based on this FSAR information, it appeared to the staff that some of these transformers perform an intended function; if so, then the transformers' structural support would also perform an intended function. The applicant was requested to clarify whether any of these transformers and their structural supports perform an intended function and need to be included within the scope of license renewal.

Part 2

"Miscellaneous Warehouses (#9, #8, #3, #4, #5, #6)" are listed in LRA Table 2.2-4 as out-of-scope. The FSAR reference is Unit 3 FSAR Section 3.1.2.5 and FPER 5.5 Analysis 76. The staff notes that LRA Tables 2.2-3 for both Unit 2 and Unit 3 list the "Unit 2 Condensate Polishing Facility and Warehouse No. 5" as being within the scope of license renewal. The applicant was requested to clarify whether Warehouse No. 5 is within the scope of license renewal and to provide the technical basis for its determination.

Part 3

The Unit 2 sodium hypochlorite building is described in Unit 2 FSAR Section 5.6.1. It states:

An adjacent Class II building, which houses the chlorination equipment, is isolated from the intake structure by a joint filled with compressible material. General layouts of the intake structure and circulating water system are shown on Figures 5.6-1 and 5.6-2, respectively.

Based on Unit 2 FSAR Figure 5.6-1, it appeared to the staff that failure of the Class-2 building in a seismic event has the potential to damage safety-related structures and components in close proximity. The applicant was requested to submit its technical basis for concluding that the Unit 2 Sodium hypochlorite building does not satisfy the criteria of 10 CFR 54.4(a)(2), for inclusion within the scope of license renewal.

Part 4

The following tank foundations are referenced to the FSAR sections noted in parentheses:

Unit 1 Demineralized Water Storage Tank Foundation (Unit 2 FSAR Table 9.12 - 1)
Unit 2 Condensate Surge Tank Foundation (Unit 2 FSAR Section 2.7.5.1)
Unit 2 Primary Water Storage Tank Foundation (Unit 2 FSAR Table 9.12 - 1)
Unit 3 Boron Test Tanks Foundation (Unit 3 FSAR Section 9.3.5.2)
Unit 3 Liquid Nitrogen Storage Tank Foundation (Unit 3 FSAR Section 9.2.8.2)
Unit 3 Primary Grade Water Storage Tank Foundation (Unit 3 FSAR Section 9.2.8.3)
Unit 3 Waste Test Tanks Foundation (Unit 3 FSAR Section 11.2.2.1)
Unit 3 Yard Vacuum Priming Tank Foundation (Unit 3 FSAR, FPER 5.5 Analysis 86)

The applicant was requested to verify that none of the systems serviced by these tanks are within the scope of license renewal. If any system is within the scope of license renewal, the applicant was requested to submit the technical basis for concluding that the associated tank and its foundation is not within the scope of license renewal.

In its response to RAI 2.4-2, dated December 3, 2004, the applicant stated:

Part 1

> Both Millstone Unit 2 and Unit 3 are designed with preferred normal and alternate offsite power supplies, as described in the FSAR sections cited in RAI 2.4-2. The design for offsite power supply includes the main transformers, normal station service transformers, and reserve station service transformers. In addition, the Millstone Unit 2 licensing basis, for general design criterion (GDC) 17 requirements, credits Unit 3 electrical components, including the main transformers, and a normal station service and reserve station service transformer, as an alternate offsite power source. For both units, the emergency onsite power source (i.e., the emergency diesel generators), is the safety-related power source credited in the accident analyses. The emergency onsite power source components are included within the scope of license renewal. The main transformers and normal station service transformers do not meet the scoping criteria of 10 CFR 54.4(a) and do not perform a license renewal intended function. These transformers do not meet 10 CFR 54.4(a)(1) since they are non-safety-related components and do not perform safety-related functions. They do not meet 10 CFR 54.4(a)(2) since their failure cannot prevent the accomplishment of the intended function of any safety-related equipment, and they do not meet 10 CFR 54.4(a)(3) since they are not credited for any of the cited regulated events. Therefore, the main and normal station service transformers that provide the preferred normal and alternate offsite power supplies to the units are not included within the scope of license renewal. The reserve station service transformers for both Millstone Unit 2 and Unit 3 are included in scope per 10 CFR 54.4(a)(3) because they are required for the restoration of offsite power following a station blackout event. The reserve station service transformers

foundations are within the scope of license renewal and are included in Unit 2 LRA Table 2.4.2-16 and Unit 3 LRA Table 2.4.2-25 as "Structural Reinforced Concrete."

Part 2

There are two separate and individual site structures that have the designation Warehouse No. 5. These structures are shown on the License Renewal Site Plan (license renewal drawing 25205-LR10025, Sh. 1) as Building No. 212 (Unit 2 Condensate Polishing Facility and Warehouse No. 5) and Building No. 435 (Warehouse #5). Tables 2.2-3 for both Unit 2 and Unit 3 list the Unit 2 Condensate Polishing Facility and Warehouse No. 5, so designated since the Condensate Polishing Facility is located within this building, as being within the scope of license renewal. Unit 2 LRA Section 2.4.2.10 and Unit 3 LRA Section 2.4.2.20 provide a description of this structure and the criteria for which it is considered within the scope of license renewal.

Building No. 435 does not house any equipment or systems that meet the criteria for inclusion within the scope of license renewal. Therefore, this building is not within the scope of license renewal and is listed in LRA Table 2.2-4 for both Unit 2 and Unit 3 under Miscellaneous Warehouses (#9, #8, #3, #4, #5, #6).

Part 3

The Unit 2 FSAR Section 5.1.1.1, Class I Structures, states that "Class I structures are designed to withstand the appropriate seismic and other applicable loads without loss of function. These Class I structures are sufficiently isolated or protected from Class II structures to ensure that their integrities are maintained at all times."

The Class II Sodium Hypochlorite Building for Unit 2 is located adjacent to and east of the Class I Intake Structure. Two safety-related cable pits are also located adjacent to and east of the Intake Structure, one to the north of and near, the other to the south of and near the Sodium Hypochlorite Building.

The Sodium Hypochlorite Building is a reinforced concrete structure 16 ft. tall with 12-inch thick walls and a structural steel roof support system. It does not contain any equipment that is within the scope of license renewal and is a robust structure that is unlikely to fail in a seismic event. It is separated from the Intake Structure by a seismic gap filled with compressible material. This compressible material is within the scope of license renewal and subject to aging management. It is included in the Commodity Group "Expansion joint/Seismic gap material (between adjacent buildings/structures)," as indicated in LRA Table 2.4.2-25, Miscellaneous Structural Commodities.

The Class I Intake Structure is a reinforced concrete structure with wall thickness of 1 ft.- 3 in. where it is adjacent to the Sodium Hypochlorite Building wall and is within the scope of license renewal. The Intake Structure is designed and sufficiently isolated or protected from the Class II Sodium Hypochlorite Building to ensure that its integrity is maintained at all times as stated in FSAR Section 5.1.1.1, Class I Structures.

The cable pits are designated safety-related since they house safety-related cables and are concrete bunkers consisting of 12-inch-thick reinforced concrete walls and roof supported on a reinforced concrete foundation. The robust design of the cable pits and separation from the Sodium Hypochlorite Building (1 foot 5 ¼ inches) is adequate to ensure that they are sufficiently isolated or protected from the Class II Sodium Hypochlorite Building to ensure that their integrity are maintained at all times.

Based on the statements from FSAR Section 5.1.1.1 and on the robust design and construction of the Sodium Hypochlorite Building including the seismic gap, it is not credible to postulate failure of this structure during a design basis earthquake. Even if such failure is postulated, it will not prevent the Class I Intake Structure or the Cable Pits from performing their respective intended functions. However, to conservatively ensure the integrity of the Class 1 Intake Structure and the Safety-related Cable Pits, the Sodium Hypochlorite Building will be added to the scope of license renewal. The structure consists of structural reinforced concrete in soil, air, and atmosphere/weather environments and structural steel members in an air environment. The aging effects requiring management are loss of material, cracking, and change of material properties for structural reinforced concrete and loss of material for structural steel. These aging effects will be managed by the Structures Monitoring Program AMP that is described in LRA Section B2.1.23. The aging management review results are included in Table 1.

Part 4

- Unit 1 Demineralized Water Storage Tank Foundation (Unit 2 FSAR Table 9.12-1): The Millstone Unit 1 demineralized water storage tank has been permanently removed from service and is not within the scope of license renewal. Therefore, the tank foundation is not within the scope of license renewal.

- Unit 2 Condensate Surge Tank Foundation (Unit 2 FSAR Section 2.7.5.1): The condensate surge tank is part of the Condensate Storage and Transfer System which provides a protected water source for the auxiliary feedwater pumps. The condensate surge tank itself is not the protected water source required to support this license renewal system intended function and is not within the scope of license renewal. Therefore, the associated tank foundation is not within the scope of license renewal.

-Unit 2 Primary Water Storage Tank Foundation (Unit 2 FSAR Table 9.12-1): The primary water storage tank is part of the Primary Makeup Water System, which is within the scope of license renewal. The Primary Makeup Water System includes safety-related instrumentation and provides a containment pressure boundary. The system meets 10 CFR 54.4(a)(2) since the system contains non-safety-related components that are spatially oriented such that their failure could prevent the function of safety-related SSCs. The system also meets 10 CFR 54.4(a)(3) because it contains environmentally qualified equipment. The source of water provided by the tank does not support the system intended functions and the tank was not originally included within the scope of license renewal. However, in response to RAI 2.1-1 the Unit 2 primary water storage tank and foundation were added to the scope of license renewal.

- Unit 3 Boron Test Tanks Foundation (Unit 3 FSAR Section 9.3.5.2): The boron test tanks are part of the Boron Recovery System which contains non-safety-related components that are spatially oriented such that their failure could prevent the function of safety-related SSCs. The system also meets 10 CFR 54.4(a)(3) because it supports fire protection by providing an alternate letdown path to the boron recovery tanks. The boron test tanks themselves do not support the system intended functions and are not within the scope of license renewal. Therefore, the associated foundation is not within the scope of license renewal.

- Unit 3 Liquid Nitrogen Storage Tank Foundation (Unit 3 FSAR Section 9.2.8.2): The liquid nitrogen storage tank is part of the Nitrogen System, which is within the scope of license renewal. The Nitrogen System meets 10 CFR 54.4(a)(1) because it includes safety-related instrumentation and provides a containment pressure boundary. The system meets 10 CFR 54.4(a)(2) since the system contains non-safety-related components that are spatially oriented such that their failure could prevent the function of safety-related SSCs. The system also meets 10 CFR 54.4(a)(3) because it supports fire protection and contains environmentally qualified equipment. However, the liquid nitrogen storage tank itself is not required to support any license renewal system intended functions. Therefore, the liquid nitrogen storage tank and foundation are not included within the scope of license renewal.

- Unit 3 Primary Grade Water Storage Tank Foundation (Unit 3 FSAR Section 9.2.8.3): The primary grade water storage tank is part of the Primary Grade Water System, which is within the scope of license renewal. The Primary Grade Water System meets 10 CFR 54.4(a)(1) because it includes safety-related instrumentation and provides a containment pressure boundary. The system meets 10 CFR 54.4(a)(2) since the system contains non-safety-related components that are spatially oriented such that their failure could prevent the function of safety-related SSCs. The system also meets 10 CFR 54.4(a)(3) because it supports station blackout events and contains environmentally qualified equipment.

However, the source of water provided by the primary water storage tanks does not support any license renewal system intended functions. Therefore, the tanks and associated foundation are not included within the scope of license renewal.

- Unit 3 Waste Test Tanks Foundation (Unit 3 FSAR Section 11.2.2.1): The waste test tanks are part of the Radioactive Liquid Waste Processing System which contains non-safety-related components that are spatially oriented such that their failure could prevent the function of safety-related SSCs. The waste test tanks are not located near any SR SSCs and do not perform a license renewal intended function. Therefore, the tanks and associated foundation are not within the scope of license renewal.

- Unit 3 Yard Vacuum Priming Tank Foundation (Unit 3 FSAR, FPER 5.5 Analysis 86): The yard vacuum priming tank is part of the Vacuum Priming System which is not within the scope of license renewal since it does not meet any of the criteria of 10 CFR 54.4(a). Therefore, the yard vacuum priming tank and associated foundation are not within the scope of license renewal.

Based on its review, the staff finds the applicant's response to RAI 2.4-2 acceptable for Parts 1, 2, 3, and 4 of the RAI. In response to Part 1, the applicant identified the reserve station service transformers and their foundations as in-scope, to meet 10 CFR 54.4(a)(3) for station blackout. In response to Part 2, the applicant clarified the difference between Warehouse No. 5 and Warehouse #5. In response to Part 3, the applicant identified that the Unit 2 Sodium Hypochlorite Building has been added to the license renewal scope. In response to Part 4, the applicant provided an acceptable basis for excluding the subject tank foundations, but noted that the Unit 2 Primary Water Storage Tank and Foundation have been added to the LR scope in response to RAI 2.1-1. The staff considers its concern described in RAI 2.4-2 to be resolved.

RAI 2.4.3. The staff also requested additional information concerning the possibility that some thermal insulation may serve an intended function, in accordance with 10 CFR 54.4(a)(2), to control the maximum temperature of safety-related structures and structural components that meet 10 CFR 54.4(a)(1). Thermal insulation is typically passive and long-lived. If it also serves an intended function in accordance with 10 CFR 54.4(a)(2), then it meets the criteria for inclusion within the scope of license renewal. Therefore, the staff issued RAI 2.4-3, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1) to thermal insulation. The staff's RAI is described below.

Thermal insulation is typically passive and long-lived. If it also serves an intended function in accordance with 10 CFR 54.4(a)(2), it meets the criteria for inclusion within the scope of license renewal.

Possible examples of intended functions are (1) maintaining the maximum temperature of NSSS support members below the maximum temperature assumed in the design basis of the supports; and (2) maintaining the maximum temperature of structural concrete below the threshold levels of 150 °F for general areas and 200 °F for local areas around hot penetrations.

Part 1 - Millstone 2

Millstone 2 FSAR Section 5.2.7.2.2, "Design of High-Temperature Penetrations," states:

> High-temperature piping penetrations consist of two for feedwater, two for main steam, and two for steam generator blowdown. These have a maximum operating temperature range between 435 °F and 550 °F. Thermal insulation is provided in the air gap between the pipe and penetration liner sleeve. The combination of insulation and penetration cooling is designed to restrict maximum temperature in the concrete to 150 °F.
>
> For the condition created by loss of penetration cooling, the maximum steady state temperature in the concrete is 300 °F at the penetration surface and decreases to 120 °F at a maximum radial depth of 48 inches in the containment wall (Section 9.9.4.4.1).

Millstone 2 FSAR Section 9.9.4, "Containment Penetration Cooling System," states in subsection 9.9.4.4.1:

> The containment penetration cooling system is provided with two full-capacity fans. Each fan has the capability of maintaining the concrete temperature around the sleeve below 150 °F. Following the unlikely loss of penetration cooling, a maximum temperature of 390 °F may be tolerated for 120 days without appreciable loss of strength of the concrete (Subsection 5.1.3).

Millstone 2 LRA Section 2.3.3.18, "Containment Penetration Cooling System," states:

> The Containment Penetration Cooling System functions to limit the temperature of Containment structure concrete to 150 °F in the vicinity of hot piping penetrations. The

system consists of two vane axial fans and the associated system ductwork and dampers. The system contains fire dampers to prevent the spread of a fire.

> The Containment Penetration Cooling System is within the scope of license renewal because the system meets 10 CFR 54.4(a)(2) by providing cooling air to the concrete area surrounding the Containment piping penetrations. The Containment Penetration Cooling System also supports fire protection.

From the information in FSAR Section 5.2.7.2.2, thermal insulation works in combination with the containment penetration cooling system to limit the temperature of concrete at high-temperature penetrations. LRA Section 2.3.3.18 indicates that the containment penetration cooling system is within the scope of license renewal because the system meets 10 CFR 54.4(a)(2). On this basis, it appears to the staff that the thermal insulation also meets 10 CFR 54.4(a)(2).

Therefore, the applicant was requested to (1) identify whether any thermal insulation at Millstone 2 serves an intended function in accordance with 10 CFR 54.4(a)(2); (2) describe plant-specific operating experience related to degradation of (a) thermal insulation in general, and (b) thermal insulation that serves an intended function in accordance with 10 CFR 54.4(a)(2); and (3) describe the scoping and screening evaluation for thermal insulation that serves an intended function in accordance with 10 CFR 54.4(a)(2), including the technical basis for either inclusion within or exclusion from the scope of license renewal.

Part 2 - Millstone 3

Millstone 3 FSAR Section 3.8.1.1.4 (D)(1) describes "Sleeved Piping Penetration" as follows:

> These penetrations have a sleeve around the outside of forged piping with integral flued head. Sleeved penetrations are used for multiple small pipes passing through one penetration and for thermally hot piping systems. Thermally hot piping is insulated to prevent the operating temperature of the concrete adjacent to the sleeve, during normal operation or any other long-term period, from exceeding 150 °F except at local areas around the penetrations which are allowed to have increased temperatures not exceeding 200 °F; for accident or other short-term periods, the temperatures are not to exceed 350 °F for the interior surface. However, local areas are allowed to reach 650 °F from steam or water jets in the event of pipe failure. Penetrations in which the insulation would be insufficient to maintain the concrete within the allowable temperature limit are equipped with a cooling jacket located inside the sleeve. The cooling water for the cooling jacket is supplied by the component cooling water subsystem. Each penetration sleeve carrying thermally hot piping is designed with adequate space between the sleeve and the piping to allow for the required pipe insulation and for the cooling jacket.

Millstone 3 LRA Table 2.3.3-4 identifies "Penetration Coolers" as a component type requiring aging management for the reactor plant component cooling system.

From the information in FSAR Section 3.8.1.1.4 (D)(1), thermal insulation works alone or in combination with the cooling jacket to limit the temperature of concrete at high-temperature penetrations. LRA Table 2.3.3-4 indicates that penetration coolers are included within the scope of license renewal. On this basis, it appears to the staff that the thermal insulation serves an intended function in accordance with 10 CFR 54.4(a)(2) and meets the criteria for inclusion within the scope of license renewal.

Therefore, the applicant was requested to (1) identify whether any thermal insulation at Millstone 3 serves an intended function in accordance with 10 CFR 54.4(a)(2); (2) describe plant-specific operating experience related to degradation of (a) thermal insulation in general, and (b) thermal insulation that serves an intended function in accordance with 10 CFR 54.4(a)(2); and (3) describe the scoping and screening evaluation for thermal insulation that serves an intended function in accordance with 10 CFR 54.4(a)(2), including the technical basis for either inclusion within or exclusion from the scope of license renewal.

In its response to RAI 2.4-3, dated November 9, 2004, the applicant stated that:

> There is no discussion of insulation functioning to limit the maximum temperature of NSSS equipment supports included in the FSAR. There are no insulated NSSS equipment supports.
>
> Cooling systems and the application of thermal insulation for high-temperature piping containment penetrations are designed to maintain containment structure concrete temperatures within limits to ensure that long-term degradation of the concrete does not occur that could degrade the integrity of the structure, as identified in the FSAR references cited in RAI 2.4-3. Although failure of the penetration cooling systems would not immediately result in the inability of the containment structure to perform its intended function, the penetration cooling systems were conservatively included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).
>
> There is currently no thermal insulation included within the scope of license renewal for Millstone Unit 2 or Unit 3. Since the thermal insulation associated with containment piping penetrations functions to limit the heat transferred to the surrounding concrete, similar to the piping penetration cooling systems that are within the scope of license renewal, Dominion will conservatively also include the thermal insulation within the scope of license renewal. The intended function applied to the insulation is to prevent excessive heat transmission to the containment concrete surrounding the piping penetrations.

Based on the aging management review performed for the fiberglass, asbestos, and calcium silicate piping penetration thermal insulation, there are no applicable aging effects in the indoor air environment and no aging management program is required.

Based on its review, the staff finds the applicant's revised response to RAI 2.4-3 acceptable because the applicant has included the subject thermal insulation within the scope of license renewal. The staff considers RAI 2.4-3 resolved.

2.4A Unit 2 Scoping and Screening Results - Structures

2.4A.1 Containment

2.4A.1.1 Summary of Technical Information in the Application

In LRA Section 2.4.1, the applicant identified the structures and components of the containment that are subject to an AMR for license renewal. The containment is a Class I structure, housing the reactor, NSSS equipment, and various safety-related and non-safety-related components. The evaluation boundary of the containment consists of the containment structure, including the liner and internal structural members, and containment penetrations (equipment access and personnel lock openings, piping penetrations, electrical penetrations, and the fuel transfer tube assembly). The neutron shield tank, refueling cavity liner and reactor cavity seal ring are also included in the containment evaluation boundary.

The containment is a Class I structure. The containment non-safety-related structural members support the function of safety-related equipment. The containment also contains EQ equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides a pressure boundary
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a missile (internal or external) barrier
- provides EQ barrier and/or HELB barrier
- provides jet impingement shielding for high energy line breaks

In LRA Table 2.4.1-1, the applicant identified the following containment component types that are within the scope of license renewal and subject to an AMR: containment liner; containment shell (cylindrical wall and dome); containment sump screen; door locking mechanism; electrical penetrations; equipment hatch; equipment pads/grout; expansion bellows; fuel transfer tube; fuel transfer tube gate valve; fuel transfer tube penetration; gaskets; hinges and pins; jet impingement barriers; mechanical penetrations; miscellaneous steel [brackets, checkered plates, embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating, stairs]; missile barriers; moisture barrier; neutron shield tank; o-rings; personnel lock; pipe; primary shield wall plate; reactor cavity seal ring; refueling cavity liner; spare penetrations; structural reinforced concrete (beams, columns, floor slabs, foundation mat slabs, pedestals, walls); structural steel (beams, bracing, columns and baseplates, trusses); tendon anchorages; tendon gallery; tendon wires; and valve bodies.

2.4A.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the containment described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.1 identified several areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, the staff issued RAIs 2.4-4, 2.4-5, and 2.4-12 to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1).

RAIs 2.4-4 and 2.4-5 are applicable to both Unit 2 and Unit 3. The staff's RAIs, the applicant's responses, and the staff's evaluations are documented in Millstone 3 SER Section 2.4B.1.

RAI 2.4-12, which is specific to Unit 2, is described below.

LRA Section 2.4.1 "Containment" references FSAR Section 5.9.3.3 for additional details about the containment post-tensioning system. FSAR Section 5.9.3.3.4, "Corrosion Protection," states:

> As a result of the Millstone Unit No. 2 tendon surveillance program, sixteen horizontal tendons have been identified as subject to ground water intrusion. To prevent ground water intrusion, the corrosion protection material is continuously supplied to the subject tendons at a pressure slightly above hydrostatic pressure of the ground water. The tendons so pressurized are horizontal tendons 12H01 through 12H06, 12H08 through 12H10, 31H01 through 31H04, 31H01, 32H02, and 32H03.

In accordance with 10 CFR 54.4(a)(2), the system that continuously supplies corrosion protection material to the sixteen (16) horizontal tendons appears to serve an intended function. The applicant was requested to submit a scoping and screening evaluation and AMR for this system and, If applicable, to provide the technical basis for excluding this system from the scope of license renewal.

In its response to RAI 2.4-12, dated November 9, 2004, the applicant stated that:

> The safety-related containment post-tensioning system is in the scope of license renewal because it provides containment structural integrity. The post-tensioning system is composed of horizontal and vertical tendon wires and associated tendon anchorages that are used to prestress the cylindrical portion of the concrete Containment. Corrosion protection material (grease) is continuously applied as a preventative measure to prevent the intrusion of water into 16 horizontal hoop tendons that have been identified as subject to ground water intrusion. Failure to supply the corrosion protection material

to the tendons may allow ground water intrusion, but would not affect the tension on the containment tendons or the structural integrity of the Containment. Additionally, no credit is taken for corrosion protection of the containment tendons in the determination of aging effects. Loss of material was identified for the containment tendons and is managed with the Inservice Inspection Program: Containment Inspections AMP as indicated in LRA Table 3.5.2-1.

Therefore, since the pressurized application of corrosion protection material to the tendons is not required for containment structural integrity or to maintain proper tension of the tendons, and is not credited in the aging management review, it does not meet the criteria of 10 CFR 54.4(a)(2) for being included in the scope of license renewal.

Based on its review, the staff finds the applicant's response to RAI 2.4-12 acceptable because the post-tensioning system is in scope as indicated in LRA Table 3.5.2-1. The staff considers its concern described in RAI 2.4-12 resolved.

2.4A.1.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the containment that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the containment that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2 Structures and Component Supports

In LRA Section 2.4.2, the applicant identified the structures and components of the structures and component supports that are subject to an AMR for license renewal.

The applicant described the structures and component supports in the following sections:

- 2.4.2.1 Unit 2 containment enclosure building
- 2.4.2.2 Unit 2 auxiliary building
- 2.4.2.3 Unit 2 warehouse building
- 2.4.2.4 Unit 2 turbine building
- 2.4.2.5 Unit 1 turbine building
- 2.4.2.6 Unit 1 control room and radwaste treatment building
- 2.4.2.7 Unit 2 fire pump house
- 2.4.2.8 Unit 3 fire pump house
- 2.4.2.9 SBO diesel generator enclosure and fuel oil tank vault
- 2.4.2.10 Unit 2 condensate polishing facility and Warehouse No. 5
- 2.4.2.11 security diesel generator enclosure
- 2.4.2.12 stack monitoring equipment building
- 2.4.2.13 Millstone stack
- 2.4.2.14 switchyard control house
- 2.4.2.15 retaining wall

- 2.4.2.16 switchyard, 345kV
- 2.4.2.17 Unit 2 intake structure
- 2.4.2.18 sea walls
- 2.4.2.19 Unit 2 discharge tunnel and discharge structure
- 2.4.2.20 Unit 2 bypass line
- 2.4.2.21 tank foundations
- 2.4.2.22 yard structures

The corresponding subsections of this SER (2.4A.2.1 - 2.4A.2.22, respectively) present the staff's related findings.

2.4A.2.1 Unit 2 Containment Enclosure Building

2.4A.2.1.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.1, the applicant described the Unit 2 containment enclosure building. The Unit 2 containment enclosure building is a steel-framed structure, with metal siding and a roof deck. The enclosure building completely surrounds the containment above grade and is designed and constructed to limit radioactive leakage to the environment in the unlikely event of a loss-of-coolant accident (LOCA). The containment enclosure building also encloses the auxiliary building equipment areas (the east and west main steam and main feedwater penetration areas).

The containment enclosure building is a Class I structure. The containment enclosure building non-safety-related structural members support the function of safety-related equipment. The containment enclosure building also contains EQ equipment, and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-1, the applicant identified the following Unit 2 containment enclosure building component types that are within the scope of license renewal and subject to an AMR: blow-off metal siding/panel; doors; equipment pads/grout; flood/spill barriers, including curbs, dikes, toe plates, and stop logs; metal siding; metal siding-caulking; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating, stairs]; scuppers; structural reinforced concrete (caisson, floor slabs, grade beams, slabs on grade, walls); structural steel (beams, bracing, columns and baseplates, concrete floor framing and decking, roof framing and decking); and vent stacks (supports).

2.4A.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.1 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 containment enclosure building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.4A.2.1.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 containment enclosure building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 containment enclosure building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.2 Unit 2 Auxiliary Building

2.4A.2.2.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.2, the applicant described the Unit 2 auxiliary building. The Unit 2 auxiliary building includes the auxiliary building structure, spent fuel pool (including transfer canal), spent fuel storage racks, control room, and service water pipe tunnel. The auxiliary building structure is a multi-story, reinforced concrete structure founded on bedrock, with concrete floor slabs, roof slabs, and walls. Unit 1 control room steel columns support a portion of the auxiliary building structure in Unit 2. A steel frame structure, which is supported on the operating floor, supports the cask handling crane and the concrete roof slab, above the spent fuel pool. Steel platforms, stairs, grating, and ladders are provided inside the auxiliary building structure.

The Unit 2 auxiliary building is a Class I structure. The Unit 2 auxiliary building non-safety-related structural members support the function of safety-related equipment. The Unit 2 auxiliary building contains EQ equipment and supports fire protection, station blackout, and anticipated transient without scram.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)

- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides jet impingement shielding for HELBs
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a missile (internal or external) barrier
- provides a pressure boundary
- provides EQ barrier and/or HELB barrier

In LRA Table 2.4.2-2, the applicant identified the following Unit 2 auxiliary building component types that are within the scope of license renewal and subject to an AMR: control room ceiling panels; control room ceiling supports; doors; equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; masonry block walls; metal siding; metal smoke barrier; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating, stairs]; neutron absorber elements; scuppers; sliding bearings; spent fuel pool gate; spent fuel pool gate-seal; spent fuel pool liner plates; spent fuel storage racks; structural reinforced concrete (beams, columns, floor slabs, foundation mat slabs, roof slabs, slabs on grade, walls); structural steel (beams, bracing, columns and baseplates, concrete floor framing and decking, roof framing and decking); sumps; and tunnel.

2.4A.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.2 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 auxiliary building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.2.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 auxiliary building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 auxiliary building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.3 Unit 2 Warehouse Building

2.4A.2.3.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.3, the applicant described the Unit 2 warehouse building. The Unit 2 warehouse building includes the warehouse building structure and associated diesel oil supply tank rooms, new fuel storage room, cask wash pit, emergency diesel generator rooms, and the pipe tunnel to the RWST. The warehouse building structure is a safety-related structure founded on compacted structural backfill. The structure is located on the east side of the auxiliary building and the containment enclosure building. Most of the warehouse building structure is a multi-story reinforced concrete structure. The cask-handling area has a higher roof, which is supported by a steel-framed structure with metal siding.

The Unit 2 warehouse building is a Class I structure. The Unit 2 warehouse building non-safety-related structural members support the function of safety-related equipment. The Unit 2 warehouse building contains EQ equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a missile (internal or external) barrier
- provides EQ barrier and/or HELB barrier

In LRA Table 2.4.2-3, the applicant identified the following Unit 2 warehouse building component types that are within the scope of license renewal and subject to an AMR: cask wash pit liner; doors; equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; masonry block walls; metal siding; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating, stairs]; missile barriers; new fuel racks assembly; scuppers; structural reinforced concrete (floor slabs, foundation mat slabs, roof slabs, walls); structural steel (beams, columns and baseplates, concrete floor framing and decking, roof framing and decking); and tunnel.

2.4A.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.3 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 warehouse building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.3.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 warehouse building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 warehouse building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.4 Unit 2 Turbine Building

2.4A.2.4.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.4, the applicant described the Unit 2 turbine building. The Unit 2 turbine building is located west of the auxiliary building and the containment enclosure building, and north of the Unit 1 turbine building. The Unit 2 turbine building is a two-bay steel-framed multi-story structure with a high and low roof. The turbine building is enclosed with metal siding, blow-off metal siding/panels and pre-cast concrete panels, roof decking on the high roof, and concrete slab on the low roof. The foundations for the frames are spread-footing bearing on bedrock.

The Unit 2 turbine building is a Class I structure. The Unit 2 turbine building non-safety-related structural members support the function of safety-related equipment. The Unit 2 turbine building also contains EQ equipment, and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a missile (internal or external) barrier
- provides EQ barrier and/or HELB barrier
- provides jet impingement shielding for high energy line breaks

In LRA Table 2.4.2-4, the applicant identified the following Unit 2 turbine building component types that are within the scope of license renewal and subject to an AMR: blow-off metal siding/ panel; doors; equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; hatches; masonry block walls; metal siding; metal siding-caulking; miscellaneous steel [brackets, checkered plates, embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating, stairs]; scuppers; sliding bearings; structural reinforced concrete (floor slabs, footing and grade beams, grade beams, pedestals, roof slabs, slabs on grade, spread footing, turbine pedestal, walls); structural steel (beams, bracing, columns and baseplates, concrete floor framing and decking, roof framing and decking); sump liner; and sumps.

2.4A.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.4 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 turbine building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.4.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 turbine building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 turbine building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.5 Unit 1 Turbine Building

2.4A.2.5.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.5, the applicant described the Unit 1 turbine building. The Unit 1 turbine building is a seismic Class I and II structure. The Unit 1 turbine building north wall is common with the safety-related Unit 2 turbine building. Protection from external flooding on the Unit 2 turbine building south side is provided by the Unit 1 turbine building.

The Unit 1 turbine building provides support for the safety-related Unit 2 turbine building. The Unit 1 turbine building non-safety-related structural members provide flood protection for the south side of the Unit 2 turbine building.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a protective barrier for internal/external flooding events

In LRA Table 2.4.2-5, the applicant identified the following Unit 1 turbine building component types that are within the scope of license renewal and subject to an AMR: h-piles; scuppers; sliding bearings; structural reinforced concrete (floor slabs, foundation mat slabs, walls); and structural steel (beams, bracing, columns and baseplates, concrete floor framing and decking, roof framing and decking).

2.4A.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.5 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 1 turbine building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.5.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 1 turbine building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 1 turbine building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.6 Unit 1 Control Room and Radwaste Treatment Building

2.4A.2.6.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.6, the applicant described the Unit 1 control room and radwaste treatment building. The Unit 1 control room and radwaste treatment building is a Seismic Class I and II structure with a foundation mat on bedrock. The building includes a below-grade reinforced concrete structure with the control room located above grade. The control room is constructed of reinforced concrete walls with a two-foot-thick reinforced concrete roof.

The Unit 1 control room and radwaste treatment building provides support for the safety-related Unit 2 auxiliary building's structure. The Unit 1 control room and radwaste treatment building non-safety-related structural members provide flood protection. The Unit 1 control room and radwaste treatment building also supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a missile (internal or external) barrier

In LRA Table 2.4.2-6, the applicant identified the following Unit 1 control room and radwaste treatment building component types that are within the scope of license renewal and subject to an AMR: miscellaneous steel (brackets, embedded steel-exposed surfaces (shapes, plates, unistrut, etc.)); sliding bearings; structural reinforced concrete (floor slabs, foundation mat slabs, roof slabs, walls); and structural steel (beams, columns and baseplates).

2.4A.2.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.6 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 1 control room and radwaste treatment building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.6.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant.

No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 1 control room and radwaste treatment building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 1 control room and radwaste treatment building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.7 Unit 2 Fire Pump House

2.4A.2.7.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.7, the applicant described the Unit 2 fire pump house. The Unit 2 fire pump house is supported on a reinforced concrete mat foundation with reinforced masonry walls and structural steel beams supporting the roof. The roof is made up of a 4-inch-thick concrete slab over metal decking.

The Unit 2 fire pump house supports fire protection.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-7, the applicant identified the following Unit 2 fire pump house component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; masonry block walls; structural reinforced concrete (foundation mat slabs, roof slabs); and structural steel (roof framing and decking).

2.4A.2.7.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.7 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 fire pump house described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.7.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 fire pump house that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 fire pump house that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.8 Unit 3 Fire Pump House

2.4A.2.8.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.8, the applicant described the Unit 3 fire pump house. The Unit 3 fire pump house consists of a reinforced concrete mat foundation with reinforced masonry walls and structural steel beams supporting the roof. The roof is made up of a 4-inch-thick concrete slab over metal decking.

The Unit 3 fire pump house supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a protective barrier for internal/external flooding events

In LRA Table 2.4.2-8, the applicant identified the following Unit 3 fire pump house component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; masonry block walls; structural reinforced concrete (foundation mat slabs, roof slabs); and structural steel (roof framing and decking).

2.4A.2.8.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.8 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 fire pump house described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.8.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 fire pump house that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 fire pump house that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.9 SBO Diesel Generator Enclosure and Fuel Oil Tank Vault

2.4A.2.9.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.9, the applicant described the station blackout (SBO) diesel generator enclosure and fuel oil tank vault. The SBO diesel generator enclosure includes the SBO diesel generator switchgear enclosure, the concrete pad that supports the SBO diesel generator exhaust, and the separate building that provides support and shelter for the SBO diesel.

The SBO diesel generator enclosure and fuel oil tank vault supports fire protection and station blackout.

The intended function within the scope of license renewal includes providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-9, the applicant identified the following SBO diesel generator enclosure and fuel oil tank vault component types that are within the scope of license renewal and subject to an AMR: miscellaneous steel (checkered plates); roofing; siding; structural reinforced concrete (foundation mat slabs); and structural steel (beams, bracing).

2.4A.2.9.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.9 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the SBO diesel generator enclosure and fuel oil tank vault described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.9.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the SBO diesel generator enclosure and fuel oil tank vault that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the SBO diesel generator enclosure and fuel oil tank vault that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.10 Unit 2 Condensate Polishing Facility and Warehouse No. 5

2.4A.2.10.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.10, the applicant described the Unit 2 condensate polishing facility and Warehouse No. 5. The Unit 2 condensate polishing facility is a non-safety-related, non-seismic structure located in Warehouse No. 5, which also houses Unit 3 fire protection piping. Unit 2 shares this warehouse with Unit 3. The structure is located north of the Unit 2 turbine building and has a reinforced concrete mat foundation founded on structural fill. The Unit 2 condensate polishing facility is located approximately 20 feet below grade. There are three main levels and a penthouse that is located in the middle of the structure near the west wall. The superstructure is a steel-framed structure and some areas of the structure have masonry walls.

The Unit 2 condensate polishing facility and Warehouse No. 5 supports station blackout and fire protection.

The intended function within the scope of license renewal includes providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-10, the applicant identified the following Unit 2 condensate polishing facility and Warehouse No. 5 component types that are within the scope of license renewal and subject to an AMR: masonry block walls; miscellaneous steel (platforms and grating); structural reinforced concrete (beams, columns, floor slabs, foundation mat slabs, walls); and structural steel (beams, bracing, columns and baseplates).

2.4A.2.10.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.10 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 condensate polishing facility and Warehouse No. 5 described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.10.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 condensate polishing facility and Warehouse No. 5 that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 condensate polishing facility and Warehouse No. 5 that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.11 Security Diesel Generator Enclosure

2.4A.2.11.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.11, the applicant described the security diesel generator enclosure. The security diesel generator enclosure is a non-safety-related, non-seismic, one-story free-standing structure that houses the security diesel generator and its support equipment, including the security diesel fuel oil tank. Power from the security diesel generators is used for general exterior illumination that is credited for fire protection events. The structure is constructed with aluminum sheeting riveted to a combination of aluminum and steel frame. The walls and roof are insulated and lined with plywood on the inside. The building is above grade, is supported by steel channels, and sits on a concrete slab foundation. Power cables and conduits from the generator are supported from the ceiling and internal wall surfaces of the structure.

The security diesel generator enclosure supports fire protection.

Intended functions provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-11, the applicant identified the following security diesel generator enclosure component types that are within the scope of license renewal and subject to an AMR: miscellaneous steel (checkered plates); roofing; siding; structural framing; structural reinforced concrete (foundation mat slabs); and structural steel (beams, bracing).

2.4A.2.11.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.11 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the security diesel generator enclosure described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.11.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the security diesel generator enclosure that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the security diesel generator enclosure that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.12 Stack Monitoring Equipment Building

2.4A.2.12.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.12, the applicant described the stack monitoring equipment building. The stack monitoring equipment building is a non-safety-related, non-seismic, single-story structure that provides support and shelter to non-safety-related equipment that can affect safety-related equipment. The building has a concrete roof and floor slab on grade with non-reinforced grouted masonry walls that are supported on a concrete spread footing.

The stack monitoring equipment building non-safety-related structural members support the function of safety-related equipment.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-12, the applicant identified the following stack monitoring equipment building component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; masonry block walls; and structural reinforced concrete (roof slabs, slabs on grade, spread footing, walls).

2.4A.2.12.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.12 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the stack monitoring equipment building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.12.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the stack monitoring equipment building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the stack monitoring equipment building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.13 Millstone Stack

2.4A.2.13.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.13, the applicant described the stack. The stack is a safety-related reinforced-concrete structure supported on a reinforced concrete mat foundation. The stack extends 375 feet above grade and has a circular orifice with a 7 foot inside diameter. The stack is a Class I structure.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a missile (internal or external) barrier

In LRA Table 2.4.2-13, the applicant identified the following stack component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete (floor slabs, foundation mat slabs, walls); and structural steel (beams, bracing).

2.4A.2.13.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.13 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the stack described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.13.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the stack that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the stack that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.14 Switchyard Control House

2.4A.2.14.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.14, the applicant described the switchyard control house. The switchyard control house is a non-safety-related, non-seismic, one-story building that provides support and shelter for equipment utilized for closure of the 345kV circuit breakers that are credited for restoration of offsite power in the event of a station blackout.

The switchyard control house supports station blackout.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-14, the applicant identified the following switchyard control house component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; masonry block walls; structural reinforced concrete; and structural steel.

2.4A.2.14.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.14 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the switchyard control house described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.14.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the switchyard control house that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the switchyard control house that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.15 Retaining Wall

2.4A.2.15.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.15, the applicant described the retaining wall. The retaining wall is a non-safety-related, non-seismic, reinforced concrete wall supported on reinforced concrete footing that is adjacent to the Unit 2 condensate polishing facility and Warehouse No. 5.

The retaining wall supports station blackout.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-15, the applicant identified the following retaining wall component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete (footing, walls).

2.4A.2.15.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.15 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the retaining wall described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.15.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the retaining wall that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the retaining wall that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.16 Switchyard, 345kV

2.4A.2.16.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.16, the applicant described the 345kV switchyard. Structural members associated with the in-scope electrical equipment required for the restoration of offsite power include transmission towers and dead-end structures and associated foundations, breaker and disconnect foundations and support structures, the non-safety-related, non-seismic, reserve station service transformer foundation, and the A700 switchgear enclosure and foundation.

The 345kV switchyard structural members supports station blackout.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-16, the applicant identified the following 345kV switchyard component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete and structural steel.

2.4A.2.16.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.16 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the 345kV switchyard described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.16.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the 345kV switchyard that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the 345kV switchyard that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.17 Unit 2 Intake Structure

2.4A.2.17.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.17, the applicant described the Unit 2 intake structure. The Unit 2 intake structure is a Class I reinforced concrete structure located west of the main plant. The structure consists of four individual bays that provide sea water from the Niantic Bay to four non-safety-related circulating water pumps. Three of the four bays also supply water to three safety-related service water pumps for the purpose of emergency and normal heat removal from heat exchangers and equipment. The service water (SW) system is the only safety-related system located in the Unit 2 intake structure.

The Unit 2 intake structure is a Class I structure (SW cubicles only) that provides a source of cooling water to the safety-related SW pumps. The Unit 2 intake structure non-safety-related structural members support the function of safety-related equipment. The Unit 2 intake structure also supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a missile (internal or external) barrier
- provides a source of cooling water for plant shutdown

In LRA Table 2.4.2-17, the applicant identified the following Unit 2 intake structure component types that are within the scope of license renewal and subject to an AMR: doors; equipment pads/grout; hatches; miscellaneous steel [checkered plates, embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating]; missile barriers; structural reinforced concrete (beams, columns, floor slabs, foundation mat slabs, roof slabs, walls); structural steel (beams, bracing, roof framing and decking); and trash racks.

2.4A.2.17.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.17 and the referenced Millstone FSAR sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 intake structure described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.17 identified one area in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, the staff issued RAI 2.4-6, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below.

- The LRA stated that the trash racks for the Unit 2 intake structure were within the scope of license renewal and referenced FSAR Section 5.6 for further details. The staff reviewed this FSAR section and could not identify the trash racks on FSAR Figure 5.6-1. This figure did not identify a course screen guide and a fine screen guide. The staff requested whether these two guides were the same as the trash racks referred to in the LRA. If not, the applicant was requested to identify the location of the trash racks on FSAR Figure 5.6-1 and clarify whether the course screen and fine screen guides were within the scope of license renewal. If not, the applicant was requested to explain why not.

- The LRA stated that the traveling screens for the Unit 2 intake structure were not in the scope of license renewal because they did not perform an intended function. FSAR Section 9.7.2.2.1 stated that the SW pumps took suction downstream from the traveling screens in the intake structure. This configuration was also illustrated in FSAR Figure 5.6-1. The applicant was requested to provide the technical basis for the conclusion that the traveling screens were not within the scope of license renewal.
- FSAR Figure 5.6-1 identified four sluice gates located on the north face of the intake structure. These sluice gates appeared to be located in the recirculation distribution box on the intake structure wall as shown on FSAR Figure 5.6-2 and apparently were associated with the operation of the Unit 2 bypass line discussed in LRA Section 2.4.2.20. The applicant was requested to clarify whether these sluice gates were within the scope of license renewal. If they were, the applicant was requested to identify where they were included in LRA Table 2.4.2-17. If they were not, the applicant was requested to explain why not.

In its response to RAI 2.4-6, dated November 9, 2004, the applicant stated:

- FSAR Figure 5.6-1 identifies a course screen guide and a fine screen guide. The course screen guide is installed for the trash racks. The course screen guide is within the scope of license renewal and inspected as part of the trash rack assembly. The fine screen and guide are not within the scope of licensee renewal because the fine screen is not utilized.
- The traveling screens are part of the non-safety-related circulating water system that supports normal plant operation. During normal plant operation, the circulating water pumps draw a significant flow of cooling water through the bays of the intake structure to support the main condenser cooling requirements. The flow velocity during normal plant operation is approximately 1.0 ft/sec. This flow rate creates the potential for debris and sediment to enter the bays. During emergency operation when the circulating water pumps are not in operation, the service water pumps draw a small amount of cooling water through the bays with a low flow velocity (approximately 0.09 ft/sec). The low flow velocity will create an insignificant amount of debris and sediment and the traveling water screens will be able to pass sufficient amount of cooling water to the service water pumps to allow for safe shutdown. The service water pumps also have their own discharge strainers to filter out small debris and vegetation. Therefore, the traveling screens do not provide a license renewal intended function as defined in 10 CFR 54.4(a)(1), (2) or (3) and are not in scope for license renewal.
- The sluice gates consist of a frame, guides, and sliding gate installed in the concrete chamber walls. These component parts are the equivalent of valve internals and have been determined to be active components. However, the sluice gate is not configured with a housing in a manner similar to a valve body. Therefore, although the sluice gates are in the scope of license renewal, they are active components that do not require aging management review, and are not included in LRA Table 2.4.2-26.

Based on its review, the staff finds the applicant's response to RAI 2.4-6 acceptable, because the applicant has adequately clarified its scoping and screening evaluation for the screen guides, traveling screens, and sluice gates. The staff considers its concern described in RAI 2.4-6 resolved.

2.4A.2.17.3 Conclusion

The staff reviewed the LRA, related structural/component information, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 intake structure that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 intake structure that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.18 Sea Walls

2.4A.2.18.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.18, the applicant described the sea walls. The shores immediately north and south of the Unit 2 intake structure are protected from erosion by post-tensioned, reinforced concrete sea walls. The walls are supported by a reinforced concrete footing, which is founded upon bedrock. The top of the walls are approximately 14 feet above mean sea level.

The concrete sea walls are safety-related structures protecting the structural integrity of the safety-related Unit 2 intake structure.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a protective barrier for internal/external flooding events

In LRA Table 2.4.2-18, the applicant identified the following sea walls component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete and structural steel.

2.4A.2.18.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.18 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the sea walls described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.18 identified one area in which additional information is necessary to complete the review of the applicant's scoping and screening results. Therefore, the staff issued RAI 2.4-7, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1).

In RAI 2.4-7, the staff noted that LRA Section 2.4.2.18 for Millstone 2 discussed the scoping and screening results for the sea walls. The LRA stated that the walls are post-tensioned, reinforced concrete sea walls. FSAR Section 2.5.4.2.1 stated that the anchorage system for the walls consists of 5 to 11 strands, consisting of 7 wires per strand, which are anchored into bedrock by drilling and grouting. It also stated that the anchorages are encased in concrete. A typical anchorage was shown in FSAR Figure 2.5-15. LRA Table 2.4.2-18 stated that the sea wall structural members that require aging management review were "structural reinforced concrete (footing, walls)." The applicant was requested to clarify whether the wall anchorage system shown in FSAR Figure 2.5-15 was also within the scope of license renewal and included as part of the item listed in LRA Table 2.4.2-18. If it was not, that applicant was requested to explain why not.

In its response to RAI 2.4-7, dated November 9, 2004, the applicant stated that:

> The sea wall anchorage functions to maintain the integrity of the sea wall and is in the scope of license renewal. The sea wall anchorage was inadvertently omitted from LRA Table 2.4.2-18 and Table 3.5.2-19. The sea wall anchorage system, consisting of the anchorage strands, has been evaluated for the effects of aging. The carbon steel anchor strands are anchored in rock by drilling and grouting. The unbonded length of the steel strands is located within a polyvinyl chloride (PVC) pipe that is completely grouted following the post-tensioning operation. The anchorage system is located in the center of the 4-foot thick reinforced concrete sea wall. The concrete, in addition to the grout and PVC pipe, provides ample protection such that the anchorage system is not exposed to an aggressive environment. Therefore, the aging management review concluded that there are no aging effects requiring management of the anchorage system.

Based on its review, the staff finds the applicant's response to RAI 2.4-7 acceptable from the scoping and screening perspective. The staff considers its concern described in RAI 2.4-7 resolved based on the inclusion of the component.

2.4A.2.18.3 Conclusion

The staff reviewed the LRA, related structural/component information, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the sea walls that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the sea walls that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.19 Unit 2 Discharge Tunnel and Discharge Structure

2.4A.2.19.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.19, the applicant described the Unit 2 discharge tunnel and discharge structure. The SW and circulating water systems discharge into the discharge tunnel. The discharge tunnel is a non-safety-related reinforced concrete structure that is located below grade. It extends from the turbine building to the rock quarry.

The discharge structure, a continuation of the discharge tunnel, is located at the end of the discharge tunnel. It is a reinforced concrete structure with a portion of the structure below grade and a portion exposed to atmosphere and weather. At the discharge structure, SW is discharged to a rock quarry. From the quarry, the water passes through a channel into Long Island Sound.

The Unit 2 discharge tunnel and discharge structure are non-safety-related structures whose failure could affect the discharge path for the safety-related SW system.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a pressure boundary

In LRA Table 2.4.2-19, the applicant identified the following Unit 2 discharge tunnel and discharge structure component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete (floor slabs, roof slabs, walls).

2.4A.2.19.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.19 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 discharge tunnel and discharge structure described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.19.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 discharge tunnel and discharge structure that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 discharge tunnel and discharge structure that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.20 Unit 2 Bypass Line

2.4A.2.20.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.20, the applicant described the Unit 2 bypass line. A non-safety-related bypass line is provided from the discharge tunnel to the Unit 2 intake structure to provide for de-icing at the intake, if required.

The Unit 2 bypass line is a non-safety-related structure whose failure could allow the formation of ice to occur in front of the Unit 2 intake structure, thus blocking flow to the safety-related SW system.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)

In LRA Table 2.4.2-20, the applicant identified the following Unit 2 bypass line component type that is within the scope of license renewal and subject to an AMR: pipe.

2.4A.2.20.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.20 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 bypass line described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.20.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 bypass line that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 bypass line that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.21 Tank Foundations

2.4A.2.21.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.21, the applicant described the tank foundations. The following foundations are within the scope of the license renewal:

- Unit 2 condensate storage tank foundation and missile barrier
- fire water tanks 1 and 2 foundations
- Unit 2 diesel fuel oil storage tank foundation
- Unit 2 refueling water storage tank foundation
- SBO diesel fuel oil storage tank foundation

The condensate storage tank foundation and missile barrier provides support for the safety-related condensate storage tank. Fire water tanks 1 and 2 foundations support fire protection. The diesel fuel oil storage tank foundation supports the in-scope diesel fuel oil storage tank. The refueling water storage tank foundation qualifies as a Class 1 structure. The SBO diesel fuel oil storage tank foundation supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a missile (internal or external) barrier

In LRA Table 2.4.2-21, the applicant identified the following tank foundations component types that are within the scope of license renewal and subject to an AMR: miscellaneous steel (brackets, ladders, platforms and grating); structural reinforced concrete (foundation mat slabs, walls); structural reinforced concrete (footing); structural reinforced concrete; structural reinforced concrete (foundation mat slabs); and structural reinforced concrete (foundation mat slabs).

2.4A.2.21.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.21 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the tank foundations described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.21.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the tank foundations that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the tank foundations that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.2.22 Yard Structures

2.4A.2.22.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.22, the applicant described the yard structures. The following structures are within the scope of the license renewal:

- Unit 2 transformer firewalls and dikes
- A700 switchgear enclosure dike
- Unit 2 diesel fuel oil storage tank dike
- Unit 2 refueling water storage tank (RWST) valve pit
- Unit 2 pipe trenches
- Unit 2 manholes
- Unit 2 duct banks
- Unit 2 security lighting supports (including poles)

The transformer firewalls and dikes, diesel fuel oil storage tank dike, and the security lighting supports (including poles) supports fire protection. The A700 switchgear enclosure dikes supports station blackout. The RWST valve pit is Class 1 structure that provides enclosure and protection for safety-related piping associated with the RWST. The pipe trenches provides protection for safety-related condensate pipe from the storage tank to the auxiliary feedwater pumps; the pipe trenches also supports fire protection and station blackout. The manholes contain electrical cables for safety-related, in-scope equipment; other in-scope manholes support fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a missile (internal or external) barrier
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)

In LRA Table 2.4.2-22, the applicant identified the following yard structures component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete (footing, walls); doors; structural reinforced concrete; flood/spill barriers including curbs, dikes, toe plates, and stop logs; structural reinforced concrete (footing); structural steel (beams); manhole covers; structural reinforced concrete (foundation mat slabs, roof slabs, walls); hatches; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.)]; structural reinforced concrete (foundation mat slabs, walls); manhole covers; structural reinforced concrete (foundation mat slabs, roof slabs, walls); duct banks; lighting poles; miscellaneous steel (embedded steel-exposed surfaces (shapes, plates, unistrut, etc.)); and structural reinforced concrete (footing).

2.4A.2.22.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.22 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the yard structures described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.2.22.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the yard structures that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the yard structures that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.3 NSSS Equipment Supports

2.4A.3.1 Summary of Technical Information in the Application

In LRA Section 2.4.3, the applicant identified the components of the NSSS equipment supports that are subject to an AMR for license renewal. The NSSS equipment supports are the plant components that support and restrain the following reactor coolant system equipment:

- reactor vessel
- reactor coolant pumps
- steam generators
- pressurizer

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)

In LRA Table 2.4.2-23, the applicant identified the following NSSS equipment supports component types that are within the scope of license renewal and subject to an AMR: pressurizer support - bolting; reactor coolant pump support - plate and structural shapes, spring hanger assemblies; reactor vessel support - bolting, plate and structural shapes; sliding support assembly; steam generator support - sliding support assembly, bolting, plate and structural shapes, sliding base, and snubber attachment hardware.

2.4A.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.3 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the NSSS equipment supports described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.3.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the NSSS equipment supports that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the NSSS equipment supports that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.4 General Structural Supports

2.4A.4.1 Summary of Technical Information in the Application

In LRA Section 2.4.4, the applicant identified the components of the general structural supports that are subject to an AMR for license renewal. Structural supports for mechanical and electrical components are an integral part of all plant systems. Many of these supports are not uniquely identified with component identification numbers. However, characteristics of the supports, such as design, materials of construction, environments, and anticipated stressors, are similar. Therefore, structural supports for mechanical and electrical components are evaluated as commodities across system boundaries.

Structural supports protect and support equipment. Non-safety-related supports prevent interaction between safety-related and non-safety-related components. Other supports provide support for components credited for fire protection, station blackout, anticipated transient without scram, pressurized thermal shock, or environmental qualification of electrical equipment.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)

In LRA Table 2.4.2-24, the applicant identified the following general structural supports component types that are within the scope of license renewal and subject to an AMR: battery racks; electrical conduit, cable trays; sliding support bearing and sliding surfaces; structural support components (plate, structural shapes, etc.); and vendor-supplied specialty items (spring hangers, struts, clamps, vibration isolators, etc.).

2.4A.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.4 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the general structural supports described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.4.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the general structural supports that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the general structural supports that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.5 Miscellaneous Structural Commodities

2.4A.5.1 Summary of Technical Information in the Application

In LRA Section 2.4.5, the applicant identified the components of the miscellaneous structural commodities that are subject to an AMR for license renewal. Miscellaneous structural commodities are within the scope of license renewal because they provide safety-related functions, by supporting safety-related component functions, and/or by supporting environmental qualification, fire protection, station blackout, anticipated transient without scram, and pressurized thermal shock regulations.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides EQ barrier and/or HELB barrier
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a pressure boundary
- provides a protective barrier for internal/external flooding events

In LRA Table 2.4.2-25, the applicant identified the following miscellaneous structural commodities component types that are within the scope of license renewal and subject to an AMR: bus duct enclosures; cable tray cover and assembly; electrical component supports within cabinets and panels; enclosure; expansion joint/seismic gap material (between adjacent buildings/structures); expansion joint/seismic gap material (fire-rated walls); fire boots; fire doors and/or eq barrier doors; fire resistant coating; fire stops; fire-rated cable wraps; fire/eq barrier penetration seals (including ceramic damming material); flood door/gate gasket; flood doors/gates; flood prevention plugs; gaskets in junction, terminal, and pull boxes; gypsum boards; junction, terminal, and pull boxes; panels and cabinets; radiant energy shields; stop log; stop log brackets; stop log gasket; switchgear enclosures; watertight door gasket; and watertight doors.

2.4A.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.5 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the miscellaneous structural commodities described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.5.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine

whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the miscellaneous structural commodities that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the miscellaneous structural commodities that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4A.6 Load Handling Cranes and Devices

2.4A.6.1 Summary of Technical Information in the Application

In LRA Section 2.4.6, the applicant identified the components of the load handling cranes and devices that are subject to an AMR for license renewal. The load handling cranes and devices are within the scope of license renewal because certain load handling cranes and devices are Seismic Class I and meet, or are seismically designed and meet to ensure that they will not adversely impact safety-related components during or subsequent to a seismic event.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)

In LRA Table 2.4.2-26, the applicant identified the following load handling cranes and devices component types that are within the scope of license renewal and subject to an AMR: cranes and monorails including bridge and trolley support members (girders, beams, angles, frames, plates, rails & anchorage); fuel elevator support members (structural plates, tracks & anchorage); and fuel transfer machine and tilting mechanism support members (structural frame, tracks, and anchorage).

2.4A.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.6 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the load handling cranes and devices described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4A.6.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine

whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the load handling cranes and devices that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the load handling cranes and devices that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B Unit 3 Scoping and Screening Results - Structures

2.4B.1 Containment

2.4B.1.1 Summary of Technical Information in the Application

In LRA Section 2.4.1, the applicant identified the components of the containment that are subject to an AMR for license renewal. The containment is a seismic Category I structure, housing the reactor, NSSS equipment, and various safety-related and non-safety-related components. The evaluation boundary of the containment consists of the containment structure, including the liner and internal structural members, and containment penetrations (equipment access and personnel air lock openings, piping penetrations, electrical penetrations, and the fuel transfer tube assembly). The refueling cavity liner and reactor cavity seal ring are also included in the containment evaluation boundary.

The containment is a Seismic Category I structure. The containment non-safety-related structural members support the function of safety-related equipment. The containment also contains EQ equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a pressure boundary
- provides EQ barrier and/or HELB barrier
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides jet impingement shielding for high energy line breaks
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a missile (internal or external) barrier
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)

In LRA Table 2.4.1-1, the applicant identified the following containment component types that are within the scope of license renewal and subject to an AMR: concrete blocks (shielding); containment liner; containment recirculation sump; containment recirculation sump screen; containment recirculation sump vortex breaker; containment shell (cylindrical wall and dome);

door locking mechanism; electrical penetrations; equipment hatch; equipment pads/grout; expansion bellows; flood/spill barriers including curbs, dikes, toe plates, and stop logs; fuel transfer tube; fuel transfer tube enclosure protection shield; fuel transfer tube gate valve; fuel transfer tube penetration; gaskets; hatches; hinges and pins; jet impingement barriers; mechanical penetrations; miscellaneous steel [brackets, checkered plates, embedded steel-exposed surfaces (shapes, plates, unistrut, etc.), ladders, platforms and grating, stairs]; missile barriers; moisture barrier; o-rings; personnel air lock; pipe; reactor cavity seal ring; refueling cavity liner; ring girder; spare penetrations; structural reinforced concrete (beams, columns, floor slabs, foundation mat slabs, pedestals, walls); structural steel (beams, bracing, columns and baseplates, trusses); sub-foundation; and valve bodies.

2.4B.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1 and the referenced Millstone FSAR Sections 3.8.1.1, 3.8.1.1.4, 3.8.1.1.5, 3.8.3, Table 3.2-1, Figure 3.8-20, Figure 3.8-21, and Figure 3.8-22. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the containment described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.1 identified several areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, the staff issued RAIs 2.4-4, 2.4-5, 2.4-8, and 2.4-13 to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1).

The staff's RAI 2.4-4 is described below.

In both the Millstone 2 and Millstone 3 LRAs, Table 2.4.1-1 "Unit X Containment" lists "pipe" and "valve bodies" under the "Structural Member" column. In both LRAs, Section 2.4.1 "Containment" does not specifically describe these items. The applicant was requested to describe the pipe and valve bodies that are included as part of the Millstone 2 and 3 containments.

In its response to RAI 2.4-4, dated November 9, 2004, the applicant stated that:

> LRA Section 2.4.1, Containment, describes the personnel lock, which allows for access into and out of the Containment. The personnel lock includes an equalizing system to equalize pressure inside and outside the lock. This function is accomplished through the use of piping and valves. In LRA Table 3.5.2-1, a note is assigned to the Structural Members "Pipe" and "Valve Bodies" which states that these components are related to the personnel lock equalizing system.

Based on its review, the staff finds the applicant's response to RAI 2.4-4 acceptable, because it clearly describes the pipe and valve bodies that are included as part of the Millstone 2 and 3 containments. The staff considers its concern described in RAI 2.4-4 resolved.

The staff's RAI 2.4-5 is described below.

In both the Millstone 2 and Millstone 3 LRAs, Section 2.4.1 "Containment" describes containment electrical penetrations as follows:

> The electrical penetrations consist of an electrical penetration module installed into a penetration sleeve that is welded to the liner plate. The evaluation boundary consists of the sleeve and attachment weld to the electrical penetration module. Spare electrical penetrations are also part of the evaluation boundary. The electrical penetration module is evaluated as described in Section 2.5.2, Electrical Penetrations.

LRA Section 2.5.2 "Electrical Penetrations" states:

> Electrical penetrations permit the conduction of electrical power or signals through the Containment wall while maintaining the integrity of the Containment pressure boundary. The electrical penetration feed-through modules consist of one or more electrical conductors in a tubular metallic cylinder. The cylinder passes through a header plate which is manufactured with an adapter ring that is field-welded to the Containment penetration sleeve to provide the Containment pressure boundary. The header plate may contain one or more modules that make up the total electrical penetration assembly. The modules contain conductor extensions, conductor supports, and seals which are either epoxy, O-ring, or mechanical compression seals. Nitrogen is used for monitoring of seal pressure integrity.

From the information provided in the LRAs, it appears that the AMR for the containment pressure boundary function of the electrical penetration feed-through modules is evaluated as part of the electrical scope, instead of as part of the structures scope. The staff considers the containment pressure boundary function of the electrical penetration feed-through modules to be part of the structures scope. The applicant was requested to submit an AMR for the containment pressure boundary function of electrical penetration feed-through modules as part of the structures scope.

In its initial response to RAI 2.4-5, dated November 9, 2004, the applicant stated:

> The evaluation boundaries for the containment electrical penetrations are described in LRA Sections 2.4.1 and 2.5.2 and the aging management review results are provided in LRA Tables 3.5.2-1 and 3.6.2-2. The information provided in these sections meets the requirements of 10 CFR 54.21(a). Therefore, no changes to the LRA are deemed necessary.

In its supplemental response to RAI 2.4-5, dated December 3, 2004, the applicant stated:

> Supplemental Information:
>
> In a November 9, 2004, telephone conversation, the staff requested further clarification of the containment pressure boundary function and the aging management review results for the electrical penetration feed-through modules. In addition, the staff

requested that Dominion provide the basis that there is no aging management program for the portion of the electrical penetration modules that provide the containment pressure boundary function, or provide an aging management program for these components.

As described in LRA Section 2.5.2, the electrical penetration feed-through module is installed in a containment structure penetration by field welding the module header plate to the containment liner via an adapter ring. The sleeve and weld are further described in LRA Section 2.4.1. The electrical penetration module, header plate, adapter, and sleeve, and the associated field weld, provide a containment pressure boundary function. The module, including non-metallic penetration seals, compression connectors, and feed-through sealants, and the header plate are evaluated for the effects of aging based on the containment pressure boundary function as indicated in LRA Table 3.6.2-2. The containment penetration sleeve, adapter, and associated welds are evaluated for the effects of aging based on the containment pressure boundary function as Electrical Penetrations and the results are provided in LRA Table 3.5.2-1.

As indicated in LRA Table 3.5.2-1, the electrical penetrations were determined to be subject to loss of material and are managed for the effects of aging by the Inservice Inspection Program: containment Inspections AMP. This AMP is described in LRA Section B2.1.16 and is modified by the response to RAI 3.5-1 provided in Dominion letter SN 04-673 dated 11/9/04.

After further consideration, and in response to NRC staff concerns, the aging management review results provided in LRA Table 3.6.2-2 for the Feed-through Sealant and the Penetration Seals component types are supplemented to indicate that the aging effects of cracking and change of material properties will be managed by the Inspection Program: Containment Inspections AMP as modified by the response to RAI 3.5-1 provided in Dominion letter SN 04-673 dated 11/9/04.

Based on its review, the staff finds the applicant's response to RAI 2.4-5 acceptable, because the applicant has committed to inspect electrical penetration feed-through modules for cracking and change in material properties under its inspection program: containment inspections AMP, as modified by the response to RAI 3.5-1 provided in Dominion letter SN 04-673 dated November 9, 2004. The staff considers its concern described in RAI 2.4-5 resolved.

The staff's RAI 2.4-8 is described below.

LRA Section 2.4.1 for Millstone 3 discusses the scoping and screening results for the containment. The LRA states that a seismic Category 1 reinforced concrete ring girder encircles the containment structure to prevent postulated sliding of rock wedges toward the containment wall during a seismic event. LRA Table 2.4.1-1 identifies the ring girder as requiring an AMR and LRA Table 3.5.2-1 presents the AMR results for the concrete structural members of the ring girder. FSAR Section 3.8.1.1.5 states that the ring girder is isolated from the containment wall by a compressible material. FSAR Figures 3.8-1, 3.8-23, and 3.8-24 identify the following components between the ring girder and the containment wall: compressible material, waterproofing membrane, protection board, ribbed fiberglass and waterstop. Some applicable components such as moisture barrier and expansion joint/seismic gap material (between adjacent buildings/structures) are generally identified in LRA Tables 2.4.1-1 and 2.4.2-36 as requiring an AMR. Please clarify whether all the components between the ring girder and the containment wall that are identified in FSAR Figures 3.8-1, 3.8-23, and 3.8-24 are within the scope of license renewal. If so, please identify where they are included in LRA Tables 2.4.1-1 and 2.4.2-36.

In its response to RAI 2.4-8, dated November 9, 2004, the applicant stated:

> The components listed in RAI 2.4-8, that are located between the ring girder and the containment wall, are identified in FSAR Figures 3.8-1, 3.8-23, and 3.8-24. They include: compressible material, waterproofing membrane, protection board, ribbed fiberglass, and waterstop. Of these, only the ribbed fiberglass material and the waterstops are within the scope of license renewal and subject to aging management review as described below.
>
> The compressible material was installed during construction to maintain a separation gap between the ring girder and the containment structure. The gap material also functioned as a gap filler to prevent debris from entering this gap until the adjacent building floors were constructed. With these floors in place, there is no possibility of debris entering the gap between the ring girder and the containment structure, and the gap filler material no longer serves a function. Therefore, the compressible material is not within the scope of license renewal.
>
> The waterproofing membrane is installed to minimize the effects of groundwater on the containment walls and foundation. However, the membrane is known to be breached and, when groundwater penetrates or otherwise circumvents the membrane, the water drains to an underdrains removal system that includes a layer of porous concrete beneath the containment and engineered safety features (ESF) building foundations. As such, failure of the waterproof membrane does not affect the structural integrity of the containment structure or liner. Therefore, the waterproof membrane does not perform a license renewal intended function and is not within the scope of license renewal.
>
> The protection board was placed during construction of the containment and ring girder structures to protect the waterproofing membrane. This component no longer serves a function and is not within the scope of license renewal.
>
> The ribbed fiberglass was placed in sheets against the outside wall of the containment structure during construction to provide an intentional space for flow of any groundwater leaking through the waterproofing membrane down to the underdrains removal system. Although it is considered unlikely that this flowpath would not be maintained even in the event of failure of the ribbed fiberglass sheets, these components were included within the scope of license renewal and subjected to an aging management review. As a result, the fiberglass material has been evaluated for the effects of aging in an air and a water environment. There are no applicable aging effects in these environments and there is no requirement to apply an aging management program for these components.
>
> Waterstops are included within the scope of license renewal and are subject to aging management review as part of the concrete structural member with which they are associated as described in LRA Appendix C, Section C2.4.

Based on its review, the staff finds the applicant's response to RAI 2.4-8 acceptable. The staff considers its concern described in RAI 2.4-8 resolved.

The staff's RAI 2.4-13 is described below.

Millstone 3 LRA Sections 2.4.1 and 2.4.2.7, identify the presence of a porous concrete subfoundation that is founded on bedrock, under the containment structure and part of the ESF building. LRA Tables 2.4-1and 2.4.2-7 list "subfoundation" as a component type subject to aging management review. LRA Section 2.3.3.51 "Reactor Plant Aerated Drains System" states:

> In addition, the Reactor Plant Aerated Drains System includes the Engineered Safety Features Building porous concrete groundwater sump that collects groundwater and prevents it from adversely affecting the Containment or imparting hydrostatic pressure on the Containment liner. The sump pump discharges the collected groundwater to the groundwater underdrains storage tank located in the yard.
>
> The Reactor Plant Aerated Drains System provides Containment pressure boundary integrity, collection and removal of groundwater from the ESF building underdrains and porous concrete.
>
> The evaluation boundary of the Reactor Plant Aerated Drains System includes piping and components that provide for collection and removal of groundwater from the ESF Building underdrains and porous concrete, and those components that provide an isolation boundary for the service water pump cubicles and the Supplemental Leak Collection and Release System. The evaluation boundary also includes components that are spatially oriented near safety-related equipment in the Auxiliary Building, ESF Building, Control Building, and structure.

LRA Table 2.3.3-48 lists the "groundwater sump" as a component type subject to aging management review for the reactor plant aerated drains system.

The staff reviewed referenced Millstone 3 FSAR Sections 1.2.3, 3.8.1, 3.8.1.1, 3.8.3, 9.3.3 and Table 3.2-1. The staff also reviewed other applicable FSAR Sections 1.8, 2.5.4.6.1, 3.4.1.2, 3.8.1.6.4, 3.8.5.1, 3.8.5.6, 9.3.3.1, 9.3.3.2.4, 9.3.3.2.4.1, 9.3.3.3, and 9.3.3.4, in order to better understand the porous concrete subfoundation and its intended function, and the components of the reactor plant aerated drains system that are essential to accomplish this intended function. The staff identified a number of other structural and mechanical components, in addition to the porous concrete subfoundation and the porous concrete groundwater sump, that appear to be essential to accomplish this intended function. Examples are the groundwater underdrains storage tank and its foundation; flow path between the groundwater sump and the groundwater underdrains storage tank; the outflow components from the groundwater underdrains storage tank; sump pump; standpipe assembly; sump water level and pump operability monitoring instrumentation. Therefore, the applicant was requested to (1) provide a clear and concise description of the safety-related groundwater collection and removal intended function; (2) identify all the structural and mechanical components that are essential to accomplishing this intended function; (3) list the components identified in (2), above, that are within the scope of license renewal, and indicate where they are covered in LRA Sections 2.3 or 2.4; and (4) list the components identified in (2), above, that are not within the scope of license renewal, and provide the technical basis for this determination.

In its response to RAI 2.4-13, dated November 9, 2004, the applicant stated:

As stated in Millstone Unit 3 LRA Section 2.3.3.51, an intended function of the Reactor Plant Aerated Drains System is the collection and removal of groundwater from the ESF building underdrains and porous concrete. As further stated in Section 2.3.3.51, the evaluation boundary of the system includes the piping and components that provide for collection and removal of groundwater from the ESF Building underdrains and porous concrete. Specifically, the evaluation boundary, as identified on license renewal drawing 25212-LR26906, Sh. 4, includes the piping from the porous concrete subfoundation underdrains to the collection sump, the sump pump, the pump discharge piping, and the sump casing and expansion joint to a point outside the ESF Building. The applicable components are included in the component types "Expansion Joints," "Groundwater Sump," "Pipe," and "Pumps" in LRA Table 2.3.3-48. (Note: The groundwater sump, 3SRW*SUMP6, was inadvertently not highlighted on license renewal drawing 25212-LR26906, Sh. 4). The evaluation boundary shown on license renewal drawing 25212-LR26906, Sh. 4, stops where the sump discharge reaches the yard area outside the ESF Building since this is sufficient to accomplish the intended function to collect and remove drainage from the porous concrete subfoundation. The groundwater underdrains storage tank and associated foundation, and components in the flowpath outside the ESF Building, are not required to support the identified intended function.

However, in response to RAI 2.1-1, the groundwater underdrains storage tank and associated piping have been added to the scope of license renewal as a non-safety-related component that is spatially oriented such that its failure could prevent the function of safety-related SSCs. The groundwater underdrains storage tank shares the foundation of the Unit 3 refueling water storage tank which is within the scope of license renewal as indicated in LRA Table 2.4.2-32.

Sump level monitoring and pump operability instrumentation, although in scope, are active components and not subject to aging management review.

Based on its review, the staff finds the applicant's response to RAI 2.4-13 acceptable because the applicant has appropriately addressed all of the items identified in the RAI. The staff notes that the applicant added the groundwater underdrain storage tank and foundation and associated piping to the LR scope in response to RAI 2.1-1. The staff considers its concern described in RAI 2.4-13 resolved.

2.4B.1.3 Conclusion

The staff reviewed the LRA, related structural/component information, and RAI responses described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the containment that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the containment that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2 Structures and Component Supports

In LRA Section 2.4.2, the applicant identified the structures and components of the structures and component supports that are subject to an AMR for license renewal.

The applicant describes the structures and component supports in the following sections:

- 2.4.2.1 Unit 3 containment enclosure building
- 2.4.2.2 Unit 3 auxiliary building
- 2.4.2.3 Unit 3 control building
- 2.4.2.4 Unit 3 fuel building
- 2.4.2.5 railroad canopy
- 2.4.2.6 Unit 3 hydrogen recombiner building
- 2.4.2.7 Unit 3 engineered safety features building
- 2.4.2.8 Unit 3 main steam valve building
- 2.4.2.9 Unit 3 emergency generator enclosure and fuel oil tank vault
- 2.4.2.10 Unit 2 fire pump house
- 2.4.2.11 Unit 3 fire pump house
- 2.4.2.12 Unit 3 service building
- 2.4.2.13 Unit 3 turbine building
- 2.4.2.14 Unit 3 auxiliary boiler enclosure
- 2.4.2.15 Unit 3 technical support center
- 2.4.2.16 Unit 3 maintenance shop
- 2.4.2.17 Unit 3 waster disposal building
- 2.4.2.18 SBO diesel generator enclosure and fuel oil tank vault
- 2.4.2.19 Unit 3 condensate polishing enclosure
- 2.4.2.20 Unit 2 condensate polishing facility and Warehouse No. 5
- 2.4.2.21 security diesel generator enclosure
- 2.4.2.22 stack monitoring equipment building
- 2.4.2.23 Millstone stack
- 2.4.2.24 switchyard control house
- 2.4.2.25 switchyard, 345kV
- 2.4.2.26 Unit 3 circulating and service water pumphouse
- 2.4.2.27 Unit 3 west retaining wall
- 2.4.2.28 sea wall
- 2.4.2.29 Unit 3 circulating water discharge tunnel and discharge structure
- 2.4.2.30 Unit 3 recirculation tempering line
- 2.4.2.31 vacuum priming pumphouse
- 2.4.2.32 tank foundations
- 2.4.2.33 yard structures

The corresponding subsections of this SER (2.4B.2.1 - 2.4B.2.33, respectively) present the staff's related review findings.

2.4B.2.1 Unit 3 Containment Enclosure Building

2.4B.2.1.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.1, the applicant described the Unit 3 containment enclosure building. The Unit 3 containment enclosure building is a cylindrical steel framed structure with metal siding, intermediate grating floors, and a metal roof deck. The containment enclosure building is designed and constructed to limit radioactive leakage to the environment in the unlikely event of a loss-of-coolant accident. It envelops the containment building completely above grade, as well as a portion of the engineering safety features building, auxiliary building, main steam valve building, and the hydrogen recombiner building. The containment enclosure building is supported entirely on the containment structure with sliding joints and has no foundation.

The containment enclosure building is a Seismic Category I structure. The containment enclosure building non-safety-related structural members support the function of safety-related equipment. The containment enclosure building also contains EQ equipment, and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)

In LRA Table 2.4.2-1, the applicant identified the following Unit 3 containment enclosure building component types that are within the scope of license renewal and subject to an AMR: doors; gaskets; hatches; metal siding; metal siding-caulking; miscellaneous steel (brackets, ladders, platforms and grating, stairs); scuppers; sliding joints; structural reinforced concrete (grade beams, slabs on grade); structural steel (beams, bracing, columns and baseplates, and roof framing and decking).

2.4B.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.1 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 containment enclosure building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.1.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 containment enclosure building that are within the scope of license renewal, as required by

10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 containment enclosure building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.2 Unit 3 Auxiliary Building

2.4B.2.2.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.2, the applicant described the Unit 3 auxiliary building. The auxiliary building (including the electrical cable tunnel) is a multi-story structure located west of the Fuel building, east of the service building, and north of the containment. An electrical cable tunnel extends from the auxiliary building, through the basement level of the service building to the control building. The auxiliary building structure is comprised of a reinforced concrete mat founded on bedrock. The southern end of the auxiliary building is open on the side adjacent to the containment electrical penetrations. The auxiliary building exterior walls provide vertical support for beams on the east-side of the service building.

The Unit 3 auxiliary building is a Seismic Category I structure. The Unit 3 auxiliary building non-safety-related structural members support the function of safety-related equipment. The Unit 3 auxiliary building also contains EQ equipment, and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a missile (internal or external) barrier
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides EQ barrier and/or HELB barrier

In LRA Table 2.4.2-2, the applicant identified the following Unit 3 auxiliary building component types that are within the scope of license renewal and subject to an AMR: doors; equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; hatches; masonry block walls; miscellaneous steel [checkered plates, embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating, stairs]; missile barriers; structural reinforced concrete (beams, columns, floor slabs, foundation mat slabs, roof slabs, walls); structural steel (columns and baseplates, concrete floor framing and decking, roof framing and decking); sump liner; and tunnel.

2.4B.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.2 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 auxiliary building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.2 identified one area in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, the staff issued RAI 2.4-14, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below.

FSAR Sections 2.5.4.12 and 3.8.4.1 stated that rock dowels were installed around the periphery of the auxiliary building to provide stability during seismic loading. FSAR Section 2.5.4.12 also stated that rock anchors were installed (1) in the turbine building to provide resistance to overturning due to tornado loading, and (2) in the service building to provide resistance to uplift due to buoyant forces and seismic forces. LRA Section 2.4.2.2, Unit 3 auxiliary building; LRA Section 2.4.2.12, Unit 3 service building; and LRA Section 2.4.2.13, Unit 3 turbine building did not discuss the use of rock dowels and/or rock anchors for these structures, and rock dowels/rock anchors were not specifically identified as component types requiring an aging management review in LRA Tables 2.4.2-2, 2.4.2-12, and 2.4.2-13. In RAI 2.4-14, the staff requested the applicant to clarify whether these rock dowels/anchors are within the scope of license renewal. If they were, the applicant was requested to identify where they were included in LRA Tables 2.4.2-2, 2.4.2-12, and 2.4.2-13. If not within the scope of license renewal, the applicant was requested to provide the technical basis for this determination.

In its response to RAI 2.4-14, dated November 9, 2004, the applicant stated that rock dowels were installed around the periphery of the auxiliary building foundation and rock anchors were installed in the service building and turbine building foundation. These rock dowels and rock anchors were considered part of the concrete foundation and were included in the structural member "Structural Reinforced Concrete" in LRA Tables 2.4.2-2, 2.4.2-12, and 2.4.2-13 and subject to aging management.

Based on its review, the staff finds the applicant's response to RAI 2.4-14 acceptable, because the applicant has clarified that the rock dowels and rock anchors are included in the LR scope, under the component type, "Structural Reinforced Concrete," in LRA Tables 2.4.2-2, 2.4.2-12, and 2.4.2-13. The staff considers its concern described in RAI 2.4-14 resolved.

2.4B.2.2.3 Conclusion

The staff reviewed the LRA, related structural/component information, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 auxiliary building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 auxiliary building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.3 Unit 3 Control Building

2.4B.2.3.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.3, the applicant described the Unit 3 control building. The Unit 3 control building houses the control room, which maintains an independent pressure boundary envelope for habitability during a design basis accident. The Unit 3 control building is located north of the Unit 3 turbine building, south of the emergency generator enclosure, east of the Unit 3 technical support center, and west of the Unit 3 service building. The Unit 3 control building is comprised of a reinforced concrete mat founded on structural backfill, overlying till, and bedrock. The Unit 3 control building's exterior walls provide vertical support for beams on the west side of the Unit 3 service building.

The Unit 3 control building is a Seismic Category I structure. The Unit 3 control building non-safety-related structural members support the function of safety-related equipment. The Unit 3 control building also supports fire protection, station blackout, and anticipated transient without scram.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a pressure boundary
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a protective barrier for internal/external flooding events
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a missile (internal or external) barrier
- provides EQ barrier and/or HELB barrier
- provides jet impingement shielding for HELBs

In LRA Table 2.4.2-3, the applicant identified the following Unit 3 control building component types that are within the scope of license renewal and subject to an AMR: access covers; control room ceiling supports; doors; equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; hatches; masonry block walls; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.), ladders, platforms and grating, stairs];

missile barriers; scuppers; service water pipe enclosure; structural reinforced concrete (floor slabs, foundation mat slabs, roof slabs, walls); structural steel (beams, bracing, columns and baseplates, concrete floor framing and decking, and roof framing and decking).

2.4B.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.3 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 control building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.3.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 control building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 control building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.4 Unit 3 Fuel Building

2.4B.2.4.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.4, the applicant described the Unit 3 fuel building. The Unit 3 fuel building includes the fuel building structure (including pipe tunnel), spent fuel pool (including transfer canal and shipping cask storage area), spent fuel storage racks, cask washdown area, and new fuel storage racks.

The Unit 3 fuel building is a Seismic Category I structure. The fuel building non-safety-related structural members support the function of safety-related equipment. The fuel building also contains EQ equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)

- provides a protective barrier for internal/external flooding events
- provides a pressure boundary
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a missile (internal or external) barrier

In LRA Table 2.4.2-4, the applicant identified the following Unit 3 fuel building component types that are within the scope of license renewal and subject to an AMR: cask wash pit liner; doors; equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; hatches; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating, stairs]; neutron absorber elements; new fuel storage racks; spent fuel pool gate; spent fuel pool liner plates; spent fuel storage racks; structural reinforced concrete (floor slabs, foundation mat slabs, roof slabs, walls); structural steel (beams, bracing, columns and baseplates, concrete floor framing and decking, roof framing and decking); sump liner; and tunnel.

2.4B.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.4 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 fuel building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.4.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 fuel building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 fuel building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.5 Railroad Canopy

2.4B.2.5.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.5, the applicant described the railroad canopy. The railroad canopy is located to the east of the fuel building and protects the spent fuel pool from tornado-generated missiles. The canopy structure is comprised of a reinforced concrete mat foundation founded on concrete fill. It has reinforced concrete walls and a roof slab with a metal deck supported by structural steel.

The railroad canopy is is a Seismic Category I structure that provides missile protection for the spent fuel pool.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a missile (internal or external) barrier
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)

In LRA Table 2.4.2-5, the applicant identified the following railroad canopy component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete (foundation mat slabs, roof slabs, walls); and structural steel (roof framing and decking).

2.4B.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.5 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the railroad canopy described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.5.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the railroad canopy that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the railroad canopy that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.6 Unit 3 Hydrogen Recombiner Building

2.4B.2.6.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.6, the applicant described the Unit 3 hydrogen recombiner building. The Unit 3 hydrogen recombiner building is located adjacent to the containment, on the southeast side, directly below the equipment hatch. The structure is constructed of reinforced concrete floor slabs, a roof slab, and walls supported on a reinforced concrete mat, founded on concrete fill. Concrete roof hatches allow for access to equipment. Roof scuppers are installed to control flooding in the event of heavy rainfall.

The Unit 3 hydrogen recombiner buildingis a Seismic Category I structure. The hydrogen recombiner building non-safety-related structural members support the function of safety-related equipment. The hydrogen recombiner building also supports fire protection.

Intended functions within the scope of license renewal include the following:

- 'provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a missile (internal or external) barrier
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-6, the applicant identified the following Unit 3 hydrogen recombiner building component types that are within the scope of license renewal and subject to an AMR: doors; equipment pads/grout; hatches; miscellaneous steel [brackets, embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating, stairs]; missile barriers; scuppers; and structural reinforced concrete (beams, floor slabs, foundation mat slabs, roof slabs).

2.4B.2.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.6 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 hydrogen recombiner building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.6.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 hydrogen recombiner building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 hydrogen recombiner building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.7 Unit 3 Engineered Safety Features Building

2.4B.2.7.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.7, the applicant described the Unit 3 engineered safety features building. The Unit 3 ESF building is a safety-related structure that wraps around the east side of the containment. Most of the Unit 3 ESF building is founded on bedrock and a portion (containment recirculation pump pit area) of the structure is founded on a porous concrete sub-foundation, that is placed on the bedrock.

The Unit 3 ESF building is a Seismic Category I structure. The Unit 3 ESF building non-safety-related structural members support the function of safety-related equipment. The Unit 3 ESF building also contains EQ equipment, and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a missile (internal or external) barrier
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides EQ barrier and/or HELB barrier

In LRA Table 2.4.2-7, the applicant identified the following Unit 3 ESF building component types that are within the scope of license renewal and subject to an AMR: doors; equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; hatches; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating]; structural reinforced concrete (beams, floor slabs, foundation mat slabs, roof slabs, walls); structural steel (beams, columns and baseplates, concrete floor framing and decking, roof framing and decking); sub-foundation; and sump liner.

2.4B.2.7.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.7 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 ESF building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.7.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 engineered safety features building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 engineered safety features building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.8 Unit 3 Main Steam Valve Building

2.4B.2.8.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.8, the applicant described the Unit 3 main steam valve building. The Unit 3 main steam valve building, located west of and directly adjacent to the containment, protects the main steam and feedwater valves and piping from tornado-generated missiles.

The Unit 3 main steam valve building is a Seismic Category I structure, which provides protection for main steam and feedwater valves and piping from missiles. The Unit 3 main steam valve building non-safety-related structural members support the function of safety-related equipment. The Unit 3 main steam valve building also contains EQ equipment, and supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a protective barrier for internal/external flooding events

- provides a missile (internal or external) barrier
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides jet impingement shielding for high energy line breaks
- provides EQ barrier and/or HELB barrier

In LRA Table 2.4.2-8, the applicant identified the following Unit 3 main steam valve building component types that are within the scope of license renewal and subject to an AMR: blow-off metal siding/ panel; doors; equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating, stairs]; missile barriers; structural reinforced concrete (floor slabs, foundation mat slabs, roof slabs, walls); and structural steel (beams, bracing, concrete floor framing and decking, roof framing and decking).

2.4B.2.8.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.8 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 main steam valve building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.8.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 main steam valve building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 main steam valve building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.9 Unit 3 Emergency Generator Enclosure and Fuel Oil Tank Vault

2.4B.2.9.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.9, the applicant described the Unit 3 emergency generator enclosure and fuel oil tank vault. The Unit 3 emergency generator enclosure and fuel oil tank vault is a multi-story, reinforced concrete structure with concrete floor slabs, roof slabs, and walls. It is supported on a reinforced concrete spread footing placed on glacial till.

The Unit 3 emergency generator enclosure and fuel oil tank vault is a Seismic Category I structure that provides support and protection for the emergency diesel generator units and associated fuel oil tanks. The Unit 3 emergency generator enclosure and fuel oil tank vault non-safety-related structural members support the function of safety-related equipment. The Unit 3 emergency generator enclosure and fuel oil tank vault also supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a protective barrier for internal/external flooding events
- provides a missile (internal or external) barrier
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides EQ barrier and/or HELB barrier

In LRA Table 2.4.2-9, the applicant identified the following Unit 3 emergency generator enclosure and fuel oil tank vault component types that are within the scope of license renewal and subject to an AMR: doors; equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; fuel oil tank vault; hatches; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating]; structural reinforced concrete (beams, floor slabs, footing, foundation mat slabs, roof slabs, slabs on grade, walls); and trench.

2.4B.2.9.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.9 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 emergency generator enclosure and fuel oil tank vault described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.9.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine

whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 emergency generator enclosure and fuel oil tank vault that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 emergency generator enclosure and fuel oil tank vault that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.10 Unit 2 Fire Pump House

2.4B.2.10.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.10, the applicant described the Unit 2 fire pump house. The Unit 2 fire pump house is supported on a reinforced concrete mat foundation with reinforced masonry walls and structural steel beams supporting the roof. The roof is made up of a 4-inch-thick concrete slab over metal decking.

The Unit 2 fire pump house supports fire protection.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-10, the applicant identified the following Unit 2 fire pump house component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; masonry block walls; structural reinforced concrete (foundation mat slabs, roof slabs); and structural steel (roof framing and decking).

2.4B.2.10.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.10 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 fire pump house described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.10.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 fire pump house that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 fire pump house that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.11 Unit 3 Fire Pump House

2.4B.2.11.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.11, the applicant described the Unit 3 fire pump house. The Unit 3 fire pump house consists of a reinforced concrete mat foundation with reinforced masonry walls and structural steel beams supporting the roof. The roof is made up of a 4-inch-thick concrete slab over metal decking.

The Unit 3 fire pump house supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a protective barrier for internal/external flooding events

In LRA Table 2.4.2-11, the applicant identified the following Unit 3 fire pump house component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; masonry block walls; structural reinforced concrete (foundation mat slabs, roof slabs); and structural steel (roof framing and decking).

2.4B.2.11.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.11 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 fire pump house described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.11.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 fire pump house that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 fire pump house that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.12 Unit 3 Service Building

2.4B.2.12.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.12, the applicant described the Unit 3 service building. The Unit 3 service building is located between the control building and the auxiliary building. It has a concrete mat foundation and spread footings and is founded on bedrock. The superstructure is a steel-framed building with a metal roof deck.

The Unit 3 service building supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a protective barrier for internal/external flooding events
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-12, the applicant identified the following Unit 3 service building component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; masonry block walls; sliding joints; structural reinforced concrete (beams, columns, floor slabs, footing, foundation mat slabs, walls); structural steel (beams, columns and baseplates, concrete floor framing and decking, and roof framing and decking).

2.4B.2.12.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.12 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 service building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.12.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 service building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 service building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.13 Unit 3 Turbine Building

2.4B.2.13.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.13, the applicant described the Unit 3 turbine building. The Unit 3 turbine building is located west of the Unit 3 containment. The Unit 3 turbine building is a non-safety-related structure supported on spread footings and founded on basal till and compacted select granular fill. The foundation walls are reinforced concrete to grade with a steel-framed superstructure. There is an auxiliary bay of the same construction on the east side of the Unit 3 turbine building. The Unit 3 turbine building has a basement level 10 feet below-grade. The Unit 3 turbine building contains the turbine pedestal, which supports the operating floor framing. A 4-inch concrete dike is provided around the perimeter of the seal oil tank for oil containment.

The Unit 3 turbine building contains EQ equipment and supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-13, the applicant identified the following Unit 3 turbine building component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; structural reinforced concrete (beams, columns, floor slabs, footing and grade beams, walls); structural steel (beams, columns and baseplates, concrete floor framing and decking); and turbine pedestal.

2.4B.2.13.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.13 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 turbine building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.13 identified one area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The staff issued RAI 2.4-14, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI, the applicant's response, and the staff's evaluation are discussed in Section 2.4.2.2.2 of this SER. For the reasons set forth in that subsection, the staff considers its concern described in RAI 2.4-14 to be resolved.

2.4B.2.13.3 Conclusion

The staff reviewed the LRA and related structural/component information, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 turbine building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 turbine building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.14 Unit 3 Auxiliary Boiler Enclosure

2.4B.2.14.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.14, the applicant described the Unit 3 auxiliary boiler enclosure. The Unit 3 auxiliary boiler enclosure is located south of the Unit 3 turbine building and houses the two auxiliary boilers and related equipment. The structure has a concrete floor supported on spread footings. It is a conventional steel-framed structure.

The Unit 3 auxiliary boiler enclosure supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-14, the applicant identified the following Unit 3 auxiliary boiler enclosure component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; structural reinforced concrete (floor slabs, foundation mat slabs, walls); and structural steel (beams, columns and baseplates, concrete floor framing and decking, roof framing and decking).

2.4B.2.14.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.14 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 auxiliary boiler enclosure described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.14.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 auxiliary boiler enclosure that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 auxiliary boiler enclosure that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.15 Unit 3 Technical Support Center

2.4B.2.15.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.15, the applicant described the Unit 3 technical support center. The Unit 3 technical support center is located adjacent to the Unit 3 control building. It is a one-level reinforced concrete structure that is supported on a concrete mat foundation, placed on structural fill.

The Unit 3 technical support center supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-15, the applicant identified the following Unit 3 technical support center component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout and structural reinforced concrete (beams, columns, floor slabs, footing, roof slabs, walls).

2.4B.2.15.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.15 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 technical support center described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.15.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 technical support center that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 technical support center that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.16 Unit 3 Maintenance Shop

2.4B.2.16.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.16, the applicant described the Unit 3 maintenance shop. The Unit 3 maintenance shop is located adjacent to the north wall of the Unit 3 service building. The walls of the maintenance shop are constructed of a combination of solid masonry-block walls and steel framing. The roof consists of a concrete slab on metal decking that is supported by a structural steel frame. The maintenance shop is supported on reinforced concrete spread footings and has a reinforced concrete floor slab.

The Unit 3 maintenance shop supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-16, the applicant identified the following Unit 3 maintenance shop component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; masonry block walls; structural reinforced concrete (beams, floor slab, spread footings, walls); and structural steel (beams, bracing, columns and baseplates, concrete floor framing and decking, roof framing and decking).

2.4B.2.16.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.16 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 maintenance shop described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.16.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 maintenance shop that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 maintenance shop that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.17 Unit 3 Waste Disposal Building

2.4B.2.17.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.17, the applicant described the Unit 3 waste disposal building. The Unit 3 waste disposal building is located north of the Unit 3 fuel building and east of the auxiliary building. The Unit 3 waste disposal building consists of a superstructure with reinforced concrete walls, and a steel-framed enclosure that is supported on a concrete mat foundation founded on bedrock and basal till. The roof is constructed of metal decking.

The Unit 3 waste disposal building supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-17, the applicant identified the following Unit 3 waste disposal building component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; masonry block walls; structural reinforced concrete (beams, floor slabs, footing, slabs on grade, walls); and structural steel (beams, columns and baseplates, roof framing and decking).

2.4B.2.17.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.17 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 waste disposal building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.17.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 waste disposal building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 waste disposal building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.18 SBO Diesel Generator Enclosure and Fuel Oil Tank Vault

2.4B.2.18.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.18, the applicant described the SBO diesel generator enclosure and fuel oil tank vault. The SBO diesel generator enclosure includes the SBO diesel generator switchgear enclosure, the concrete pad that supports the SBO diesel generator exhaust, and the separate building that provides support and shelter for the SBO diesel.

The SBO diesel generator enclosure and fuel oil tank vault supports fire protection and station blackout.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-18, the applicant identified the following SBO diesel generator enclosure and fuel oil tank vault component types that are within the scope of license renewal and subject to an AMR: miscellaneous steel (checkered plates); roofing; siding; structural reinforced concrete (foundation mat slabs); and structural steel (beams, bracing).

2.4B.2.18.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.18 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the SBO diesel generator enclosure and fuel oil tank vault described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.18.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the SBO diesel generator enclosure and fuel oil tank vault that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the SBO diesel generator enclosure and fuel oil tank vault that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.19 Unit 3 Condensate Polishing Enclosure

2.4B.2.19.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.19, the applicant described the Unit 3 condensate polishing enclosure. The Unit 3 condensate polishing enclosure is located south of the Unit 3 turbine building. The enclosure is a two-story, reinforced concrete structure supported on a spread footing placed on structural fill.

The Unit 3 condensate polishing enclosure supports fire protection.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-19, the applicant identified the following Unit 3 condensate polishing enclosure component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; structural reinforced concrete (beams, columns, floor slabs, spread footing, walls); and structural steel (beams, columns and baseplates, concrete floor framing and decking, roof framing and decking).

2.4B.2.19.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.19 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 condensate polishing enclosure described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.19.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 condensate polishing enclosure that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 condensate polishing enclosure that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.20 Unit 2 Condensate Polishing Facility and Warehouse No. 5

2.4B.2.20.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.20, the applicant described the Unit 2 condensate polishing facility and Warehouse No. 5. The Unit 2 condensate polishing facility is a non-safety-related, non-seismic structure located in Warehouse No. 5, which also houses Unit 3 fire protection piping. Unit 2 shares this warehouse with Unit 3. The structure is located north of the Unit 2 turbine building and has a reinforced concrete mat foundation founded on structural fill. The Unit 2 condensate polishing facility is located approximately 20 feet below grade. There are three main levels and a penthouse that is located in the middle of the structure near the west wall. The superstructure is a steel-framed structure and some areas of the structure have masonry walls.

The Unit 2 condensate polishing facility and Warehouse No. 5 supports station blackout and fire protection.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-20, the applicant identified the following Unit 2 condensate polishing facility and Warehouse No. 5 component types that are within the scope of license renewal and subject to an AMR: masonry block walls; miscellaneous steel (platforms and grating); and structural reinforced concrete (beams, columns, floor slabs, foundation mat slabs, walls); structural steel (beams, bracing, columns and baseplates).

2.4B.2.20.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.20 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 2 condensate polishing facility and Warehouse No. 5 described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.20.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 2 condensate polishing facility and Warehouse No. 5 that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 2 condensate polishing facility and Warehouse No. 5 that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.21 Security Diesel Generator Enclosure

2.4B.2.21.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.21, the applicant described the security diesel generator enclosure. The security diesel generator enclosure is a non-safety-related, non-seismic, one-story, free-standing structure that houses the security diesel generator and its support equipment, including the security diesel fuel oil tank. Power from the security diesel generators is used for general exterior illumination that is credited for fire protection events. The structure is constructed with aluminum sheeting riveted to a combination of aluminum and steel frame. The walls and roof are insulated and lined with plywood on the inside. The building is above grade, is supported by steel channels, and sits on a concrete slab foundation. Power cables and conduit from the generator are supported from the ceiling and internal wall surfaces of the structure.

The security diesel generator enclosure supports fire protection.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-21, the applicant identified the following security diesel generator enclosure component types that are within the scope of license renewal and subject to an AMR: miscellaneous steel (checkered plates); roofing; siding; structural framing; structural reinforced concrete (foundation mat slabs); and structural steel (beams, bracing).

2.4B.2.21.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.21 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the security diesel generator enclosure described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.21.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the security diesel generator enclosure that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the security diesel generator enclosure that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.22 Stack Monitoring Equipment Building

2.4B.2.22.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.22, the applicant described the stack monitoring equipment building. The stack monitoring equipment building is a non-safety-related, non-seismic, single-story structure that provides support and shelter to non-safety-related equipment that can affect safety-related equipment. The building has a concrete roof and floor slab on grade with non-reinforced grouted masonry walls that are supported on a concrete spread footing.

The stack monitoring equipment building non-safety-related structural members support the function of safety-related equipment.

Intended functions within the scope of license renewal include providng structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-22, the applicant identified the following stack monitoring equipment building component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; masonry block walls; and structural reinforced concrete (roof slabs, slabs on grade, spread footing, walls).

2.4B.2.22.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.22 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the stack monitoring equipment building described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.22.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the stack monitoring equipment building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the stack monitoring equipment building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.23 Millstone Stack

2.4B.2.23.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.23, the applicant described the stack. The stack is a safety-related reinforced-concrete structure supported on a reinforced concrete mat foundation. The stack extends 375 feet above grade and has a circular orifice with a 7-foot inside diameter.

The stack is a Seismic Category I structure.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a missile (internal or external) barrier
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)

In LRA Table 2.4.2-23, the applicant identified the following stack component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete (floor slabs, foundation mat slabs, walls); and structural steel (beams, bracing).

2.4B.2.23.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.23 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the stack described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.23.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the stack that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the stack that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.24 Switchyard Control House

2.4B.2.24.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.24, the applicant described the switchyard control house. The switchyard control house is a non-safety-related, non-seismic, one-story building that provides support and shelter for equipment utilized for closure of the 345kV circuit breakers that are credited for restoration of offsite power in the event of a station blackout.

The switchyard control house supports station blackout.

Intended functions within the scope of license renewal include the following:

- *provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)*

In LRA Table 2.4.2-24, the applicant identified the following switchyard control house component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; masonry block walls; structural reinforced concrete; and structural steel.

2.4B.2.24.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.24 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the switchyard control house described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.24.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the switchyard control house that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the switchyard control house that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.25 Switchyard, 345kV

2.4B.2.25.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.25, the applicant described the 345kV switchyard. Structural members associated with the in-scope electrical equipment required for the restoration of offsite power include transmission towers and dead end structures and associated foundations, breaker and disconnect foundations and support structures, and the non-safety-related, non-seismic, reserve station service transformers foundations.

The 345kV switchyard structural members support station blackout.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-25, the applicant identified the following 345kV switchyard component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete and structural steel.

2.4B.2.25.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.25 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the 345kV switchyard described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.25.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the 345kV switchyard that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the 345kV switchyard that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.26 Unit 3 Circulating and Service Water Pumphouse

2.4B.2.26.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.26, the applicant described the Unit 3 circulating and SW pumphouse. The Unit 3 circulating and service water pumphouse serve as the intake structure. The circulating and service water pumphouse is a Seismic Category I (service water cubicles only) reinforced concrete structure located west of the main plant. The structure consists of six individual bays that provide sea water from the Niantic Bay to six non-safety-related circulating water pumps. Four of the six bays also supply water to four safety-related service water pumps for the purpose of emergency and normal heat removal from heat exchangers and equipment. The SW system is the only safety-related system located in the Unit 3 circulating and SW pumphouse.

The Unit 3 circulating and service water pumphouse is a Seismic Category I (service water cubicles only) structure that provides a source of cooling water to the safety-related SW pumps. The Unit 3 circulating and service water pumphouse non-safety-related structural members support the function of safety-related equipment. The Unit 3 circulating and service water pumphouse also supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a missile (internal or external) barrier
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides a source of cooling water for plant shutdown
- provides a protective barrier for internal/external flooding events

In LRA Table 2.4.2-26, the applicant identified the following Unit 3 circulating and service water pumphouse component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; flood/spill barriers including curbs, dikes, toe plates, and stop logs; hatches; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) ladders, platforms and grating]; missile barriers; structural reinforced concrete (beams, columns, floor slabs, foundation mat slabs, roof slabs, walls); and trash racks.

2.4B.2.26.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.26 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 circulating and service water pumphouse described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.26 identified one area in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, the staff issued RAI 2.4-9 to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below.

LRA Section 2.4.2.26 for Millstone 3 discussed the scoping and screening results for the Unit 3 circulating and SW pumphouse and referenced FSAR Section 3.8.4 for further details. FSAR Figure 3.8-69 (sheet 4 of 4) indicated that sluice gates were located in the concrete chamber located in the front of the pumphouse. It appeared that these sluice gates were associated with the operation of the Unit 3 recirculation tempering line discussed in LRA Section 2.4.2.30. The applicant was requested to clarify whether these sluice gates were within the scope of license renewal. If they were, the applicant was requested to identify where they were included in LRA Table 2.4.2-26. If they were not, the applicant was requested explain why not.

In its response to RAI 2.4-9, dated November 9, 2004, the applicant stated:

> The sluice gates consist of a frame, guides, and sliding gate installed in the concrete chamber walls. These component parts are the equivalent of valve internals and have been determined to be active components. However, the sluice gate is not configured with a pressure boundary housing. Therefore, although the sluice gates are within the scope of license renewal, they are active components that do not require aging management review, and are not included in LRA Table 2.4.2-26.

Based on its review, the staff finds the applicant's response to RAI 2.4-9 acceptable. The staff concurs with the applicant's assessment that the sluice gates are in the LR scope, but may be treated as active components, similar to valves. Unlike valves, the sluice gates do not perform a passive pressure boundary intended function, and consequently do not require aging management. The staff considers its concern described in RAI 2.4-9 resolved.

2.4B.2.26.3 Conclusion

The staff reviewed the LRA, related structural/component information, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 circulating and service water pumphouse that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 circulating and service water pumphouse that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.27 Unit 3 West Retaining Wall

2.4B.2.27.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.27, the applicant described the Unit 3 west retaining wall. A safety-related reinforced concrete retaining wall is provided on the west side of the circulating and service water pumphouse to protect the safety-related SW lines and the concrete duct bank containing the power and control cables from being undermined due to wave action on the adjoining slope. The Unit 3 west retaining wall, which is approximately 126 feet in length, is an extension of the west wall on the circulating and SW pumphouse and extends in a northerly direction along an adjoining earthen slope. The top of the Unit 3 west retaining wall is at approximately 14 feet mean sea level. The retaining wall footing is founded on bedrock.

The Unit 3 west retaining wall is a Seismic Category I structure that provides protection for safety-related service water piping.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a protective barrier for internal/external flooding events

In LRA Table 2.4.2-27, the applicant identified the following Unit 3 west retaining wall component type that is within the scope of license renewal and subject to an AMR: structural reinforced concrete (footing, walls).

2.4B.2.27.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.27 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 west retaining wall described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.27 identified one area in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, the staff issued RAI 2.4-10, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below.

LRA Section 2.4.2.27 for Millstone 3 discusses the scoping and screening results for the Unit 3 west retaining wall. The LRA states that the Unit 3 retaining wall is within the scope of license renewal because it meets 10 CFR 54.4(a)(1) because it is a Seismic Category I structure that provides protection for safety-related SW piping. FSAR Section 3.8.4.1 states that the function of the west retaining wall is to protect the Category 1 SW and electrical lines located behind the wall and to be part of the shoreline protection. FSAR Section 2.5.5.1.1 further states that the west retaining wall is to protect the circulating and SW lines from being undermined due to wave action on the adjoining slope. This slope is referred to in FSAR Section 2.5.5.1.1 as the "shoreline slope," and the FSAR states that a multilayer stone armor zone was placed on the slope for protection against wave action during the probable maximum hurricane. There is considerable discussion in FSAR Section 2.5.5 concerning the analysis of the stability of this slope under static, dynamic and post-earthquake conditions. The applicant was requested to explain whether the shoreline slope serves an intended function in accordance with 10 CFR 54.4(a)(2). If so, applicant was requested to identify the components of the slope that are subject to an AMR and the results of that review.

In its response to RAI 2.4-10, dated November 9, 2004, the applicant stated:

> The shoreline slope configuration and multilayer stone armor zone described in FSAR Section 2.5.5.1.1 is not required to protect the nearby West Retaining Wall and Circulating and Service Water Pumphouse Category I structures or the service water lines and electrical cabling. However, failure of the shoreline slope stone armor, which was placed to protect the slope from wave action based on the probable maximum hurricane, could result in erosion or a slope failure of the shoreline slope and displacement of material to near the intake bays, possibly resulting in a restriction of the service water pump suction. Therefore, the multilayer stone armor zone should have been included within the scope of license renewal and subject to aging management review.

Based on its review, the staff finds the applicant's response to RAI 2.4-10 acceptable from the scoping and screening perspective. The applicant has identified that the "multilayer stone armor zone" is included in the LR scope, because failure of the shoreline slope might restrict SW pump suction. The staff considers its concern described in RAI 2.4-10 resolved.

2.4B.2.27.3 Conclusion

The staff reviewed the LRA, related structural/component information, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 west retaining wall that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.28 Sea Wall

2.4B.2.28.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.28, the applicant described the sea wall. The Unit 3 circulating and SW pumphouse is protected from wave action by a reinforced concrete sea wall with post-tensioned rock anchors consisting of steel tendons. The wall is supported by a reinforced concrete footing, which is founded upon concrete fill and rock. The top of the wall is approximately 14 ft. above mean sea level.

The concrete sea wall is a non-safety-related structure that protects the structural integrity of the safety-related Unit 3 circulating and SW pumphouse.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a protective barrier for internal/external flooding events

In LRA Table 2.4.2-28, the applicant identified the following sea wall component type that is within the scope of license renewal and subject to an AMR: structural reinforced concrete (footing, walls).

2.4B.2.28.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.28 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the sea wall described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.4.28 identified one area in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, the staff issued RAI 2.4-11, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below.

LRA Section 2.4.2.28 for Millstone 3 discussed the scoping and screening results for the sea walls. The LRA stated that the walls are reinforced concrete with post-tensioned rock anchors consisting of steel tendons. FSAR Section 2.5.5.1.1 provided similar information. A typical anchorage was not shown in the Millstone 3 FSAR; however, from the written description, it appeared that the details are similar to those shown in Figure 2.5-15 of the Millstone 2 FSAR. LRA Table 2.4.2-28 listed the sea wall structural members requiring aging management review as "structural reinforced concrete (footing, walls)." The applicant was requested to clarify whether the Millstone 3 sea wall anchorage system was the same as that shown in the Millstone 2 FSAR Figure 2.5-15 and to indicate whether the anchorage system was within the scope of license renewal and included as part of the item listed in LRA Table 2.4.2-28. If the anchorage system was not included within the scope of license renewal, the applicant was requested to explain why not.

In its response to RAI 2.4-11, dated November 9, 2004, the applicant stated that the Unit 3 sea wall anchorage design is the same as the Unit 2 design except that the unbonded length of the anchor strands is protected with a corrosion protection material instead of grout.

The sea wall anchorage functions to maintain integrity of the sea wall and is within the scope of license renewal. The sea wall anchorage was omitted from LRA Table 2.4.2-28 and Table 3.5.2-29.

Based on its review, the staff finds the applicant's response to RAI 2.4-11 acceptable based on the inclusion of the component. The staff considers its concern described in RAI 2.4-11 resolved.

2.4B.2.28.3 Conclusion

The staff reviewed the LRA, related structural/component information, and RAI response described above to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the sea wall that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the sea wall that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.29 Unit 3 Circulating Water Discharge Tunnel and Discharge Structure

2.4B.2.29.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.29, the applicant described the Unit 3 circulating water discharge tunnel and discharge structure. The SW and circulating water systems discharge into the discharge tunnel. The circulating water discharge tunnel is a reinforced concrete structure that is located below grade. It extends from the turbine building to the rock quarry. The reinforced concrete tunnel is founded on rock, concrete fill, and till.

The circulating water discharge structure, a continuation of the circulating water discharge tunnel, is located at the end of the circulating water discharge tunnel. It is a reinforced-concrete structure with a portion of the structure below grade and a portion exposed to atmosphere and weather. The circulating water discharge structure has a seal pit with a concrete weir wall where the discharge water is forced up and over the wall and into the rock quarry. From the quarry, the water passes through a channel into Long Island Sound.

The Unit 3 circulating water discharge tunnel and discharge structure are Seismic Category I structures whose failure could affect the discharge path of the safety-related SW system.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a pressure boundary

In LRA Table 2.4.2-29, the applicant identified the following Unit 3 circulating water discharge tunnel and discharge structure component type that is within the scope of license renewal and subject to an AMR: structural reinforced concrete (floor slabs, roof slabs, walls).

2.4B.2.29.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.29 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 circulating water discharge tunnel and discharge structure described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.29.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 circulating water discharge tunnel and discharge structure that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 circulating water discharge tunnel and discharge structure that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.30 Unit 3 Recirculation Tempering Line

2.4B.2.30.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.30, the applicant described the Unit 3 recirculation tempering line. A non-safety-related recirculation tempering line is provided from the circulating water discharge tunnel to the Unit 3 circulating and SW pumphouse to provide for de-icing at the intake, if required.

The Unit 3 recirculation tempering line is a non-safety-related structure whose failure could allow the formation of ice to occur in front of the Unit 3 circulating and SW pumphouse, thus blocking flow to the safety-related SW system.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-30, the applicant identified the following Unit 3 recirculation tempering line component types that are within the scope of license renewal and subject to an AMR: equipment pads/grout; miscellaneous steel [embedded steel-exposed surfaces (shapes, plates, unistrut, etc.) platforms and grating]; and structural reinforced concrete (beams, foundation mat slabs, roof slabs, walls).

2.4B.2.30.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.30 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the Unit 3 recirculation tempering line described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.30.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the Unit 3 recirculation tempering line that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the Unit 3 recirculation tempering line that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.31 Vacuum Priming Pumphouse

2.4B.2.31.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.31, the applicant described the vacuum priming pumphouse. The vacuum priming pumphouse contains the vacuum priming system for the Unit 3 circulating water discharge tunnel and includes fire suppression equipment. The vacuum priming pumphouse, which is located on top of the Unit 3 circulating water discharge structure, is a one-level reinforced-concrete structure with a concrete mat foundation. The structural walls and roof slab are constructed of concrete.

The vacuum priming pumphouse supports fire protection.

Intended functions within the scope of license renewal include providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3).

In LRA Table 2.4.2-31, the applicant identified the following vacuum priming pumphouse component type that is within the scope of license renewal and subject to an AMR: pipe.

2.4B.2.31.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.31 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the vacuum priming pumphouse described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived component was subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.31.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the component of the vacuum priming pumphouse that is within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the component of the vacuum priming pumphouse that is subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.32 Tank Foundations

2.4B.2.32.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.32, the applicant described the tank foundations. The applicant described the following foundations that are within the scope of license renewal:

- Unit 3 condensate storage tank foundation
- fire water tank 1 and 2 foundations
- Unit 3 refueling water storage tank foundation
- SBO diesel fuel oil storage tank foundation
- Unit 3 demineralized water storage tank foundation and enclosure
- Unit 3 carbon dioxide tank foundation
- Unit 3 boron recovery tanks foundation and enclosure

The fire water tank 1 and 2 foundations, the carbon dioxide tank foundation, and the boron recovery tank foundation and enclosure supports fire protection. The refueling water storage tank foundation and the demineralized water storage tank foundation and enclosure qualify as Seismic Category 1 structures and enclosures. The condensate storage tank foundation provides support for the in-scope, non-safety-related condensate storage tank. The SBO diesel fuel oil storage tank foundation supports fire protection and station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a missile (internal or external) barrier
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

In LRA Table 2.4.2-32, the applicant identified the following tank foundations component type that is within the scope of license renewal and subject to an AMR: structural reinforced concrete (foundation mat slabs, roof slabs, footing, walls).

2.4B.2.32.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.32 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the tank foundations described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.32.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the tank foundations that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the tank foundations that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.2.33 Yard Structures

2.4B.2.33.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.33, the applicant described the yard structures. The applicant described the following yard structures that are within the scope of license renewal:

- Unit 3 transformer firewalls and dikes
- SBO diesel fuel oil storage tank dike
- SBO fuel oil tank tent
- Unit 3 yard valve pits and enclosure
- Unit 3 pipe tunnel
- Unit 3 encasement
- Unit 3 manholes
- Unit 3 duct banks
- Unit 3 security lighting supports (including poles)
- technical support building

The transformer firewalls and dikes, the SBO diesel fuel oil storage tank dike, the SBO fuel oil tank vent, the pipe tunnel, the security lighting supports, and the technical support building support fire protection. The valve yard pits and enclosure non-safety-related structural members support the function of safety-related equipment; the valve yard pits and enclosure also meet by supporting fire protection. The encasement is a non-safety-related structure that provides protection for safety-related service water system piping. The manholes contain electrical cables for safety-related in scope equipment; the manholes also supports station blackout. The duct banks support and protect electrical cables for safety-related, in-scope equipment; other duct banks support station blackout.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides a missile (internal or external) barrier

In LRA Table 2.4.2-33, the applicant identified the following yard structures component types that are within the scope of license renewal and subject to an AMR: structural reinforced concrete (footing, walls); flood/spill barriers including curbs, dikes, toe plates, and stop logs; miscellaneous steel (checkered plates); structural steel (beams, bracing); access covers; manhole covers; metal siding; structural reinforced concrete (foundation mat slabs, roof slabs, walls); manhole covers; structural steel; encasement; duct banks; and lighting poles.

2.4B.2.33.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.33 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the yard structures described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.2.33.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the yard structures that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the yard structures that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.3 NSSS Equipment Supports

2.4B.3.1 Summary of Technical Information in the Application

In LRA Section 2.4.3, the applicant identified the components of the NSSS equipment supports that are subject to an AMR for license renewal. The applicant described the following NSSS equipment supports that are the plant components that support and restrain the following reactor coolant system equipment:

- reactor vessel
- reactor coolant pumps
- steam generators
- pressurizer

The intended function within the scope of license renewal includes providing structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1).

In LRA Table 2.4.2-34, the applicant identified the following NSSS equipment supports component types that are within the scope of license renewal and subject to an AMR: pressurizer support - bolting, manufactured items, plate and structural shapes; reactor coolant pump support - bolting, manufactured items and snubber attachment hardware, plate and structural shapes; reactor vessel support - bolting, neutron shield tank assembly, plate and structural shapes, sliding support plate; steam generator support - manufactured items and snubber attachment hardware, bolting, plate and structural shapes.

2.4B.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.3 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the NSSS equipment supports described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.3.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the NSSS equipment supports that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the NSSS equipment supports that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.4 General Structural Supports

2.4B.4.1 Summary of Technical Information in the Application

In LRA Section 2.4.4, the applicant identified the components of the general structural supports that are subject to an AMR for license renewal. Structural supports for mechanical and electrical components are an integral part of all plant systems. Many of these supports are not uniquely identified with component identification numbers. However, characteristics of the supports, such as design, materials of construction, environments, and anticipated stressors, are similar. Therefore, structural supports for mechanical and electrical components are evaluated as commodities across system boundaries.

Structural supports protect and support equipment that is within the scope of license renewal. Non-safety-related supports prevent interaction between safety-related and non-safety-related components. Other supports provide support for components credited for fire protection, station blackout, anticipated transient without scram, pressurized thermal shock, or environmental qualification of electrical equipment.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)

In LRA Table 2.4.2-35, the applicant identified the following general structural supports component types that are within the scope of license renewal and subject to an AMR: battery racks; electrical conduit; cable trays; sliding support bearing and sliding surfaces; structural support components (plate, structural shapes, etc.); and vendor-supplied specialty items (spring hangers, struts, clamps, vibration isolators, etc.).

2.4B.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.4 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the general structural supports described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.4.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the general structural supports that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the general structural supports that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.5 Miscellaneous Structural Commodities

2.4B.5.1 Summary of Technical Information in the Application

In LRA Section 2.4.5, the applicant identified the components of the miscellaneous structural commodities that are subject to an AMR for license renewal. Miscellaneous structural commodities are within the scope of license renewal because they meet provides safety-related functions, 10 CFR 54.4(a)(2) by supporting safety-related component functions, and/or

10 CFR 54.4(a)(3) by supporting environmental qualification, fire protection, station blackout, anticipated transient without scram, and pressurized thermal shock regulations.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides enclosure, shelter, or other protection for in-scope equipment (including radiation shielding and pipe-whip restraint)
- provides a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)
- provides EQ barrier and/or HELB barrier
- provides a protective barrier for internal/external flooding events
- provides a pressure boundary

In LRA Table 2.4.2-36, the applicant identified the following miscellaneous structural commodities component types that are within the scope of license renewal and subject to an AMR: bus duct enclosures; cable tray cover assembly; electrical component supports within cabinets and panels; expansion joint/seismic gap material (between adjacent buildings/structures); expansion joint/seismic gap material (fire-rated walls); fire boots; fire doors and/or EQ barrier doors; fire resistant coating; fire stops; fire-rated duct wrap; fire/EQ barrier penetration seals (including ceramic damming material); flood gate gasket; flood gates; flood prevention plugs; gaskets in junction, terminal, and pull boxes; gypsum boards; junction, terminal, and pull boxes; panels and cabinets; roof hatch seals; switchgear enclosures; watertight door gasket; and watertight doors.

2.4B.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.5 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the miscellaneous structural commodities described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.5.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the miscellaneous structural commodities that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the miscellaneous structural commodities that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4B.6 Load Handling Cranes and Devices

2.4B.6.1 Summary of Technical Information in the Application

In LRA Section 2.4.6, the applicant identified the components of the load handling cranes and devices that are subject to an AMR for license renewal. The load handling cranes and devices are within the scope of license renewal because certain load handling cranes and devices are Seismic Category I and meet 10 CFR 54.4(a)(1), or are seismically designed and meet 10 CFR 54.4(a)(2) to ensure that they will not adversely impact safety-related components during or subsequent to a seismic event.

Intended functions within the scope of license renewal include the following:

- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(2) or (a)(3)
- provides structural and/or functional support to equipment meeting 10 CFR 54.4(a)(1)

In LRA Table 2.4.2-37, the applicant identified the following load handling cranes and devices component types that are within the scope of license renewal and subject to an AMR: cranes and monorails including bridge & trolley support members (girders, beams, angles, frames, plates, rails & anchorage); fuel elevator support members (structural plates, track & anchorage); and fuel transfer system support members (structural base supports, tracks, & anchorage).

2.4B.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.6 and the referenced Millstone FSAR Sections. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In conducting its review, the staff evaluated the structural or component functions of the load handling cranes and devices described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

2.4B.6.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant.

No omissions were identified. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the load handling cranes and devices that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the load handling cranes and devices that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.5 Scoping and Screening Results - Electrical and Instrumentation and Controls Systems

This section documents the staff's review of the applicant's scoping and screening results for electrical and instrumentation and controls (I&C) systems. Specifically, this section discusses the following systems:

- cables and connectors
- electrical penetrations
- bus duct

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

Staff Evaluation Methodology. The staff's evaluation of the information provided in the LRA was performed in the same manner for all electrical and I&C systems. The objective of the review was to determine if the components and supporting structures for a specific electrical and I&C system 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 components were subject to an AMR in accordance with 10 CFR 54.21(a)(1).

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

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

2.5.1 Cables and Connectors Systems

2.5.1.1 Summary of Technical Information in the Application

In LRA Section 2.5.1, the applicant described the cables and connectors systems. Cables and associated connectors provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals. Insulation resistance, which precludes shorts, grounds, and unacceptable leakage currents, maintains circuit integrity.

The cables and connectors within the scope of renewal supply electrical/control power and signals for electrical and I&C equipment: (i) that perform safety-related functions; (ii) whose failure could adversely impact the safety-related function of a safety-related component; or (iii) that are relied upon for fire protection (FP), station blackout (SBO), pressurized thermal shock (PTS), or anticipated transients without scram (ATWS). Cables and connectors within the scope of the EQ program are the subject of time-limited aging analyses (TLAAs) as described in LRA Section 4.4, Environmental Qualification of Electric Equipment.

Intended functions within the scope of license renewal include the following:

- conducts electricity
- insulates electrical conductors

In LRA Table 2.5.1-1, the applicant identified the following cables and connectors systems component types that are within the scope of license renewal and subject to an AMR: conductors and insulation.

2.5.1.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1 using the evaluation methodology described in Section 2.5 of this SER. The staff conducted its review in accordance with the guidance described in the NRC's Standard Review Plan (NUREG-1800), Section 2.5, "Scoping and Screening Results - Electrical and Instrumentation and Controls Systems."

In conducting its review, the staff evaluated the structure and component functions of the cables and connectors described in the LRA and Millstone FSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated in 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed the LRA to verify that passive or long-lived components were not omitted from being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

The applicant states that the cables and connectors within the scope of license renewal meet 10 CFR 54.21 (a)(1), (2) or (3) by supplying electrical control power and signals for electrical and I&C equipment: (i) that performs safety-related functions; (ii) whose failure could adversely impact the safety-related function; or (iii) that is relied upon for fire protection, station blackout, pressurized thermal shock, or anticipated transients without scram. The evaluation boundary for the non-EQ cables and connectors includes cables, connectors, terminations, and cables in storage. The commodity groups that require AMR are indicated in Table 2.5.1-1, "Cables and Connectors." The commodity group includes conductors and insulation. The function of insulated cables and connections is to electrically connect specified sections of an electrical circuit to deliver voltage, current, or signals. Electrical cables and their connections are reviewed as commodity groups. In RAI 2.5-1, the staff requested the following information:

(1) Table 2.5.1 of the LRA lists electrical cables and connectors not subject to EQ requirements to be subjected to an aging management review (AMR). It did not include splices, and fuse holder (non-metallic portions). The applicant was requested to provide a technical justification of why splices, and fuse holders are excluded from the AMR.

(2) The applicant was requested to discuss whether there are there any non-safety related cables (not within the scope of license renewal) excluded from an AMR that includes cables. If that includes cables, the applicant was requested to discuss how these cables are treated if they run in the same conduits or race ways with the other cables.

(3) The applicant was requested to explain why grounding systems are not within the scope of license renewal.

(4) Section 2.5, Table 2.5.1 of the LRA did not include the transmission connections to be included in the AMR. Transmission connections are within the scope of license renewal, are considered long-lived, passive components and should be included in the AMR. Therefore, the applicant was requested to explain why the transmission connections are excluded from the AMR.

By letter dated November 9, 2004, the applicant responded to the staff's questions as follows:

(1) The splices are considered an integral part of the cable and non-EQ splices are included in the commodity groups, "Conductors" and "Insulation" in LRA Table 2.5.1-1 and the AMR results are included in LRA table 3.6.2-1. Fuse holders (including non-metallic portions) that are not part of a larger assembly, but support safety-related and non-safety-related functions in which a failure of a fuse precludes a safety function from being accomplished, are subject to AMR and will be evaluated prior to the period of extended operation as described in LRA Section 2.1.6.5. This commitment is identified as Commitment 6 in LRA Appendix A, Table A6.0-1.

The staff finds the applicant's commitment to be acceptable based on the applicant's statement, the splices are already included in the LRA Table 3.6.2-1 and it's commitment to complete the evaluation of fuse holders prior to the period of extended operation, this resolves RAI 2.5-1(1).

(2) The only non-safety-related cables that are not subject to AMR are the Unit 2 control element drive mechanism and Unit 3 control rod drive mechanism cables. In some instances, these cables may be routed in the same raceways as in-scope non-EQ cables. However, since an area-based approach is used to manage the effects of aging for non-EQ cables, as described in LRA Section B2.1.8, "Electrical Cables and Connectors not Subject to 10 CFR 50.49 Environmental Qualification Requirements," all cables within a raceway are subject to aging management program.

The staff finds the applicant's response to be acceptable based on the applicant's clarification that all cables within a raceway are subject to aging management, this resolves RAI 2.5-1(2).

(3) The station grounding system bonds metal raceways, building structural steel, and plant equipment to earth ground through an installed grounding grid. The station grounding system is non-safety related and is provided for personnel and equipment protection. In the event of a fault in an electrical circuit or component, the grounding system includes the capability to detect and/or isolate the fault to minimize equipment damage. The grounding system does not prevent faults and is not required for equipment operation. Failure of the system cannot affect the accomplishment of any safety functions. Therefore, the system does not perform an intended function that meets the criteria of 10 CFR 54.4(a) and is not within the scope of license renewal.

The staff finds the applicant's response to be acceptable based on the applicant's clarification that the grounding system does not prevent faults and is not required for equipment operation, this resolves RAI 2.5-1(3).

(4) Transmission connections are within the scope of license renewal and subject to AMR. Transmission connections are included in the commodity group "Conductors" in LRA Table 2.5.1-1.

The staff finds the applicant's response to be acceptable based on the applicant's clarification that transmission connections are included in Table 2.5.1-1, this resolves RAI 2.5-1(4).

2.5.1.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and RAI responses discussed above, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the structures and components of the cables and connectors. Therefore, the staff concludes that the applicant has adequately identified the cables and connectors systems components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the cables and connectors systems components that are subject to an AMR, as required by 10 CFR 54.21(a)(1). However, fuse holders (including non-metallic portions) that are not part of a larger assembly, will be evaluated prior to the period of extended operation as described in LRA Section 2.1.6.5. This commitment is identified as Commitment 6 in LRA Appendix A, Table A6.0-1.

2.5.2 Electrical Penetrations Systems

2.5.2.1 Summary of Technical Information in the Application

In LRA Section 2.5.2, the applicant described the electrical penetrations systems. Electrical penetrations permit the conduction of electrical power or signals through the containment wall while maintaining the integrity of the containment pressure boundary.

The electrical penetrations provide a seal between the containment and the outside atmosphere. The electrical penetration assemblies within the scope of the EQ program are the subject of a TLAA as described in LRA Section 4.4, Environmental Qualification of Electric Equipment.

Intended functions within the scope of license renewal include the following:

- conducts electricity
- insulates electrical conductors
- provides a pressure boundary
- provides structural and/or functional support related to mechanical components

In LRA Table 2.5.2-1, the applicant identified the following electrical penetrations systems component types that are within the scope of license renewal and subject to an AMR: conductors; feed-through module; header plates; bolting hardware; compression connectors; feed-through sealant; insulation; internal conductor support; and penetration seals.

2.5.2.2 Staff Evaluation

The staff reviewed LRA Section 2.5.2 using the evaluation methodology described in Section 2.5 of this SER. The staff conducted its review in accordance with the guidance described in the NRC's Standard Review Plan (NUREG-1800), Section 2.5, "Scoping and Screening Results - Electrical and Instrumentation and Controls Systems."

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

Electrical penetrations are used to pass electrical circuits through the containment wall while maintaining containment integrity. They provide electrical continuity for the circuit as well as a pressure boundary for the containment. The electrical penetrations are within the scope of license renewal because they provide a seal between the containment and the outside atmosphere. All primary containment electrical penetrations are included in the scope of the rule. The electrical continuity function of penetrations is managed under the EQ program which is discussed in Section 4.4, "Environmental Qualification of Electrical Equipment." The evaluation boundary of the non-EQ electrical penetrations includes the sealed conductor feed-through module. The components subject to an AMR are indicated in Table 2.5.2.1, "Electrical Penetrations." The results of the AMR of these components are provided in Table 3.6.2-2: Electrical Components-Electrical Penetrations-Aging Management Evaluation.

The applicant's methodology has adequately addressed the electrical penetrations and is, therefore, acceptable.

2.5.2.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the structures and components of the electrical penetrations systems. Therefore, the staff concludes that the applicant has adequately identified the electrical penetrations systems components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the electrical penetrations systems components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.3 Bus Duct Systems

2.5.3.1 Summary of Technical Information in the Application

In LRA Section 2.5.3, the applicant described the bus duct systems. A switchyard-type tubular bus duct is a bare, rigid conductor supported on insulator posts or stacks. These insulators are non-porous, translucent, porcelain ceramic covered with an oven-baked glaze. The bus support insulator attaches to the bus duct and a support stand to provide a rigid insulating support for the bus duct.

These switchyard-type tubular bus ducts are required for the restoration of offsite power during a station blackout event.

Intended functions within the scope of license renewal include the following:

- conducts electricity
- insulates electrical conductors
- provides structural and/or functional support related to mechanical components

In LRA Table 2.5.3-1, the applicant identified the following bus duct systems component types that are within the scope of license renewal and subject to an AMR: bus duct and bus support insulator.

2.5.3.2 Staff Evaluation

The staff reviewed LRA Section 2.5.3 using the evaluation methodology described in Section 2.5 of this SER. The staff conducted its review in accordance with the guidance described in the NRC's Standard Review Plan (NUREG-1800), Section 2.5, "Scoping and Screening Results - Electrical and Instrumentation and Controls Systems."

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

The switchyard-type tubular bus ducts are within the scope of license renewal for 10 CFR 54.4(a)(3) since they are required for the restoration of offsite power during a station blackout event. The applicant described the bus ducts in LRA Section 2.5.3 and provided a list of components subject to an AMR in LRA Table 2.5.3-1, "Bus Duct," and 3.6.2-3, "Electrical Components-Bus Duct-Aging Management Evaluation."

The applicant has adequately addressed the bus duct and is, therefore, acceptable.

2.5.3.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the structures and components of the bus duct systems. Therefore, the staff concludes that the applicant has adequately identified the bus duct systems and components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the bus duct systems components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.6 Conclusion for Scoping and Screening

The staff has reviewed the information in Section 2, "Structures and Components Subject to Aging Management Review" of the LRA. The staff determined the applicant's scoping and screening methodology, including its supplement 10 CFR 54.4(a)(2) review which brought additional nonsafety-related piping segments and associated components into the scope of license renewal, was consistent with the requirements of 10 CFR 54.21(a)(1) and the staff's position on the treatment of safety and nonsafety-related SSC's within the scope of license renewal and the structures and components requiring an AMR is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

On the basis of its review, the staff concludes that the applicant has adequately identified those systems and components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified 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 NRC staff has concluded that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis, and that any changes made to the MPS current licensing basis in order to comply with 10 CFR 54.29(a) are in accord with the Act and the Commission's regulations.

SECTION 3

AGING MANAGEMENT REVIEW RESULTS

This section of the SER contains the staff's evaluation of the applicant's aging management programs (AMPs) and aging management reviews (AMRs). In Appendix B of the LRA, the applicant described the 25 AMPs that it relies on to manage or monitor the aging of long-lived, passive components and structures.

By letter dated December 3, 2004, the applicant supplemented the program discussions in Appendix B to the license renewal application (LRA) by providing a new AMP, Section B2.1.26, "Bolting Integrity."

In Section 3 of the LRA, the applicant provided the results of the AMRs for those structures and components that were identified in Section 2 of the LRA as being within the scope of license renewal and subject to an AMR.

3.0 Applicant's Use of the Generic Aging Lessons Learned Report

In preparing its license renewal application (LRA), Dominion Nuclear Connecticut, Inc. (Dominion or the applicant) credited NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," dated July 2001. The GALL Report contains the staff's generic evaluation of the existing plant programs and documents the technical basis for determining where existing programs are adequate without modification and where existing programs should be augmented for the extended period of operation. The evaluation results documented in the GALL Report indicate that many of the existing programs are adequate to manage the aging effects for particular structures or components for license renewal without change. The GALL Report also contains recommendations on specific areas for which existing programs should be augmented for license renewal. An applicant may reference the GALL Report in its LRA to demonstrate that the programs at its facility correspond to those reviewed and approved in the report.

The purpose of the GALL Report is to provide the staff with a summary of staff-approved AMPs to manage or monitor the aging of structures and components that are subject to an AMR. If an applicant commits to implementing these staff-approved AMPs, the time, effort, and resources used to review an applicant's LRA will be greatly reduced, thereby improving the efficiency and effectiveness of the license renewal review process. The GALL Report also serves as a reference for applicants and staff reviewers to quickly identify those AMPs and activities that the staff has determined will adequately manage or monitor aging during the period of extended operation.

The GALL Report identifies (1) systems, structures, and components (SSCs), (2) structure and component (SC) materials, (3) the environments to which the SCs are exposed, (4) the aging effects associated with the materials and environments, (5) the AMPs that are credited with managing or monitoring the aging effects, and (6) recommendations for further applicant evaluations of aging management for certain component types.

To determine whether using the GALL Report would improve the efficiency of the license renewal review, the staff conducted a demonstration project to exercise the GALL process and to determine the format and content of a safety evaluation based on this process. The results of the demonstration project confirmed that the GALL process will improve the efficiency and effectiveness of the LRA review while maintaining the staff's focus on public health and safety. NUREG-1800, "Standard Review Plan for the Review of License Renewal Applications," dated April 2001 (SRP-LR), was prepared based on both the GALL Report model and lessons learned from the demonstration project.

The staff performed its review in accordance 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 guidance provided in NUREG-1800, the guidance provided in NUREG-1801.

In addition to its review of the LRA, the staff conducted onsite audit of selected aging management reviews and associated aging management program as described in the "Audit and Review Plan for Plant Aging Management Reviews and Programs, Millstone Power Station, Units 2 and 3," dated October 27, 2004, (ADAMS ML043290430). The onsite audits and reviews are designed to maximize the efficiencies of the staff's review of the LRA. The need for formal correspondence between the staff and the applicant was reduced, and therefore, improved the efficiency of the review. Also the applicant could respond to questions, and the staff could readily evaluate the responses made by the applicant.

3.0.1 Format of the License Renewal Application

The applicant submitted an application that followed the standard LRA format, as agreed to between the NRC staff and the Nuclear Energy Institute (NEI) (see letter dated April 7, 2003, ML030990052). This revised LRA format incorporates lessons learned from the staff's reviews of the previous five LRAs. These previous applications used a format developed from information gained during an NRC staff and NEI demonstration project conducted to evaluate the use of the GALL Report in the staff's review process.

The organization of Section 3 of the LRA parallels Chapter 3 of the SRP-LR. The AMR results information in Section 3 of the LRA is presented in the following two table types:

- Table 1: Table 3.x.1 - where "3" indicates the LRA section number, "x" indicates the subsection number from the GALL Report, and "1" indicates that this is the first table type in Section 3 of the LRA.
- Table 2: Table 3.x.2-y - where "3" indicates the LRA section number, "x" indicates the subsection number of the GALL Report, "2" indicates that this is the second table type in Section 3 of the LRA, and "y" indicates the system table number.

The content of the previous applications and the MPS applications is essentially the same. The intent of the revised format used for the MPS applications was to modify the tables in Chapter 3 to provide additional information to assist the staff in its review. In Table 1 the applicant summarized the portions of the application it considered to be consistent with the GALL Report. In Table 2, the applicant identified the linkage between the scoping and screening results in Chapter 2 and the AMRs in Chapter 3.

3.0.1.1 Overview of Table 1

Table 3.x.1 (Table 1) provides a summary comparison of how the facility aligns with the corresponding tables of the GALL Report, Volume 1. The table is essentially the same as Tables 1 through 6 provided in the GALL Report, Volume 1, except that the "Type" column has been replaced by an "Item Number" column and the "Item Number in GALL" column has been replaced by a "Discussion" column. The "Item Number" column provides the reviewer with a means to cross-reference from Table 2 to Table 1. The "Discussion" column is used by the applicant to provide clarifying/amplifying information. The following are examples of information that might be contained within this column:

- further evaluation recommended - information or reference to where that information is located
- the name of a plant-specific program being used
- exceptions to the GALL Report assumptions
- a discussion of how the line is consistent with the corresponding line item in the GALL Report when that may not be intuitively obvious
- a discussion of how the item is different than the corresponding line item in the GALL Report (e.g., when there is exception taken to an aging management program that is listed in the GALL Report)

The format of Table 1 allows the staff to align a specific Table 1 row with the corresponding NUREG-1801, Volume 1, table row so that consistency can be checked easily.

3.0.1.2 Overview of Table 2

Table 3.x.2-y (Table 2) provides the detailed results of the AMRs for those components identified in LRA Section 2 as being subject to an AMR. The LRA contains a Table 2 for each of the components or systems within a system grouping (e.g., reactor coolant systems, engineered safety features, auxiliary systems, etc.). For example, the engineered safety features group contains tables specific to the containment spray system, containment isolation system, and emergency core cooling system; Table 2 consists of the following nine columns:

(1) Component Type - The first column identifies the component types from Section 2 of the LRA that are subject to aging management review. They are listed in alphabetical order.

(2) Intended Function - The second column contains the license renewal intended functions (including abbreviations where applicable) for the listed component types. Definitions and abbreviations of intended functions are contained within the Intended Functions table of LRA Section 2.

(3) Material - The third column lists the particular materials of construction for the component type.

(4) Environment - The fourth column lists the environment to which the component types are exposed. Internal and external service environments are indicated and a list of these environments is provided in the Internal Service Environments and External Service Environments tables of LRA Section 3.

(5) Aging Effect Requiring Management - The fifth column lists aging effects requiring management. As part of the aging management review process, the applicant determined any aging effects requiring management for each material and environment combination.

(6) Aging Management Programs - The sixth column lists the aging management programs the applicant used to manage the identified aging effects.

(7) GALL Vol. 2 Item - The seventh column lists the GALL Report item(s) that the applicant identified as being similar to the AMR results in its LRA. The applicant compared each combination of component type, material, environment, aging effect requiring management, and aging management program in Table 2 of the SER to the items in the GALL Report. If there were no corresponding item in the GALL Report, the applicant left the column blank. In this way, the applicant identified the AMR results in the LRA tables that corresponded to items in the GALL Report tables.

(8) Table 1 Item - The eighth column lists the corresponding summary item number from Table 1. If the applicant identifies AMR results in Table 2 that are consistent with the GALL Report, then the associated Table 3.x.1 line summary item number should be listed in Table 2. If there is no corresponding item in the GALL Report, then column eight is left blank. That way, the information from the two tables can be correlated.

(9) Notes - The ninth column lists the corresponding notes that the applicant used to identify how the information in Table 2 aligns with the information in the GALL Report. The notes identified by letters were developed by a Nuclear Energy Institute working group and will be used in future license renewal applications. Any plant-specific notes are identified by a number and provide additional information concerning the consistency of the line item with the GALL Report.

3.0.2 Staff's Review Process

The staff conducted the following three types of evaluations of the AMRs and associated AMPs.

(1) For items that the applicant stated were consistent with the GALL Report, the staff conducted either an audit or a technical review to determine consistency with the GALL Report.

(2) For items the applicant stated were consistent with the GALL Report with exceptions and/or enhancements, the staff conducted either an audit or a technical review of the item to determine consistency with the GALL Report. In addition, the staff conduct either an audit or a technical review of the applicant's technical justification for the exceptions and the adequacy of the enhancements.

(3) For other items, the staff conducted a technical review per 10 CFR 54.21(a)(3).

The staff performed audits and technical reviews of the license renewal applicant's AMPs and AMRs. These audit and technical reviews are to determine whether the effects of aging on structures and components can be adequately managed so that their intended functions can be maintained consistently with the plant's current licensing basis (CLB) for the period of extended operation as required by 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."

The staff performed onsite audits during the weeks of March 29, May 3, May 10, and June 7, 2004, to verify selected AMPs and AMR results that the applicant claimed were consistent with the GALL Report were actually consistent as claimed. The staff conducted a public exit meeting on July 13, 2004. Details of the staff's onsite audit are documented in the "Audit and Review Report for Plant Aging Management Reviews - Millstone Power Station, Units 2 and 3," dated February 2, 2005 (MPS Audit and Review Report) (ML050330059).

3.0.2.1 Review of AMPs

For those AMPs for which the applicant claimed consistency with the GALL AMPs, the staff conducted either an audit or a technical review to verify that the applicant's AMPs were consistent with the AMPs in the GALL Report. For each AMP that had one or more deviations, the staff evaluated each deviation to determine (1) whether the deviation was acceptable, and (2) whether the AMP, as modified, would adequately manage the aging effect(s) for which it was credited.

For AMPs that were not evaluated in the GALL Report, the staff performed a full review to determine the adequacy of the AMPs. The staff evaluated the AMPs against the following 10 program elements defined in SRP-LR Appendix A.

(1) Scope of the Program - Scope of the program should include the specific structures and components subject to an AMR for license renewal.

(2) Preventive Actions - Preventive actions should prevent or mitigate aging degradation.

(3) Parameters monitored or inspected - Parameters monitored or inspected should be linked to the degradation of the particular structure or component intended functions(s).

(4) Detection of Aging Effects - Detection of aging effects should occur before there is a loss of structure or component intended functions(s). This includes aspects such as method or technique (i.e., visual, volumetric, surface inspection), frequency, sample size, data collection and timing of new/one-time inspections to ensure timely detection of aging effects.

(5) Monitoring and Trending - Monitoring and trending should provide predictability of the extent of degradation, and timely corrective or mitigative actions.

(6) Acceptance Criteria - Acceptance criteria, against which the need for corrective action will be evaluated, should ensure that the structure or component intended function(s) are maintained under all CLB design conditions during the period of extended operation.

(7) Corrective Actions - Corrective actions, including root cause determination and prevention of recurrence, should be timely.

(8) Confirmation Process - Confirmation process should ensure that preventive actions are adequate and that appropriate corrective actions have been completed and are effective.

(9) Administrative Controls - Administrative controls should provide a formal review and approval process.

(10) Operating experience - Operating experience of the aging management program, including past corrective actions resulting in program enhancements or additional programs, should provide objective evidence to support the conclusion that the effects of aging will be managed adequately so that the structure and component intended function(s) will be maintained during the period of extended operation.

Details of the staff's audit evaluation of program elements (1) through (6) is documented in its MPS audit and review report and is summarized in Section 3.0.3 of this SER.

The staff reviewed the applicant's corrective action program and documented its evaluations in Section 3.0.4 of this SER. The staff's evaluation of the corrective action program included assessment of the following program elements: (7) corrective actions, (8) confirmation process, and (9) administrative controls.

The staff reviewed the information concerning the (10) operating experience program element and documented its evaluation in its MPS audit and review report and summarized it in Section 3.0.3 of this SER.

The staff reviewed the Final Safety Analysis Report (FSAR) supplement for each AMP to determine if it provided an adequate description of the program or activity, as required by 10 CFR 54.21(d).

3.0.2.2 Review of AMR Results

Table 2 of the LRA contains information concerning whether or not the AMRs align with the AMRs identified in the GALL Report. For a given AMR in Table 2, the staff reviewed the intended function, material, environment, aging effect requiring management, and aging management program (MEAP) combination for a particular component type within a system. The AMRs that correlate between a combination in Table 2 and a combination in the GALL Report were identified by a referenced item number in column seven, "GALL, Volume 2 Item." The staff also conducted onsite audits to verify the correlation. A blank column seven indicates that the applicant was unable to locate an appropriate corresponding combination in the GALL Report. The staff conducted a technical review of these combinations that were not consistent with the GALL Report. The next column, "Table 1 Item," provided a reference number that indicated the corresponding row in Table 1.

3.0.2.3 FSAR Supplement

Consistent with the SRP-LR, for the AMRs and associated AMPs that it reviewed, the staff also reviewed the FSAR supplement that summarizes the applicant's programs and activities for managing the effects of aging for the period of extended operation, as required by 10 CFR 54.21(d).

3.0.2.4 Documentation and Documents Reviewed

In performing its review, the staff relied heavily on the LRA, the LRA supplements, the SRP-LR, and the GALL Report.

Also, during the onsite audit, the staff examined the applicant's justification, as documented in the staff's MPS audit and review report, to verify that the applicant's activities and programs will adequately manage the effects of aging on SCs. The staff also conducted detailed discussions and interviews with the applicant's license renewal project personnel and others with technical expertise relevant to aging management.

3.0.3 Aging Management Programs

Table 3.0.3-1 presents the AMPs credited by the applicant and described in Appendix B of the LRA. The table also indicates the GALL program that the applicant claimed its AMP was consistent with (if applicable) and the SSCs for managing or monitoring aging. The section of the safety evaluation report in which the staff's evaluation of the program is documented also is provided.

Table 3.0.3-1 MPS's Aging Management Programs

MPS's AMP (LRA Section)	GALL Comparison	GALL AMP(s)	LRA Systems or Structures That Credit the AMP	Staff's SER Section
Existing AMPs				
Battery rack inspections (B2.1.1)	Plant-specific	NA	Structures and component supports	3.0.3.3.1
Boraflex monitoring (B2.1.2)	Consistent	XI.M22	Structures and component supports	3.0.3.1.1
Boric acid corrosion (B2.1.3)	Consistent	XI.M10	Reactor vessel, internals, and reactor coolant system; engineered safety features; auxiliary systems; steam and power conversion system; structures and component supports	3.0.3.1.2
Buried pipe inspection program (B2.1.4)	Consistent with exceptions and enhancements	XI.M28, XI.M34	Auxiliary systems	3.0.3.2.1
Chemistry control for primary systems program (B2.1.5)	Consistent with exception	X1.M2	Reactor vessel, internals, and reactor coolant system; engineered safety features; auxiliary systems; structures and component supports	3.0.3.2.2
Chemistry control for secondary systems programs (B2.1.6)	Consistent with exception	XI.M2	Reactor vessel, internals, and reactor coolant system; auxiliary systems; steam and power conversion system	3.0.3.2.3

MPS's AMP (LRA Section)	GALL Comparison	GALL AMP(s)	LRA Systems or Structures That Credit the AMP	Staff's SER Section
Closed-cycle cooling water system (B2.1.7)	Consistent with exception and enhancement	XI.M21	Reactor vessel, internals, and reactor coolant system; engineered safety features; auxiliary systems; steam and power conversion system	3.0.3.2.4
Electrical cables not subject to 10 CFR 50.49 environmental qualification requirements used in instrumentation circuits (B2.1.9)	Consistent with enhancement	XI.E2	Electrical components	3.0.3.2.6
Fire protection program (B2.1.10)	Consistent with exception and enhancements	XI.M26 XI.M27	Auxiliary systems; structures and component supports	3.0.3.2.7
Flow-accelerated corrosion (B2.1.11)	Consistent with exception	XI.M17	Reactor vessel, internals, and reactor coolant system; steam and power conversion system	3.0.3.2.8
Fuel oil chemistry (B2.1.12)	Consistent with exceptions	XI.M30	Auxiliary systems	3.0.3.2.9
General condition monitoring (B2.1.13)	Plant-specific	NA	Reactor vessel, internals, and reactor coolant system; engineered safety features; auxiliary systems; steam and power conversion system; structures and component supports	3.0.3.3.2
Inaccessible medium-voltage cables not subject to 10 CFR 50.49 environmental qualification requirements (B2.1.14)	Consistent with exception and enhancement	XI.E3	Electrical components	3.0.3.2.10
Inservice inspection program: containment inspections (B2.1.16)	Consistent with exceptions	XI.S1 XI.S2 XI.S4	Structures and component supports	3.0.3.2.11
Inservice inspection program: reactor vessel internals (B2.1.17)	Consistent with exceptions and enhancements	XI.M12 XI.M13 XI.M16	Reactor vessel, internals, and reactor coolant system	3.0.3.2.12

MPS's AMP (LRA Section)	GALL Comparison	GALL AMP(s)	LRA Systems or Structures That Credit the AMP	Staff's SER Section
Inservice inspection program: systems, components and supports (B2.1.18)	Consistent with exceptions and enhancements	XI.M1 XI.M3 XI.M11 XI.M12 XI.S3	Reactor vessel, internals, and reactor coolant system; engineered safety features; auxiliary systems; structures and component supports	3.0.3.2.13
Inspection activities: load handling cranes and devices (B2.1.19)	Consistent with enhancements	XI.M23	Structures and component supports	3.0.3.2.14
Reactor vessel surveillance (B2.1.20)	Consistent	XI.M31	Reactor vessel, internals, and reactor coolant system	3.0.3.1.3
Service water system (open-cycle cooling) (B2.1.21)	Consistent with exceptions	XI.M20	Auxiliary systems	3.0.3.2.15
Steam generator structural integrity (B2.1.22)	Consistent	XI.M19	Reactor vessel, internals, and reactor coolant system	3.0.3.1.4
Structures monitoring program (B2.1.23)	Consistent with enhancements	XI.S5 XI.S6 XI.S7	Structures and component supports	3.0.3.2.16
Tank inspection program (B2.1.24)	Consistent with enhancements	XI.M29	Engineered safety features; auxiliary systems; steam and power conversion system	3.0.3.2.17
Work control process (B2.1.25)	Plant-specific	NA	Reactor vessel, internals, and reactor coolant system; engineered safety features; auxiliary systems; steam and power conversion system; structures and component supports	3.0.3.3.4
Bolting integrity (B2.1.26)	Consistent with exception	XI.M18	Reactor vessel, internals, and reactor coolant system; engineered safety features; auxiliary systems; steam and power conversion system	3.0.3.2.18
New AMPs				
Electrical cables and connectors not subject to 10 CFR 50.49 environmental qualification requirements (B2.1.8)	Consistent with enhancement	XI.E1	Electrical components	3.0.3.2.5
Infrequently accessed areas inspection program (B2.1.15)	Plant-specific	NA	Auxiliary systems; structures and component supports	3.0.3.3.3

3.0.3.1 AMPs that are Consistent with the GALL Report

In Appendix B of the LRA, the applicant indicated that the following AMPs were consistent with the GALL Report:

- Boraflex monitoring (B2.1.2)
- boric acid corrosion (B2.1.3)
- reactor vessel surveillance (B2.1.20)
- steam generator structural integrity (B2.1.22)

3.0.3.1.1 Boraflex Monitoring

Summary of Technical Information in the Application. The applicant's Boraflex monitoring program is described in LRA Section B2.1.2, "Boraflex Monitoring." In the LRA, the applicant stated that this is an existing program. This program is consistent with GALL AMP XI.M22, "Boraflex Monitoring."

The applicant stated, in the LRA, that the Boraflex monitoring program manages the aging effect of change of material properties on the sheets of neutron-absorbing materials affixed inside spent fuel racks at Unit 2. For the Boraflex panels, gamma irradiation and long-term exposure to the wet pool environment cause shrinkage, which results in gap formation, gradual degradation of the polymer matrix, and the release of silica to the spent fuel storage pool water. The resultant loss of boron carbide from the neutron-absorbing sheets reduces the neutron absorption capabilities. The program ensures that periodic testing and monitoring is performed to verify the condition of the neutron-absorbing panels in the spent fuel storage pool.

The applicant also stated, in the LRA, that Boraflex panels are installed in the Unit 3 spent fuel racks but are not credited for neutron absorption and criticality prevention of the spent fuel pool. For that reason, the Boraflex monitoring program at MPS Unit 3 is not included in this AMP.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's evaluation of this AMP are documented in the MPS audit and review report. The staff determined that this AMP is consistent with the AMP described in the GALL Report, including the associated operating experience attribute.

Based on its review, the staff concludes that the applicant's Boraflex monitoring program provides reasonable assurance of aging management of change of material properties on the sheets of neutron-absorbing materials affixed inside spent fuel racks at Unit 2. The staff finds this AMP acceptable because it conforms to the recommended program description, program elements, and acceptance criteria for the Boraflex monitoring program, as discussed in GALL AMP XI.M22, "Boraflex Monitoring."

Also, the applicant stated, in the MPS LRA, that Boraflex panels are installed in the MPS Unit 3 spent fuel racks but the panels are not credited for neutron absorption and criticality prevention of the spent fuel pool. For that reason, the Boraflex monitoring program at MPS Unit 3 is not included in this AMP. Since the applicant did not credit spent fuel racks with Boraflex panels for neutron absorption and criticality prevention of the spent fuel pool for MPS Unit 3, the staff agrees that the Boraflex monitoring program is not applicable to MPS Unit 3.

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.1.2 Boric Acid Corrosion

Summary of Technical Information In the Application. The applicant summarizes the boric acid corrosion program in Section B2.1.3 of Appendix B to the LRA. In Section B2.1.3 of the LRA, the applicant stated that the AMP is used to manage loss of material in areas where carbon steel, low-alloy steel, copper and cast iron structures and components may be susceptible to the effects of borated reactor coolant leaks. The program ensures that boric acid corrosion is consistently identified, documented, evaluated, and trended so that loss of material is effectively repaired. The applicant stated that this AMP is developed to address industry recommendations reflected in Generic Letter (GL) 88-05 and the information from NRC Bulletins 2002-01 and 2002-02.

Staff Evaluation. The applicant stated that the borated water leakage assessment and evaluation program has been developed to address industry recommendations reflected in GL 88-05, and that the AMP is consistent with the program attributes in GALL AMP XI.M10, "Boric Acid Corrosion." In addition, the recommendations of NRC Bulletins 2002-01 and 2002-02 have been addressed in this program. It should be noted that Bulletins 2003-02 and 2004-01, and NRC Order EA-03-009 provide additional documentation of industry experience related to cracking in ASME Class 1 nickel-alloy partial-penetration welds, including those used to join the upper RV head penetration nozzles to the upper RV heads and those used to join the bottom mounted instrumentation (BMI) nozzles to the lower RV heads of PWRs. The staff requested additional clarification regarding the scope of the boric acid program and the process the applicant uses to augment the list of components within the scope of the AMP based on pertinent industry experience. Specifically, the staff requested the following actions of the applicant in RAI B2.1.3-1:

> Corrective actions have been effectively implemented to mitigate active leakage prior to experiencing a loss of intended function. Discuss how program revisions have incorporated lessons learned from the Davis-Besse vessel head degradation, the control rod drive mechanism penetration cracking and the bottom mounted instrumentation (BMI) nozzles to the lower RV heads discussed in NRC Bulletins 2002-01, 2002-02, 2003-02, and NRC Order EA-03-009 to prevent reoccurrence of degradation caused by boric acid leakage, as required by Generic Letter 88-05. This discussion should include the identification of component locations that have been added to the scope of the program and clarify what type of visual examinations (i.e., specify whether VT-1, VT-2 or VT-3, and whether the visual examinations are enhanced, bare-surface, qualified, etc.) will be performed on the components.

In response to RAI B2.1.3-1, in a letter dated December 3, 2004, the applicant provided the following representative list of applicable component locations and corresponding examination methods, which have been incorporated into the boric acid corrosion control (BACC) program to address operating experience, lessons learned from Davis Besse, the identified NRC bulletins, and the identified NRC order:

Unit 2

- After Fort Calhoun reported leakage from a pressurizer heater or instrument penetration in December 2001, Millstone added the bare metal visual examination of heater sleeves and instrument nozzles on the pressurizer to the GL 88-05 inspection procedure starting with the April 2002 refueling outage (2R14) for Millstone Unit 2. These examinations found two leaking heater sleeves. Both were repaired with Mechanical Nozzle Seal Assembly (MNSA) clamps.
- In the fall of 2002, bare metal examinations of the instrument nozzles on the reactor coolant piping and steam generators for Millstone Unit 2 were added to the inspection procedure.
- In February 2003, Dominion instituted a corporate level program to manage borated water leakage for Millstone, North Anna, and Surry.
- In the fall outage of 2003 (2R15), Millstone Unit 2 performed bare metal visual examinations of the pressurizer heater sleeves and all of the instrument nozzles and repeated 100 percent ultrasonic testing (UT) of the reactor pressure vessel penetrations in accordance with NRC Order EA-03-009. Two leaking heater sleeves and 11 cracked reactor pressure vessel penetrations were identified. All of the heater sleeves and reactor vessel head penetrations were repaired. No leakage was found on any of the instrument nozzles.
- Prior to 3R09, the Boric Acid Corrosion Control (BACC) program procedure was revised into four separate implementing procedures to address the overall program requirements, on-line walkdowns, refueling outage walkdowns, and boric acid corrosion evaluations.
- Prior to outage 2R16, Millstone Unit 2 will add bare metal visual examinations of Alloy 82/182 butt welds in the reactor coolant system to the BACC program.
- As identified in letter S/N 04-140 from Ms. Leslie N. Hartz, Dominion Nuclear Connecticut, to U. S. Nuclear Regulatory Commission, dated June 3, 2004; Dominion announced its intention to replace the pressurizer for Millstone Unit 2 using materials that are resistant to PWSCC. Dominion intends to replace the Unit 2 pressurizer during the Fall 2006 refueling outage.

Unit 3

- In the fall outage of 2002 (3R08), Millstone Unit 3 performed bare metal visual examinations of the reactor vessel head penetrations under the insulation of the reactor vessel head even though it was in the low susceptibility category according to NRC Bulletin 2002-02. 3R08 was the first outage after NRC Bulletin 2002-02 was issued. The results of this examination concluded that there was no evidence of material degradation or RCS leakage.
- In February 2003, Dominion instituted a corporate level program to manage borated water leakage for Millstone, North Anna, and Surry.

- After the Unit 2 fall outage of 2003 (2R15), bare metal visual examinations of Alloy 82/182 butt welds in the Millstone Unit 3 reactor coolant system (RCS) were added to the inspection procedure. Bare metal visual examinations of Alloy 600 Resistance Temperature Detectors (RTDs) on Millstone Unit 3 were added to the program as a result of operating experiences from North Anna and Surry. Bare metal visual examination of the bottom mounted instrumentation (BMI) nozzles on Millstone Unit 3 was added in accordance with NRC Bulletin 2003-2.
- Prior to 3R09, the Boric Acid Corrosion Control (BACC) program procedure was revised into four separate implementing procedures to address the overall program requirements, on-line walkdowns, refueling outage walkdowns, and boric acid corrosion evaluations.
- During outage 3R09, Millstone Unit 3 performed bare metal visual examinations for alloy 82/182 butt welds (except for RPV nozzles). This included the pressurizer and steam generator pipe connections. Bare metal visual examinations were performed for the BMI nozzles in accordance with NRC Bulletin 2003-02.

In issuing RAI B2.1.3-1, the staff inquired as to the process the applicant would use to augment the list of components within the scope of the boric acid corrosion program as based on pertinent industry experience. This was done, in part, to account for any industry experience on borated water leakage events that could possibly impact the AMP prior to the time of the pending issuance of the renewed operating licenses for the Millstone units. For example, NRC Bulletin 2004-01, Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors (May 28, 2004), provided industry experience that demonstrated that Alloy 600 base metal and Alloy 82/182 weld components used in pressurizer penetration nozzles and steam space piping connections may be susceptible to PWSCC and reactor coolant leakage. Since the staff's issuance of NRC Bulletin 2004-01, the applicant's response to RAI B2.1.3-1 confirms that the applicant is updating the list of components within the scope of the applicant's boric acid corrosion program based on pertinent industry experience on reactor coolant leakage events and that the applicant has included Alloy 600 base metal and Alloy 82/182 weld components as being within the scope of the boric acid corrosion program assessment and evaluation program. This includes the Alloy 600 base metal and Alloy 82/182 weld metal components in the pressurizer system specified in NRC Bulletin 2004-01.

The staff and the industry are currently pursuing resolution of the issues raised and discussed in NRC Bulletin 2004-01 on PWSCC and reactor coolant leakage in pressurizer penetrations and steam space piping connections. Because this is an emerging issue that has yet to be resolved, but will be resolved during the current operating terms for the Millstone units, consideration of these issues is beyond the scope of this license renewal review, pursuant to 10 CFR 54.30(b). However, it should be noted that as identified in Dominion letter S/N 04-140 from Ms. Leslie N. Hartz, Dominion Nuclear Connecticut, to U. S. Nuclear Regulatory Commission, dated June 3, 2004, Dominion announced its intention to replace the pressurizer for Millstone Unit 2 during the fall 2006 refueling outage using materials that are resistant to PWSCC. The replacement of the pressurizer would resolve the current issues concerning PWSCC in the pressurizer penetrations for Millstone Unit 2. For other susceptible nickel-based piping connections, in Millstone Unit 2, the applicant has a commitment to follow the industry efforts investigating the aging effects applicable to nickel-based alloys (i.e., PWSCC in Alloy 600 base metal and Alloy 82/182 weld metals) and identifying the appropriate aging management activities and will implement the appropriate recommendations resulting from this guidance. This commitment is identified in the Millstone Unit 2 LRA, Appendix A, Table A6.0-1 License Renewal Commitments, Item 14. Millstone Unit 3 does not have nickel-based pressurizer penetrations. However, Millstone Unit 3 does have nickel-based alloy welds attaching the safe ends to the pressurizer surge nozzle and the pressurizer relief, spray and safety valve nozzles. To manage these welds, the applicant has a commitment to follow the industry efforts investigating the aging effects applicable to susceptible nickel-based alloys (i.e., PWSCC in Alloy 600 base metal and Alloy 82/182 weld metals) and identifying the appropriate aging management activities and will implement the appropriate recommendations resulting from this guidance. This commitment is identified in the Millstone Unit 3 LRA, Appendix A, Table A6.0-1 License Renewal Commitments, Item 15.

Based on this assessment, the staff concludes that the program is applying pertinent generic communications on borated reactor coolant leakage events as the basis for augmenting the scope of the boric acid corrosion program and that the program has been updated to include Alloy 600 base metal and Alloy 82/182 weld metal components in addition to implementing industry efforts to manage aging of PWSCC in Alloy 600 base metal and Alloy 82/182 weld metals.

Section B2.1.3 of the LRA also states that the program addresses the structures and components composed of susceptible materials, which includes carbon and low-alloy steel, copper, and cast iron. The program inspects the surfaces of structures and components from which borated water may leak. The boric acid corrosion program includes systematic measures to ensure that corrosion caused by leaking borated coolant does not lead to degradation of the leakage source or adjacent structures or components. However, the applicant did not address electrical components on which borated coolant may leak onto as recommended by GALL AMP XI.M10. This should be added to the LRA and FSAR supplement, and was addressed in RAI B2.1.3-3a.

In response to RAI B2.1.3-3a in a letter dated December 3, 2004, the applicant stated that design features such as those detailed in LRA Table 3.6.1, Item Number 3.6.1-05, provide physical protection and prevent the corrosion of the connector contact surfaces caused by intrusion of borated water. In addition, the boric acid corrosion program uses visual inspections to detect the boric acid leakage source, path and any targets of boric acid leakage. The applicant is also clarifying the scope of the program in the FSAR supplement by including the following information in Section A2.1.3 of the Unit 2 FSAR supplement and Section A2.1.2 of the Unit 3 FSAR supplement; "The program uses visual inspections to detect the boric acid leakage source, path and any targets of the leakage." Therefore, the staff finds that the program includes all potential targets, including electrical components, as recommended by NUREG-1801 to manage the degradation of these components.

In addition, some components and structures that are not adjacent to the leakage source may still be targets of the borated coolant. Therefore, the staff asked the applicant in RAI B2.1.3-3b that this AMP should reflect that targets include adjacent systems and components to the leakage source and systems and components that may be leaked on, such as components that are spatially under the leakage source, yet are not directly adjacent to the source.

In response to RAI B2.1.3-3b in a letter dated December 3, 2004, the applicant stated that the boric acid corrosion program uses visual inspections to detect the boric acid leakage source, path and any targets of the leakage. This program inspects the surfaces of structures and components from which the borated water may have leaked, and confirms whether degradation has occurred for any potential targets of the identified leakage. In determining the path of boric acid leakage, the applicable adjacent systems and components are identified, as well as systems and components that are spatially located under the leakage and which may have become targets of the leakage. The program is consistent with NUREG-1801, and the applicant will clarify the scope of the program by including the following:

> The boric acid corrosion program uses visual inspections to detect the boric acid leakage source, path and any targets of the leakage.

The staff finds the response to this RAI acceptable, since the boric acid corrosion program in the LRA is consistent with GALL AMP XI.M10 "Boric Acid Corrosion," and the applicant clarified the scope of the program to include any potential target of boric acid leakage.

<u>FSAR Supplement</u>. The applicant provides the following FSAR supplement summary description for the boric acid program in Section A2.1.3 of Appendix A to the LRA:

> Boric Acid Corrosion corresponds to NUREG-1801, Section XI.M10 "Boric Acid Corrosion." The program manages the aging effect of loss of material and ensures that systems, structures, and components susceptible to boric acid corrosion are properly monitored. It ensures that boric acid corrosion is consistently identified, documented, evaluated, trended and effectively repaired. The acceptance criterion is the absence of any boric acid leakage or precipitation. If boric acid leakage or precipitation is found by any personnel, it is required to be reported using the Corrective Action Program. Corrective action for conditions that are adverse to quality are performed in accordance with the Corrective Action Program as part of the Quality Assurance Program. The corrective action process provides reasonable assurance that deficiencies adverse to quality are either promptly corrected or are evaluated to be acceptable.

The applicant's FSAR supplement summary description for the boric acid program provides a general reference to commitments made to GL 88-05 and NRC Bulletins. The staff requested that the applicant amend the FSAR supplement summary description to provide more specific references to the applicant's response (i.e., Dominion's response) to GL 88-05, and to any additional responses to NRC generic communications (i.e., Generic Letters, Bulletins, Orders, or Circular Letters) that are germane to the scope for the AMP, including those responses to NRC Bulletin 2002-01, 2002-02 and 2003-02 and to NRC Order EA-03-009, as appropriate. The staff issued these requests in RAI B2.1.3-2.

In response to RAI B2.1.3-2, in a letter dated December 3, 2004, the applicant provided the following information:

> Dominion's response to Generic Letter 88-05 and subsequent NRC communications on boric acid corrosion and leakage detection, which include NRC Bulletins 2001-01, 2002-02 and 2003-02, and NRC Order EA-03-009 (as revised) are part of the current licensing basis (CLB) for Millstone Units 2 and 3. In accordance with 10 CFR 54, the CLB will carry forward into the period of extended operation. The specific responses to these NRC generic communications for Millstone Units 2 and 3 are readily retrievable in the NRC Public Document Room. Dominion feels that providing these commitment

details in the FSAR supplement summary would be inconsistent with the level of detail normally presented in the FSAR supplement.

The staff issued RAI B2.1.3-2 to assure that the applicant's discussion in its FSAR supplement summary description for the borated water leakage assessment and evaluation program was consistent with relevant NRC generic communications and the CLB for the plants. The applicant's response to RAI B2.1.3-3b indicates that the applicant will not amend the FSAR supplement summary description for the borated water leakage assessment and evaluation program to include a reference to the applicant's responses and commitments provided in the applicant's responses to NRC Bulletins 2001-01, 2002-01, 2002-02, 2003-02, and the response to NRC Order EA-03-009, as amended by applicant's response to the first revision of the Order. The staff found this unacceptable because the summary description was not current with the CLB for the facilities and did not reference Dominion's responses and commitments to NRC generic communications that are relevant to the scope and implementation of the AMP. It should be noted that as discussed above, the LRA only addressed Generic Letter (GL) 88-05, and NRC Bulletins 2002-1 and 2002-2. NRC Bulletin 2003-02 and NRC Order EA-03-009 were not included in the LRA. Therefore, the staff requested that the applicant amend the FSAR supplement to ensure that the summary description is current with the CLB for the facilities and references Dominion's responses and commitments to NRC generic communications that are relevant to the scope and implementation of the AMP. This is consistent with other applicants that have included its responses and commitments to NRC Bulletins 2001-01, 2002-01, 2002-02, 2003-02, and the response to NRC Order EA-03-009.

In response to supplemental RAI B2.1.3-2 in a letter dated February 8, 2005, the applicant stated that the FSAR supplement will be revised to identify of the applicable NRC generic communications that the program implements, including NRC Bulletin 2003-02 and NRC Order EA-03-009. The applicant response is acceptable since it will revise the FSAR supplement to include the applicable NRC generic communications that are relevant to the scope of and implementation of this AMP. This resolves RAI B2.1.3-2.

Conclusion. On the basis of its review, the staff finds that the program will adequately manage the aging effects so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.1.3 Reactor Vessel Surveillance Program

The staff's regulatory bases for the establishment of the applicant's reactor vessel surveillance programs (RVSPs) for Millstone, Units 2 and 3 are specified in Appendix H to Part 50 of Title 10, *Code of Federal Regulations* (10 CFR Part 50, Appendix H).

Summary of Technical Information in the Application. The applicant's RVSP is discussed in LRA Section B2.1.20, "Reactor Vessel Surveillance." The applicant stated that the program is consistent with and takes no exceptions to GALL AMP XI.M31, "Reactor Vessel Surveillance."

Staff Evaluation The staff's evaluation of the RVSP is based on its review of the program description in LRA Section B2.1.20, as supported with pertinent information reported in the staff's MPS audit and report. The staff's criteria for accepting the RVSP are based on both conformance with aging management program (AMP) XI.M31, "Reactor Vessel Surveillance," in

NUREG-1801, and compliance with the applicable requirements of 10 CFR Part 50, Appendix H. The staff also reviewed the FSAR supplement to determine whether it provides an adequate description of the program. Furthermore, the staff reviewed the applicant's evaluation to determine whether it addressed the additional issues recommended in NUREG-1801 and confirmed that the AMP would adequately address these issues.

The applicant's AMP, Section B2.1.20 of Appendix B to the LRA, and the FSAR supplement provide a general description of the RVSP for Millstone, Units 2 and 3 and state that it is consistent with the guidelines of Section XI.M31, "Reactor Vessel Surveillance," of NUREG-1801. However, the staff notes that 10 CFR Part 50, Appendix H, requires licensees to submit any proposed changes to their RVSP withdrawal schedules to the NRC for review and approval. In addition, Items 5 through 7 in NUREG-1801, Section XI.M31, "Reactor Vessel Surveillance," provide recommendations for the withdrawal schedule of the RVSP capsules during the period of license renewal. The staff requested that the applicant identify how the Millstone, Units 2 and 3, capsule withdrawal schedule for the period of license renewal complies with Items 5 through 7 in NUREG-1801, AMP XI.M31.

The response for RAI B2.1.20-1(1), provided in a letter dated December 3, 2004, is discussed below for Items 5 through 7 of NUREG-1801 and the requirements of 10 CFR Part 50, Appendix H:

<u>Unit 2</u>

- Appendix H of 10 CFR Part 50 requires licensees to submit any proposed changes to their RVSP withdrawal schedules to the NRC for review and approval. The applicant stated that Dominion will revise the surveillance capsule withdrawal schedule from 40 to 60 years (54 EFPY) for Millstone Unit 2, consistent with NUREG-1801, AMP XI.M31, item 5. To ensure that this reporting requirement will carry forward after the Millstone operating license have been renewed, the staff is imposing the following condition in the renewed license for Millstone, Unit 2:

  > All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of ASTM E 185-82 to the extent practicable for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H.

- Item 5 in NUREG-1801, section XI.M31 provides guidelines for changes to the withdrawal schedule for capsules with a projected fluence of less than 60-year fluence at the end of 40 years. The applicant stated that Dominion is consistent with Item 5 of NUREG-1801, section XI.M31. The applicant is consistent with this item because their capsules will have a projected fluence of less than 60-year fluence at the end of 40 years. In addition the applicant will include withdrawal and testing of at least one of the three remaining capsules during the period of extended operation. This methodology is consistent with the recommendations of NUREG-1801, AMP XI.M31, Item 5 to withdraw a capsule during the period of extended operation to monitor the effects of long-term exposure to neutron irradiation, and therefore the staff finds this acceptable

- Item 6 of NUREG-1801, AMP XI.M31 provides guidelines for changes to the withdrawal schedule for capsules with a projected fluence exceeding the 60-year fluence at the end of 40 years. This item also recommends the applicant to withdraw one capsule at an outage in which the capsule receives a neutron fluence equivalent to the 60-year fluence and test the capsule in accordance with the requirements of ASTM E 185. The staff notes that this item does not apply to Millstone Unit 2 since it will not have surveillance capsules with a projected fluence exceeding the 60-year fluence at the end of 40 years.

- Item 7 of NUREG-1801, AMP XI.M31 provides a recommendation for applicants without in-vessel capsules to use alternative dosimetry to monitor neutron fluence during the period of extended operation. The applicant has three standby capsules, of which at least one will be removed during the period of extended operation. This will provide up to two capsules to monitor neutron fluence during the period of extended operation. In addition, the applicant has stated if the last Millstone Unit 2 capsule is removed prior to year 55, Dominion will provide additional dosimetry for the reactor pressure vessel. This is consistent with the recommendations of NUREG-1801 AMP XI.M31, Item 7, and the staff finds this acceptable.

For reactor vessels with high lead factors, the standby capsules are recommended by NUREG-1801, AMP XI.M31 to be removed and placed in storage. Therefore, the staff requested the applicant in RAI B2.1.20-1(2) to provide the lead factors for Millstone Unit 2. In addition, the applicant was requested to discuss how capsules with high lead factors are stored to ensure that they are not disposed.

In response to RAI B2.1.20-1(2), in a letter dated December 3, 2004, the applicant stated that the lead factor for the remaining Millstone Unit 2 surveillance capsules is approximately 1 (0.97 to 1.31). Therefore, the applicant will withdraw one or more of these capsules in the extended period of operation. The staff finds this response acceptable since the applicant has provided the requested information. This resolves RAI B2.1.20-1(2) for Millstone Unit 2. Since there can be up to two standby capsules in the Unit 2 reactor vessel, these capsules have the potential to be removed for storage. However, the staff notes that currently, there is no detailed guidance regarding the treatment of standby capsules. Therefore, the staff has imposed the following license condition to ensure that any surveillance capsules removed from the Millstone unit, without the intent to test them, are maintained in a condition which would permit their future use, including the period of extended operation, if necessary:

> All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of ASTM E 185-82 to the extent practicable for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H.

The imposition of this license condition is consistent with actions that the staff has taken with other, recent license renewal applicants with respect to the control of "standby" RPV surveillance capsules and reporting requirements.

Unit 3

- 10 CFR Part 50, Appendix H requires licensees to submit any proposed changes to their RVSP withdrawal schedules to the NRC for review and approval. The applicant stated that Dominion will revise the surveillance capsule withdrawal schedule from 40 to 60 years (54 EFPY) for Millstone Unit 3, consistent with NUREG-1801, AMP XI.M31, item 6. To ensure that this reporting requirement will carry forward after the Millstone operating license have been renewed, the staff is imposing the following condition in the renewed license for Millstone, Unit 3:

  > All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of ASTM E 185-82 to the extent practicable for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H.

- Item 5 in NUREG-1801, section XI.M31 provides guidelines for changes to the withdrawal schedule for capsules with a projected fluence of less than 60 year fluence at the end of 40 years. The applicant stated that the Millstone Unit 3 surveillance program consists of capsules with a projected fluence of less than 60 year fluence at the end of 40 years. The staff notes that this item does not apply to Millstone Unit 3 since it will not have surveillance capsules with a projected fluence of less than 60 year fluence at the end of 40 years.

- Item 6 of NUREG-1801, AMP XI.M31 provides guidelines for changes to the withdrawal schedule for capsules with a projected fluence exceeding the 60 year fluence at the end of 40 years. This item also recommends the applicant to withdraw one capsule at an outage in which the capsule receives a neutron fluence equivalent to the 60-year fluence and test the capsule in accordance with the requirements of ASTM E 185. The applicant stated that the Millstone Unit 3 surveillance program consists of capsules with a projected fluence exceeding the 60 year fluence at the end of 40 years. The applicant also stated that Millstone Unit 3 will withdraw capsule W when it receives a neutron fluence equivalent to 60 year fluence (approximately 54EFPY). This capsule will be tested in accordance with the requirements of ASTM E 185. The staff finds this response acceptable since it is consistent with the recommendations of NUREG-1801 AMP XI.M31, Item 6.

- Item 7 of NUREG-1801, AMP XI.M31 provides a recommendation for applicants without in-vessel capsules to use alternative dosimetry to monitor neutron fluence during the period of extended operation. The applicant stated that there are three standby capsules in Millstone

Unit 3 that will be removed prior to these capsules receiving neutron fluence equivalent to 60 year fluence. One of these may be selected to remain in place for the purpose of flux monitoring, but will be over-irradiated in terms of meaningful metallurgical information. If the last capsule is withdrawn prior to year 55, Dominion will provide additional dosimetry for the reactor pressure vessel. The staff finds this response acceptable since a standby capsule or additional dosimetry will be available to monitor neutron fluence during the period of extended operation consistent with the guidelines of NUREG-1801 AMP XI.M31, Item 7. For reactor vessels with high lead factors, the standby capsules are recommended by NUREG-1801, AMP XI.M31 to be removed and placed in storage. Therefore, the staff requested the applicant in RAI B2.1.20-1(2) to provide the lead factors for Millstone Unit 3. In addition, the applicant was requested to discuss how capsules with high lead factors are stored to ensure that they are not disposed.

The applicant stated that for Millstone Unit 3, the lead factors for the remaining standby surveillance capsules are approximately 4 (4.11 to 4.32). Therefore, in accordance with the recommendations of NUREG-1801 AMP XI.M31, Item 6, these standby capsules would be removed since further exposure would not provide meaningful metallurgical data. These removed standby capsules will be placed in storage for potential reuse should supplemental information be needed. The applicant also stated that storage of irradiated components in the spent fuel pool is administratively controlled by unit specific procedures. However, the staff notes that currently, there are no detailed guidance regarding the treatment of standby capsules. Therefore, the staff has imposed the following license condition to ensure that any surveillance capsules removed from the Millstone unit, without the intent to test them, are maintained in a condition which would permit their future use, including the period of extended operation, if necessary:

> All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of ASTM E 185-82 to the extent practicable for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H.

The imposition of this license condition is consistent with actions that the staff has taken with other, recent license renewal applicants with respect to the control of "standby" RPV surveillance capsules and reporting requirements.

FSAR Supplement. The applicant's FSAR supplement summary description for the RVSP is given in Section A2.1.20 and A2.1.19, of Appendix A to the Millstone Units 2 and 3 LRAs, respectively.

This summary description provides an acceptable general description of the RVSPs for Millstone Units 2 and 3. The staff finds that the FSAR supplement for this AMP is acceptable and provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its inspection of the applicant's program and its review of the information provided by the applicant to address the NUREG-1801 recommendation, the staff finds that the program is consistent with NUREG-1801 and adequately addresses the additional issues as recommended by NUREG-1801.

3.0.3.1.4 Steam Generator Structural Integrity Program

The applicant describes its steam generator structural integrity program (SGSIP) for Units 2 and 3 in LRA Appendix B, Section B2.1.22. The staff reviewed LRA Appendix B, Section

B2.1.22 to determine if the applicant has demonstrated that the program will adequately manage the applicable aging effects in the steam generators (SGs) during the period of extended operation, as required by 10 CFR 54.21(a)(3).

Summary of Technical Information in the Application. The applicant stated that the SGSIP is consistent with the 10 attributes of the program described in GALL AMP XI.M19, "Steam Generator Tube Integrity Program," with no exceptions. In addition, the program scope includes the Units 2 and 3 steam generator tubesheet and cladding. The applicant stated that its program is based on Nuclear Energy Institute (NEI) 97-06 (Steam Generator Program Guidelines) and the associated Electric Power Research Institute (EPRI) guidelines, which provide performance acceptance criteria and guidance for monitoring and maintaining SG tubes. The applicant's program includes performance acceptance criteria for structural integrity, accident-induced and operational leakage, as well as SG integrity and support elements. The program also includes preventive measures to mitigate degradation through control of primary side and secondary side water chemistry; assessment of degradation mechanisms; leakage monitoring; in-service inspection of the SG; and evaluation and plugging, as needed, to ensure the leakage integrity of the pressure boundary. The applicant stated that the tube inspection scope and frequency, tube plugging or repair, and leakage monitoring are in accordance with the Millstone Units 2 and 3 Technical Specifications.

The applicant stated that it currently participates in industry programs whose goals include the investigation of aging effects applicable to nickel-based alloys (i.e., primary water stress corrosion cracking in Alloy 600 base metal and Alloy 82/182 weld metals) and identification of appropriate aging management activities. The applicant commits to implementing the appropriate recommendations that result from this investigation. This commitment is identified in Appendix A, Table A6.0-1 of License Renewal Commitments, Item 14.

The applicant concludes that the SGSIP ensures that the effects of aging associated with the in-scope components will be adequately managed so that there is reasonable assurance that their intended functions will be maintained consistent with the current licensing basis (CLB) throughout the period of extended operation.

Staff Evaluation. The staff reviewed the information included in LRA Appendix B, Section B2.1.22 and the applicant's response to the staff's RAI, dated August 11, 2004, to ensure that the aging effects will be adequately managed so that the intended functions of the SG tubes will be maintained consistent with the CLB throughout the period of extended operation.

The 10 program attributes in the GALL SG Section XI.M19 provide detailed programmatic characteristics and criteria that the staff considers necessary to manage aging effects of the SG tubes and tube plugs. The GALL SG AMP recommends preventive measures to mitigate degradation phenomena; assessment of degradation mechanisms; in-service inspection of SG tubes to detect degradation; evaluation and plugging or repair, as needed, of the SG tubes; and leakage monitoring to ensure the leakage integrity of the pressure boundary. Although the applicant did not describe the program attributes in LRA Section B2.1.22, the applicant has stated that the program attributes are consistent with those stipulated in GALL SG AMP, Section XI.M19, without exceptions nor enhancements.

In addition, the applicant identifies the SGSIP as the AMP to manage the aging effect loss of material in the tubesheet and cladding. Currently, the GALL SG AMP does not address the SG tubesheet and its cladding; therefore, the staff asked the applicant to explain how SGSIP manages aging in those areas. Based on operating experience, cladding has not shown significant degradation. In addition, during routine SG tube inspections, the applicant would inspect the cladding and the tube-end welds as part of the SGSIP. If degradation is identified, the applicant would take appropriate measures to correct the problem. In its response to RAI B2.1.22-2, the applicant stated that although the scope of the GALL SG AMP only addresses the SG tubes, the SGSIP for Millstone Units 2 and 3 additionally addresses the secondary side of the steam generator tubesheet. The staff asked the applicant to discuss how the SGSIP manages the aging effects through the effective incorporation of the following program elements: Preventive Actions, Parameters Monitored/Inspected; Detection of Aging Effects, Monitor and Trending, and Acceptance Criteria. The five elements to manage the aging effects associated with the tubesheet are discussed below.

(1) Preventive Actions: The program includes preventive measures to mitigate degradation through control of primary side and secondary side water chemistry consistent with NEI 97-06 and GALL Section XI.M19. The applicant's SGSIP relies upon secondary systems chemistry control to prevent or mitigate initiation of degradation mechanisms or reduce rates of degradation in the tubesheet. The applicant identified loss of material as the aging effect for the tubesheet. The staff finds that the chemistry control for secondary systems acceptable because it will be effective in preventing or mitigating the secondary side tubesheet degradation.

(2) Parameters Monitored/Inspected: The applicant stated that the SGSIP identified loss of material as the aging effect for the uncladded secondary side of the tubesheet. The applicant will perform an assessment prior to the inspection to predict the expected amount of degradation. The applicant also stated that in addition to tubesheet secondary side inspection, it performs primary side inspections of the tubesheet. Secondary side visual inspections of the tubesheet are performed in accordance with the applicable guidance in NEI 97-06. The applicant's inspection procedures include remote and direct visual examination of the tubesheet's accessible areas for evidence of degradation. The applicant considers factors such as potential degradation mechanisms, industry operating experience and SG design when determining the appropriate inspection requirements. The staff finds that the inspection parameters monitored or inspected are acceptable because the inspection requirements provide reasonable assurance that the SGSIP will monitor the parameters necessary to prevent and mitigate degradation of the secondary side of the tubesheet.

(3) Detection of Aging Effects: The applicant stated that the SGSIP manages the aging effects for the tubesheet prior to the loss of intended function. Visual inspections of the secondary side of the tubesheets are performed in accordance with the guidance identified in NEI 97-06. Typically, the tubesheet in Millstone Unit 2 SGs is inspected every other refueling outage while the tubesheet in the Unit 3 SGs is inspected every outage. The applicant performs a degradation assessment before inspection in which it predicts the expected amount of degradation. Inspection frequencies are based on the results of the degradation assessments and the comparison of such assessments to the as-found inspection results. The applicant may perform visual inspections should the eddy current testing of the tubes indicate the presence of a foreign object. Loose parts or foreign objects are removed from the steam generators unless it can be shown that these objects would not represent any challenge to tube integrity. The staff finds that these are acceptable methods for identifying tubesheet degradation.

(4) Monitoring and Trending: Degradation is managed within the corrective action process to ensure that timely corrective and mitigative actions are performed as necessary. The applicant monitors and trends the tubesheet degradation found through inspections to assure that the intended function is maintained. The staff finds that the applicant's monitoring and trending activities follow GALL AMP Section XI.M19, and therefore, are acceptable.

(5) Acceptance Criteria: The applicant stated that the acceptance criteria for tubesheet secondary side inspections is based on the corrective action process and engineering analysis. Whenever degradation is identified, it is entered into the corrective actions program where an evaluation is performed. Deficiencies that may present a challenge for the component to complete its intended function are promptly corrected or evaluated to be acceptable. If an evaluation is performed without repair or replacement, an engineering analysis is executed to reassure that the intended function is maintained. The staff finds the acceptance criteria acceptable because they follow the GALL AMP Section XI.M19.

Operating Experience. In the fall of 1992, Millstone Unit 2 steam generators were replaced with Babcock and Wilcox steam generators. The pre-service inspection consisted of a 100 percent eddy current examination and it covered the full length of each tube from the hot leg plenum. The applicant did not identify any measurable flaws. During the February 2002 outage, the applicant performed a 100 percent full length bobbin examination of No. 1 SG. The applicant expanded the scope of examination to include locations of special interest tested with a rotating probe. The examinations were performed in the hot and cold leg areas, dings and dents. A visual inspection of the cold leg tubesheet surface of the secondary side revealed a foreign object lodged diagonally between pairs of tubes. The applicant was not successful in retrieving the object. No tubes were plugged in association with this object since no evidence of degradation was observed. The applicant will examine the tubes to verify that there has not been any change to these two tubes in the conditions evaluated.

The Millstone Unit 3 original SGs began commercial operation in the spring of 1986. During the September 2002 outage, the applicant performed a bobbin inspection on approximately 50 percent of the tubes in SGs A and C. The applicant expanded the scope of examination to include +Point™ coil inspections on special interest areas such as the hot leg expansion transitions, low row U-bends, dents and locations where the bobbin response was ambiguous. The inspection results showed seven tubes exhibiting anti-vibration bar wear, two tubes with loose part wear, one tube with an obstruction not allowing the insertion of a probe, and one tube with an single volumetric indication (SVI) and in contact with an adjacent lodged loose part. All of these tubes were preventively plugged. The tube with the lodged loose part had incurred minor damage and was stabilized and plugged. In addition, the applicant performed a 20 percent inspection expansion at top-of-tubesheet locations in both the hot and cold legs of SG A to address the inspection results related to loose part wear. The staff reviewed the annual inspection report and found the SG inspection results consistent with industry experience with similar models of SGs.

During the August 2004, outage, the applicant performed a bobbin inspection on approximately 50 percent of the tubes in SGs B and D in Unit 3. The applicant expanded the scope of the examination to include +Point™ coil inspection on special interest areas such as the hot leg expansion transitions, low row U-bends, dents and locations where the bobbin response was ambiguous. The inspection results showed two tubes with loose part wear, one tube with anti-vibration wear, one tube with a SVI exceeding the plugging limit and a cluster of five tubes identified with SVI signals. Of the cluster of five tubes, three were potentially caused by a loose part. Since the area is not accessible for visual inspection, all of the tubes were plugged and removed from service. One tube in the U-bend region was identified with an SVI. The applicant determined that this indication seems to be a manufacture defect, similar to the tubes plugged prior to startup. This indication was small and not detectable with the bobbin probe. This tube was plugged and removed from service.

No degradation of either the primary side or secondary side of the tubesheets has been identified for Millstone Units 2 and 3. The staff found these SG inspection results consistent with industry experience with similar models of SGs.

FSAR Supplement. The FSAR supplement for the SGSIP is discussed in LRA Appendix A, Sections A2.1.22 and A2.1.21 in the Millstone Unit 2 and Unit 3 LRAs, respectively. The staff verified that the information in the FSAR supplement provides an adequate summary of the program activities, and is consistent with Table 3.1-2 of NUREG-1800. The staff concludes that the information provided in the FSAR supplement for aging management of the steam generators is acceptable because it provides an adequate summary of the program activities, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review of the applicant's SGSIP and the consistency of this AMP to GALL AMP Section X1.M19, the staff concludes that the applicant has demonstrated that the effects of aging associated with the SGs will be adequately managed by the SGSIP so that the intended functions of the SGs will be maintained consistent with the current licensing basis for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate description of the program, as required by 10 CFR 54.21(d).

3.0.3.1.5 Summary of Conclusions for AMPs That Are Consistent With the GALL Report

On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. The staff concludes that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis (CLB) for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff reviewed the associated FSAR supplements for these AMPs and concludes that the FSAR supplements provide an adequate summary description of the programs, as required by 10 CFR 54.21(d).

3.0.3.2 AMPs that are Consistent with the GALL Report with Exceptions or Enhancements

In Appendix B of the LRA, the applicant indicated that the following AMPs were or will be consistent with the GALL Report with exceptions or enhancements:

- buried pipe inspection program (B2.1.4)
- chemistry control for primary systems program (B2.1.5)
- chemistry control for secondary systems programs (B2.1.6)

- closed-cycle cooling water system (B2.1.7)
- electrical cables and connectors not subject to 10 CFR 50.49 environmental qualification requirements (B2.1.8)
- electrical cables not subject to 10 CFR 50.49 environmental qualification requirements used in instrumentation circuits (B2.1.9)
- fire protection program (B2.1.10)
- flow-accelerated corrosion (B2.1.11)
- fuel oil chemistry (B2.1.12)
- inaccessible medium-voltage cables not subject to 10 CFR 50.49 environmental qualification requirements (B2.1.14)
- inservice inspection program: containment inspections (B2.1.16)
- inservice inspection program: reactor vessel internals (B2.1.17)
- inservice inspection program: systems, components and supports (B2.1.18)
- inspection activities: load handling cranes and devices (B2.1.19)
- service water system (open-cycle cooling) (B2.1.21)
- structures monitoring program (B2.1.23)
- tank inspection program (B2.1.24)
- bolting integrity program (B2.1.26)

For AMPs that the applicant claimed are consistent with the GALL Report with exceptions or enhancements, the staff performed an audit to confirm that those attributes or features of the program for which the applicant claimed consistency with the GALL Report were indeed consistent. The staff also reviewed the exceptions and enhancements to the GALL Report to determine whether they were acceptable and adequate. The results of the staff's audit and reviews are documented in the following sections.

3.0.3.2.1 Buried Pipe Inspection Program

<u>Summary of Technical Information in the Application</u>. The applicant's buried pipe inspection program is described in LRA Section B2.1.4, "Buried Pipe Inspection Program." In the LRA, the applicant stated that this is an existing program. This program is consistent, with exceptions and enhancements, with GALL AMPs XI.M28, "Buried Piping and Tanks Surveillance," and XI.M34, "Buried Piping and Tanks Inspection."

The applicant stated in the LRA that the buried pipe inspection program manages the aging effect of loss of material through the use of preventive measures (i.e., coating, wrapping, and cathodic protection) and inspections. Though preventive measures were applied to the external surfaces of the buried piping, no credit was taken for these measures in the determination of the aging effects for the underlying materials. The program evaluates the condition of the coatings and/or wraps as an indication of the condition of the underlying materials.

The applicant also stated in the LRA that the use of impressed-current cathodic protection for in-scope piping is limited to the Unit 2 off-gas pipeway and the Unit 3 supplementary leak collection-and-release system piping.

In addition, the applicant stated that a baseline inspection of the in-scope buried components, located in a damp soil environment, will be performed for a representative sample of each of the following combinations of material and protective measures: Unit 2 - carbon steel/coated, Unit 2 - carbon steel/wrapped, Unit 2 - cast iron/wrapped, Unit 3 - stainless steel/coated, Unit 3 - carbon steel/wrapped, Unit 3 - cast iron/wrapped, and Unit 3 - copper alloy/uncoated.

The program requires that the inspections be completed using available industry guidance such as the National Association of Corrosion Engineers' (NACE) Standard RP-0169, "Control of External Corrosion on Underground or Submerged Metallic Piping Systems," dated 1996.

Furthermore, the applicant stated that inspections will also be performed when the buried components are excavated for maintenance or for any other reason which will provide an effective method to evaluate the condition of the buried piping and protective coatings on a continuing basis.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's evaluation of this AMP are documented in its MPS audit and review report. Furthermore, the staff reviewed the exceptions and enhancements and their justifications to determine whether the AMP, with the exceptions and enhancements, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.4 of the LRA, the applicant stated that the buried pipe inspection program is consistent with GALL AMPs XI.M28 and XI.M34, with exceptions and enhancements. The buried pipe inspection program takes exception to the "scope of program" program element in that the NACE Standard RP-0169-96, "Control of External Corrosion on Underground or Submerged Metallic Piping Systems," dated 1996, may not have been utilized during initial installation of the piping in establishing the preventive measures, as recommended in the GALL Report.

The staff understands that NACE Standard RP-0169-96 may not have been utilized during installation of the in-scope buried piping. As an enhancement to the program scope, the applicant will perform baseline inspections of the in-scope buried piping located in a damp soil environment to develop a representative sample of each combination of material and protective measures identified in the program description. The inspections will include piping or valves and will provide an effective method for evaluating the condition of the buried components and protective coatings. The inspections will use available industry guidance such as NACE Standard RP-0169-96. With these inspections, the applicant's program for buried piping and valves will meet the intent of the GALL AMP XI.M28 with regard to establishing that the protective measures put in place during construction are effective. Therefore the staff finds this exception to be acceptable.

The buried pipe inspection program also takes exception to the "monitoring and trending" program element in that coating conductance and current requirement for cathodic protection are not trended versus time, as recommended in the GALL Report. Performance parameters of the impressed current cathodic protection systems are checked either monthly or quarterly and compared to predetermined values to verify proper operation.

The staff finds that the difference between trending of cathodic protection versus time and the checking of impressed cathodic protection system current either monthly or quarterly and comparing these values with predetermined values for proper operation is insignificant since aging effects are typically manifested over several years. The staff reviewed the operating experience associated with the buried pipe inspection program and identified no specific instances where degradation had occurred for the buried piping with cathodic protection. Since the verification of performance parameters for the impressed current cathodic protection system ensures proper operation, the intent of the GALL program element is satisfied. The staff concludes that the monthly or quarterly periodicity of checking the cathodic protection system against predetermined values adequately manages the aging effects of buried pipe components during the period of extended operation. The staff finds this exception to be acceptable.

The applicant stated in the LRA that it will enhance the buried pipe inspection program scope of program and detection of aging effects program elements such that a baseline inspection will be performed on a representative sample of different piping materials with different protective measures for the buried piping located in a damp soil environment. The inspections will include a short length of piping and any associated valves for each combination of material and burial condition.

The applicant stated in the LRA that these inspections, using available industry guidance such as NACE Standard RP-0169-96, will provide an effective method to evaluate the condition of the buried piping and protective coatings. With these inspections, the program for buried piping and valves will be consistent with the programs described in GALL AMP XI.M28, "Buried Piping and Tanks Surveillance," with regard to establishing that the protective measures put in place during construction are effective. Components protected by cathodic protection will not be inspected. The staff finds that although the applicant stated that it will perform baseline inspections for in-scope buried piping, it does not specify the type of inspection. The applicant was asked to justify the type of inspection (only visual), or provide other means of detection such as Brinnell hardness, destructive testing, or other mechanical means such as scraping, chipping, etc. By letter dated July 7, 2004, the applicant modified its commitment such that inspection will be performed by visual, and mechanical or other appropriate methods. These inspections will be initiated prior to the period of extended operation. This commitment is identified on the applicant's license renewal commitment list in the MPS LRA, Appendix A, Table A6.0-1, as Item 3, and in the July 7, 2004, LRA supplement. On the basis that these inspections will cause the applicant's program to be consistent with GALL AMP XI.M28, the staff finds this enhancement to be acceptable.

The applicant also stated that it will enhance the "scope of program" and "detection of aging effects" program elements for the buried pipe inspection program such that the maintenance and work control procedures will be revised to ensure that inspections of buried components are performed when the piping is excavated during maintenance or for any other reason. These inspections will ensure on a continuing basis that the condition of the buried and protective coating and wrapping remains intact so they will be able to perform their intended function.

The staff identified the following difference regarding the detection of aging effects program element:

> The applicant stated in the discussion of MPS LRA Table 3.3.1, Item 29 that components (aluminum bronze, brass, cast iron, cast steel) in open-cycle and

closed-cycle cooling water systems, and the ultimate heat sink, are subject to loss of material due to selective leaching. Management of this aging effect is assigned to the work control process and buried pipe inspection program.

GALL AMP XI.M.33, "Selective Leaching of Materials," recommends a combination of one-time inspection and hardness measurement. Since selective leaching is a slow acting corrosion process, it is recommended that this be performed as late in the plant life as possible, preferably after 30 years of service.

Selective leaching generally does not cause changes in dimension and is difficult to detect by visual inspection. Hence, a Brinnell hardness test on the inside surfaces of a selected set of components is recommended to determine if selective leaching has occurred. Alternatively, if a component is removed from service for whatever reason, a destructive test could be performed.

As documented in the staff's MPS audit and review report for the in the buried piping inspection program, the applicant will revise its maintenance and work control procedures to ensure that inspections of buried components are performed when the piping is excavated during maintenance or for any other reason. The applicant stated, in the LRA, that these inspections will ensure on a continuing basis that the condition of the buried and protective coating and wrapping remain intact so they will be able to perform their intended function. With these inspections, the applicant's program for buried piping will be consistent with GALL AMP XI.M34, "Buried Piping and Tanks Inspection." This commitment is identified on the applicant's license renewal commitment list in the MPS LRA, Appendix A, Table A6.0-1, as Item 4, and the July 7, 2004, LRA supplement. On the basis that these inspections will cause the applicant's program to be consistent with the GALL AMP XI.M34, the staff finds this enhancement to be acceptable.

Operating Experience. The staff reviewed operating experience for the applicant's buried pipe inspection program. The review indicated the buried pipe inspection program is effective in identifying age-related degradation, implementing repairs, and maintaining the integrity of buried pipe. The following examples, based on review of condition reports generated under the corrective action program, are representative of internal operating experience at MPS and were considered for evaluating the effectiveness of the program.

During performance of cathodic protection system maintenance on rectifiers, the applicant noted that one of its anodes had a low reading. As a result, a work order was developed to perform excavation as required to facilitate the replacement of the anode. Contingency plans were made to replace additional anodes in system if it was discovered that the affected node had been sacrificed. Subsequently, cathodic protection vendor representatives visited the site and performed a walkdown of the off-gas cathodic protection system. Further evaluations and discussions with the applicant's technical personnel included review of photographs of the anodes that were recently replaced and a briefing on the recent history of the system. Agreement was reached that a wholesale replacement of all the anodes in the system was not warranted based on the condition of the affected anode.

The applicant stated in the LRA that corrosion mechanisms seen in the firewater piping are similar to those seen in the domestic water (city water) piping. These mechanisms are well known and do not require sampling to determine their cause or extent. Additionally, the fire water system is flow-tested every three years, and no significant degradation in overall loop flow has been noted. Further, due to the recent decommissioning of Unit 1, several parts of the site's firewater above ground piping have been removed and made available for detailed inspection.

All of the Unit 1 piping segments had been in place and filled with water for approximately 30 years. No significant corrosion was identified in the above ground piping. While one piece of unlined 6-inch carbon steel pipe had about ¼-inch of corrosion buildup, this buildup was evaluated and determined to not restrict flow nor challenge the system's pressure boundary.

The rest of the aboveground piping segments inspected were clean. Since the fire pumps are run frequently, the piping associated with the pumps' suction lines and tank recirculation lines was considered subject to corrosion buildup. During the fire tank replacement project, segments of the firewater suction piping and tank recirculation piping were disassembled and inspected. When disassembled, these lines were observed to have a significant corrosion buildup, but this corrosion buildup did not affect pump performance, which was measured using lines that frequently experienced flow. Much of this corroded piping, and the tanks themselves, were replaced as part of the fire tank replacement project.

On the basis of its review of the above operating experience, the staff concludes that the buried pipe inspection program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.4 of the MPS Unit 2 LRA and Appendix A, Section A2.1.3 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the buried pipe inspection program, as supplement by the July 7, 2004, letter. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement and the July 7, 2004, letter sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exceptions and the associated justifications and determined that the AMP, with the exceptions is adequate to manage the aging effects for which it is credited. Also, the staff has reviewed the enhancements and confirmed that the implementation of the enhancements prior to the period of extended operation would result in the existing aging management program being consistent with the GALL Report AMP to which it was compared. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.2 Chemistry Control for Primary Systems Program

Summary of Technical Information in the Application. The applicant's chemistry control for primary systems program is described in LRA Section B2.1.5, "Chemistry Control for Primary Systems Program." In the LRA, the applicant stated that this is an existing MPS program. This program is consistent, with an exception, with GALL AMP XI.M2, "Water Chemistry."

The applicant stated in the program basis document that the chemistry control for primary systems program includes periodic monitoring and control of known detrimental contaminants such as chlorides, fluorides, dissolved oxygen, and sulfate concentration below the levels known to result in loss of material or cracking in accordance with the Electric Power Research Institute (EPRI) Technical Report TR-105714, "PWR Primary Water Chemistry Guidelines," Revision 4, dated March 1999.

The applicant also stated in the program basis document that the chemistry control for primary systems program monitors the fluids within the following systems and components: reactor coolant system, emergency core cooling system (refueling water storage tank and safety injection accumulator tanks), chemical and volume control system (boric acid storage tank, letdown demineralizer (Unit 2), and volume control tank (Unit 2)), spent fuel pool cooling and purification system (spent fuel pool demineralizer), sampling system, primary makeup water (primary water storage tank (Unit 2), primary grade water storage tank (Unit 3), and demineralized water storage tank (Unit 3)).

The applicant stated in the program basis document that the monitored chemistry parameters are based on information provided in EPRI TR-105714 and the requirements of the plant technical specifications and the plant technical requirements manual. The monitored parameters include the following items: chlorides, conductivity, dissolved oxygen, fluorides, hydrogen, hydrogen peroxide, lithium, pH, and sulfates. In addition, the applicant stated in the LRA that verification of the effectiveness of the chemistry control for primary systems program is provided by the work control process.

<u>Staff Evaluation</u>. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's audit evaluation are documented in the MPS audit and review report. Furthermore, the staff reviewed the exception and its justification to determine whether the AMP, with the exception, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.5 of the LRA, the applicant stated that the chemistry control for primary systems program is consistent with GALL AMP XI.M2, with an exception. The chemistry control for primary systems program takes exception to the "scope of program" program element in that the applicant's program is based on Revision 4 of EPRI guideline TR-105714 (the applicable EPRI guideline for the primary water chemistry systems program), rather than Revision 3 or a later revision approved by the NRC, as recommended by the GALL Report. Revision 4 of EPRI TR-105714 has not yet been approved by the NRC.

The later revision of the EPRI guideline incorporates additional industry operating experience not available at the time of the issuance of the earlier revision and is in keeping with the latest industry practice. Further, the later revision is more conservative with regard to monitoring and control of primary chemistry parameters. On the basis that the later revision of the EPRI guidance applies more stringent guidelines than the earlier version, the staff finds this exception to be acceptable.

<u>Operating Experience</u>. The applicant stated in the program basis documents that the chemistry control for primary systems program is based on the EPRI guidelines to take advantage of industry operating experience as is done in the GALL Report. The staff reviewed condition reports and interviewed the applicant's technical staff, which did not reveal any examples where the loss of intended function occurred as the result of inadequate primary water chemistry

controls. The staff determined that the operating experience indicates that the chemistry control for primary systems program creates an environment that minimizes material degradation. The staff's review of the applicant's operating experience indicates that primary water systems chemistry parameters can drift from their acceptable ranges, but the chemistry control for primary systems program is effective in identifying these anomalies, implementing effective corrective action, and trending the parameters. When chemistry results reach a level at which loss of material or cracking could become a concern related to the loss of intended function, immediate corrective actions have been implemented to preclude the necessity for a plant shutdown.

On the basis of its review of the above operating experience, the staff concludes that the chemistry control for primary systems program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A.2.1.5 of the MPS Unit 2 LRA and Appendix A, Section A2.1.4 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the chemistry control for primary systems program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exception and the associated justifications and determined that the AMP, with the exception is adequate to manage the aging effects for which it is credited. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.3 Chemistry Control for Secondary Systems Program

Summary of Technical Information in the Application. The applicant's chemistry control for secondary systems program is described in LRA Section B2.1.6, "Chemistry Control for Secondary Systems Program." In the LRA, the applicant stated that this is an existing program. This program is consistent, with an exception, with GALL AMP XI.M2, "Water Chemistry."

The applicant stated in the LRA that this program includes periodic monitoring and control of known detrimental contaminants such as chlorides, sodium, dissolved oxygen, and sulfate concentrations below the levels known to result in loss of material or cracking in accordance with EPRI Technical Report TR-102134, "PWR Secondary Water Chemistry Guidelines," Revision 5, dated May 3, 2000.

As documented in the staff's MPS audit and review report for the chemistry control for secondary systems program, the applicant stated that the chemistry control for secondary systems program ensures that the effects of aging are managed for the main steam, feedwater, and auxiliary feedwater systems, as well as the following plant-specific systems: for MPS Unit 2, sampling, moisture separation and re-heat, condensate, condensate storage and transfer, feedwater heater vents and drains, plant heating and condensate recovery, secondary chemical addition, extraction steam, turbine gland sealing steam, and condensate demineralizer mixed bed system; for MPS Unit 3, auxiliary steam, auxiliary boiler condensate and feedwater, reactor plant sampling, steam generator blowdown, and condensate make-up and draw-off systems.

The applicant also stated, as documented in the staff's MPS audit and review report for the chemistry control for secondary systems program, that in accordance with EPRI TR-102134, Revision 5, dated May 3, 2000, the monitored parameters include cation conductivity, chloride, copper, dissolved oxygen, hydrazine, iron, lead, pH, sodium, specific conductivity, and sulfate.

Additionally, the applicant stated, as documented in the staff's MPS audit and review report for the chemistry control for secondary systems program, that verification of the effectiveness of the secondary systems water chemistry program is provided by the work control process, which provides the opportunity to visually inspect the internal surfaces of components during preventive and corrective maintenance activities on an ongoing basis. The work control process involves a sufficient number of components such that it provides an ongoing representative indication of the integrity of components affected by the chemistry control tasks.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's audit evaluation are documented in the MPS audit and review report. Furthermore, the staff reviewed the exception and its justification to determine whether the AMP, with the exception, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.6 of the LRA, the applicant stated that the chemistry control for secondary systems program is consistent with GALL AMP XI.M2, with an exception. The chemistry control for secondary systems program takes exception to the "scope of program" element in that the applicant's program is based on Revision 5 of EPRI guideline EPRI TR-102134 (the applicable EPRI guideline for the secondary water chemistry systems program), rather than Revision 3 or a later revision approved by the staff, as recommended by the GALL Report. Revision 5 of EPRI TR-102134 has not yet been approved by the staff.

The later revision of the EPRI guideline incorporates additional industry operating experience not available at the time of the issuance of the earlier revision and is in keeping with the latest industry practice. Further, the later revision is more conservative with regard to monitoring and control of secondary chemistry parameters. On the basis that the later revision of the EPRI guidance applies more stringent guidelines than the earlier version, the staff finds this exception to be acceptable.

Operating Experience. The applicant stated in the program basis documents that the chemistry control for secondary systems program is based on the EPRI guidelines to take advantage of industry operating experience as is done in the GALL Report. The staff reviewed condition reports and interviewed the applicant's technical staff, which did not reveal any examples where the loss of intended function occurred as the result of inadequate secondary systems water chemistry controls. The staff determined that the operating experience indicates that the chemistry control for secondary systems program creates an environment that minimizes material degradation. The staff's review of the applicant's operating experience indicates that chemistry parameters can drift from their acceptable range, but the chemistry control for secondary systems program is effective in identifying these anomalies, implementing corrective action, and trending the parameters. When chemistry results reach a level at which loss of material or cracking could become a concern (i.e., potentially affect the intended function), plant power reductions are implemented until corrective actions are completed.

On the basis of its review of the above operating experience, the staff concludes that the chemistry control for secondary systems program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.6 of the MPS Unit 2 LRA and Appendix A, Section A2.1.5 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the chemistry control for secondary systems program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exception and the associated justifications and determined that the AMP, with the exception is adequate to manage the aging effects for which it is credited. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.4 Closed-Cycle Cooling Water System

Summary of Technical Information in the Application. The applicant's closed-cycle cooling water system program is described in LRA Section B2.1.7, "Closed-Cycle Cooling Water System." In the LRA, the applicant stated that this is an existing MPS program. This program will be consistent, with an exception, with GALL AMP XI.M21, "Closed-Cycle Cooling Water Systems." Also, in an LRA supplement letter dated July 7, 2004, the applicant added an enhancement to its closed-cycle cooling water system program.

The applicant stated in the LRA that the closed-cycle cooling water (CCCW) system program manages the effects of loss of material through maintenance of process fluid chemistry and performance monitoring of CCCW systems to ensure parameters remain within acceptable limits. The program is based on guidance contained in EPRI Technical Report TR-107396, "Closed Cooling Water Chemistry Guidelines," dated November1997.

The applicant stated, as documented in the staff's MPS audit and review report for the closed-cycle cooling water system program, that the CCCW system program monitors fluids and components within the following in-scope systems: for Unit 2 - chilled water, reactor building, closed cooling water, emergency diesel generator (jacket cooling water) systems; and for Unit 3 - reactor plant component cooling water, emergency diesel generator (jacket cooling water), control building chilled water, safety injection pumps cooling, and charging pumps cooling system.

Additionally, the applicant stated, as documented in the staff's MPS audit and review report for the closed-cycle cooling water system program, that the CCCW system program monitors only the CCCW side of the heat exchangers that are within the scope of license renewal. The service water system (open-cycle cooling) program monitors the service water side of the heat exchangers.

The applicant also stated, as documented in the staff's MPS audit and review report for the closed-cycle cooling water system, that the parameters that are currently monitored by the CCCW system program are in accordance with the closed cooling water system chemistry control procedure and EPRI TR-107396. The following parameters are monitored or used as a diagnostic tool as part of this program: adenosine triphosphate, ammonia, chloride, conductivity, copper, dissolved oxygen, fluoride, Freon, gross activity, hydrazine, iron, LCS-60 (as nitrogen dioxide), LCS-1200 (as molybdenum), pH, tolyltriazole, total organic carbon, and total petroleum.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's audit evaluation of this AMP are documented in the MPS audit and review report. Furthermore, the staff reviewed the exception and enhancement and their justifications to determine whether the AMP, with the exception and enhancement, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.7 of the LRA and the LRA supplemental letter dated, July 7, 2004, the applicant stated that the closed-cycle cooling water system program is consistent with GALL AMP XI.M21, with an exception and enhancement. The closed-cycle cooling water system program takes exception to the "parameters monitored/inspected," "detection of aging effects," "monitoring and trending," and "acceptance criteria" program elements in that this program does not include performance testing of the CCCW side of heat exchangers.

For the "parameters monitored/inspected" program element associated with the exception taken by the applicant, the GALL Report states that the AMP monitors the effects of corrosion by surveillance testing and inspection in accordance with standards in EPRI TR-107396 to evaluate system and component performance. For pumps, the "parameters monitored/inspected" include flow and discharge and suction pressures. For heat exchangers, the "parameters monitored/inspected" include flow, inlet and outlet temperatures, and differential pressure.

The applicant stated, in the LRA, that the parameters recommended in the GALL Report for a heat exchanger are not specifically monitored by the CCCW program to indicate corrosion buildup. Instead, the CCCW program relies on the use of corrosion inhibitors to minimize and to maintain heat exchanger performance. The applicant also stated, as documented in the staff's MPS audit and review report for the CCCW system program, that the heat exchangers for the CCCW system use service water as the cooling medium and are monitored, inspected, and trended on the service side by the service water program, as described in the service water system (open-cycle cooling) program. The staff has approved, in GL 89-13, "Service Water System Problems Affecting Safety-Related Equipment," dated July 18, 1989, the performance of regular, frequent cleaning of the service water side in lieu of thermal performance testing.

The applicant added, as documented in the staff's MPS audit and review report for the CCCW system program, that MPS maintains low corrosion rates on the closed-cycle cooling water side by using corrosion inhibitors. Operating experience indicates that the corrosion of the CCCW side of the heat exchangers is not a concern. Inspections of the internal piping surfaces, performed by the applicant during normal maintenance activities, indicate that corrosion was not occurring. Volumetric inspections of piping, and eddy current testing and visual inspections of heat exchanger tubes also showed no signs of corrosion activity. Performance testing of the CCCW side of heat exchangers is not performed at MPS.

For the "detection of aging effects" program element associated with the exception taken by the applicant, the GALL Report states that control of water chemistry does not preclude corrosion at locations of stagnant flow conditions or crevices. Degradation of a component due to corrosion would result in degradation of system or component performance. The extent and schedule of inspections and testing in accordance with EPRI TR-107396 assure detection of corrosion before the loss of intended function of the component. Performance and functional testing in accordance with EPRI TR-107396, ensures acceptable functioning of the CCCW system or components serviced by the CCCW system. For systems and components in continuous operation, performance adequacy is determined by monitoring data trends for evaluation of heat transfer fouling, pump wear characteristics, and branch flow changes. Components not in operation are periodically tested to ensure operability.

The applicant stated in the LRA, that thermal performance testing of the closed-cycle cooling heat exchangers is not performed, so the parameters specified in GALL AMP XI.M21 are not periodically monitored. The CCCW system program eliminates the need for this monitoring by the use of corrosion inhibitors.

The applicant also stated, as documented in the staff's MPS audit and review report for the CCCW system program, that the CCCW system program includes both aging effect mitigation activities (chemistry control) and performance monitoring activities, neither of which directly detects aging effects. The identification of out-of-specification water chemistry conditions or declining component performance indicates the potential for component degradation. The applicant added that monitoring the chemistry of the in-scope CCCW system is generally performed weekly with additional testing performed monthly and/or quarterly. Performance testing of the in-scope pumps is performed quarterly as part of the inservice testing program or diesel engine surveillance. Performance testing of the CCCW side of the heat exchangers is not performed at MPS.

For the "monitoring and trending" program element associated with the exception taken by the applicant, the GALL Report states that the frequency of sampling water chemistry varies and can occur on a continuous, daily, weekly, or as needed basis, as indicated by plant operating conditions. Per EPRI TR-107396, performance and functional tests are performed at least every 18 months to demonstrate system operability, and tests to evaluate heat removal capability of the system and degradation of system components are performed every five years. The testing intervals may be adjusted on the basis of the results of the reliability analysis, type of service, frequency of operation, or age of components and systems.

The applicant stated in the LRA that periodic performance tests are not performed for CCCW system heat exchangers. As a result, monitoring of heat exchanger flow, inlet and outlet temperatures, and differential pressure is not performed and this data is not trended. The CCCW system program relies on the use of corrosion inhibitors to minimize the effects of corrosion and to maintain heat exchanger performance, eliminating the need for periodic performance testing.

The applicant stated, as documented in the staff's MPS audit and review report for the closed-cycle cooling water system program, that water chemistry parameters are monitored and the results are trended to provide timely indication of abnormal chemistry conditions. Chemistry supervisors and control room personnel are notified and determine the need for additional sampling, analysis, and corrective actions when the established limits are exceeded. If out-of-specification parameters are deemed to promote accelerated corrosion or produce a component or system failure, a condition report is initiated in accordance with the corrective action program. Trending of chemistry data provides a basis for confirming that sampling frequencies are appropriately set to continue the effective monitoring of chemistry trends. Component performance is also monitored and trended to detect potential degradation before any loss of intended function. If monitored parameters are outside proceduralized ranges or values, chemistry supervisors and control room personnel are notified and a condition report is initiated in accordance with the corrective action program.

During the audit and review, the staff noticed a footnote in the monitoring and trending section of the closed-cycle cooling water system program, as documented in the staff's MPS audit and review report, which stated that, heat exchangers cooled by service water are performance monitored, inspected, and trended on the service water side as part of the service water system program. The staff reviewed the service water system (open-cycle cooling) program, as documented in the staff's MPS audit and review report, and found that performance testing is done on only some heat exchangers, while the above footnote implies that performance testing is done on all heat exchangers. The staff requested that the applicant provide clarification for this footnote. The applicant concurred with the staff that there was an error in the above mentioned footnote. The applicant revised the footnote to read, "Not all the CCCW heat exchangers. . ." The staff reviewed the applicant response, as documented in the staff's MPS audit and review report, and concludes that concerns related to the footnote in the CCCW are resolved.

In addition, during the audit, the staff asked the applicant to explain how performance of the heat exchangers will be monitored and trended since the applicant is taking an exception to the heat exchanger performance monitoring approach, as recommended by GALL AMP XI.M21. In its response during the audit, the applicant presented a pump summary report for Unit 3 for the period of January 1, 1999 through April 1, 2004; and a pump summary report for Unit 2 for the period of January 1, 1999 through March 31, 2004. During the audit, the staff reviewed the data and found that no degradation was identified. The staff finds the pump data to be acceptable as documented in the audit and review report.

For the "acceptance criteria" program element associated with the exception taken by the applicant, the GALL Report states that corrosion inhibitor concentrations are maintained within the limits specified in the EPRI water chemistry guidelines for CCCW. System and component performance test results are evaluated in accordance with the guidelines of EPRI TR-107396. Acceptance criteria and tolerances are also based on system design parameters and functions.

The applicant stated in the LRA that periodic performance testing of CCCW system heat exchangers is not performed. Therefore, the analysis and trending of system and component performance test results described in GALL AMP XI.M21 cannot be performed. The applicant also stated that lack of negative operating experience indicates that this is acceptable.

Additionally, the applicant stated, as documented in the staff's MPS audit and review report for the closed-cycle cooling water system program, that the acceptance criteria reflect EPRI guidelines for parameters in the CCCW systems that have been shown to contribute to component degradation. Adherence to the guidelines minimizes loss of material and detects potential component degradation before the loss of intended function occurs. The applicant stated that system and component performance test results are evaluated in accordance with procedural requirements that meet or exceed EPRI guideline requirements.

During the audit and review, the staff noted that there was not sufficient information available to provide a basis for accepting the applicant's exception as stated in the AMP for the CCCW system program. In subsequent discussions with the staff, the applicant proposed the addition of an enhancement to the CCCW system program and documented the enhancement in an LRA supplement letter dated July 7, 2004. The applicant committed, in the LRA supplement letter, that baseline inspections of the CCCW side of a sample of closed-cycle cooling heat exchangers will be performed to verify that the corrosion control program is acceptable and heat exchangers performance is maintained.

On the basis of its review of the CCCW heat exchanger operating data and the additional commitment to perform the inspection, as described in the enhancement to the CCCW system program, the staff finds the exception to be acceptable. This commitment is identified in Appendix A, Table A6.0-1 License Renewal Commitments, Item 29 for MPS Unit 2 and Item 30 for MPS Unit 3. The enhancements are described in detail below.

The applicant stated in an LRA supplement letter dated July 7, 2004, that it will enhance the CCCW system program "parameters monitored/inspected," "detection of aging effects," and "monitoring and trending" program elements by performing a baseline visual inspection of the accessible areas of the heat exchanger shell side of a sample of CCCW heat exchangers prior to the period of extended operation. The inspection will verify that the chemistry control portion of the closed-cycle cooling water system program is adequately maintaining the corrosion control of the closed-cycle cooling heat exchangers.

The applicant stated that the parameters recommended by the GALL Report to be monitored for a heat exchanger are not specifically monitored by the CCCW system program for corrosion buildup indication. The applicant stated, in the LRA supplement letter dated July 7, 2004, that instead, baseline inspections of the CCCW side of a sample of closed-cycle cooling heat exchangers will be performed to verify that the corrosion control program is acceptable and that the heat exchanger performance is maintained. On the basis of its review of the CCCW heat exchanger operating data and the additional commitment to perform the inspection, described in the LRA supplement letter for the CCCW system program, the staff finds the enhancement to be acceptable. The staff finds this enhancement is required and is acceptable as any such changes will provide additional assurance that the effects of aging will be adequately managed.

The applicant stated in the LRA that thermal performance testing of the closed-cycle cooling heat exchangers is not performed on most heat exchangers. Instead, the applicant stated, in its LRA supplement letter dated July 7, 2004, that baseline inspections of the CCW side of a sample of closed-cycle cooling heat exchangers will be performed to verify that the corrosion control program is acceptable, heat transfer fouling is not occurring, and heat removal capability is maintained. On the basis of its review of the CCCW heat exchanger operating data and the additional commitment to perform the inspection, described in the LRA supplement letter for the CCCW system program, the staff finds this enhancement is required and is acceptable as any such changes will provide additional assurance that the effects of aging will be adequately managed.

Operating Experience. The staff reviewed operating experience for the applicant's CCCW system program. The applicant stated in the LRA that operating experience indicates that chemistry parameters and component performance can drift from their acceptable ranges, but that the CCCW system program is effective in identifying these anomalies, implementing corrective action, and trending the parameters. The applicant also stated that when chemistry results reach a predetermined level, corrective actions are properly completed to return the parameter to within acceptable limits, or compensatory measures are implemented. Similarly, supervisors and control room personnel are notified when component performance falls outside proceduralized ranges or values, and a condition report is initiated in accordance with the corrective action program. During discussions with the staff, the applicant's technical staff indicated that, to the best of its knowledge, there has not been a loss of intended function for the components managed by the CCCW system program.

On the basis of its review of the above operating experience, the staff concludes that the CCCW system program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.7 of the MPS Unit 2 LRA and Appendix A, Section A2.1.6 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the CCCW system program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exception and the associated justifications and determined that the AMP, with the exception is adequate to manage the aging effects for which it is credited. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.5 Electrical Cables and Connectors Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Summary of Technical Information in the Application. The applicant's program for electrical cables and connectors not subject to 10 CFR 50.49 EQ requirements is described in LRA Section B2.1.8, "Electrical Cables and Connectors Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." In the LRA, the applicant stated that this is a new program that will be established prior to the period of extended operation. This commitment is identified on the applicant's license renewal commitment list in the MPS Units 2 and 3 LRAs, Appendix A, Table A6.0-1, as Item 5. This program will be consistent, with an enhancement, with GALL AMP XI.E1, "Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements."

The applicant stated in the LRA that this program will include electrical cables and connections within the scope of license renewal that are exposed to an adverse localized environment but are not subject to the EQ requirements of 10 CFR 50.49. Connection types within the scope of the program include connectors, fuse holders, splices, and terminal blocks. Fuse holders (including fuse clips and fuse blocks) are included consistent with Interim Staff Guidance (ISG)-5, "Identification and Treatment of Electrical Fuse Holders for License Renewal," dated March 10, 2003. Adverse local environments include heat, radiation, or moisture local to the cables or connections. The applicant also stated in the LRA that this program will manage the aging effects of cracking and embrittlement to ensure that the cables and connections within the scope of the program are capable of performing their intended function. The program will sample and inspect cables and connections from accessible areas having an adverse localized environment, in a manner intended to also represent, with reasonable assurance, cables and connectors in inaccessible areas with an adverse localized environment.

The applicant stated in the LRA that the inspection plans will be developed consistent with GALL AMP XI.E1 and considering the technical information and guidance contained in EPRI Technical Report TR-109619, "Guideline for the Management of Adverse Localized Equipment Environments," dated June 1999, IEEE Standard P1205-2000, "IEEE Guide for Assessing, Monitoring, and Mitigating Aging Effects on Class 1E Equipment Used in Nuclear Power Generating Stations," NUREG/CR-5643, "Insights Gained from Aging Research," dated March 1992, and SAND96-0344, "Aging Management Guideline for Commercial Nuclear Power Plants - Electrical Cable and Terminations," dated September 1996. This program will use a sampling methodology based on a recognized industry or military standard.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's audit evaluation are documented in the MPS audit and review report. Furthermore, the staff reviewed the enhancement and its justification to determine whether the AMP, with the enhancement, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.8 of the LRA, the applicant stated that the program for electrical cables and connectors not subject to 10 CFR 50.49 EQ requirements will be consistent with GALL AMP XI.E1, with an enhancement. The applicant stated that it will enhance the "detection of aging effects" program element such that initial visual inspections for representative samples of accessible non-EQ insulated cables and connections will be performed and applicable fuse holders will be tested between year 30 and the end of the current operating license. Subsequent confirmation of ambient conditions and fuse holder testing will be performed at least once every 10 years during the period of extended operation.

For the "Detection of the Aging Effects" program element associated with the enhancement by the applicant, the GALL Report states that conductor insulation aging degradation from heat, radiation, or moisture in the presence of oxygen causes cable and connection jacket surface anomalies. Accessible electrical cables and connections installed in adverse localized environments are visually inspected at least once every 10 years. This is an adequate period to preclude failures of the conductor insulation since experience has shown that aging degradation is a slow process. A 10-year inspection frequency will provide two data points during a 20-year period, which can be used to characterize the degradation rate. The first inspection for license renewal is to be completed before the period of extended operation.

In a letter dated March 10, 2003, (ML030690512), the NRC forwarded to the Nuclear Energy Institute (NEI) and Union of Concerned Scientists interim staff guidance (ISG)-5 for the identification and treatment of electrical fuse holders for license renewal. In ISG-5, the staff indicated that fuse holders should be scoped, screened, and included in the AMR in the same manner as terminal blocks and other types of electrical connections that are currently being treated in the process. Further, this applies to fuse holders that are not part of a larger assembly such as switchgear, power supplies, power inverters, battery chargers, circuit boards, etc. Fuse holders in these types of active components would be considered to be piece parts of the larger assembly and not subject to an AMR.

Operating experience, as discussed in NUREG-1760, "Aging Assessment of Safety-Related Fuses Used in Low- and Medium-Voltage Applications in Nuclear Power Plants," identified that aging stressors such as vibration, thermal cycling, electrical transients, mechanical stress, fatigue, corrosion, chemical contamination, or oxidation of the connections surfaces can result in fuse holder failure. Visual inspection alone may not be sufficient to detect the aging effects from fatigue, mechanical stress, vibration, or corrosion of the metallic clamps of the fuse holders. Other methods of aging detection may be necessary.

The applicant, in MPS LRA Table A6.0-1, License Renewal Commitments, Commitment Number 6, committed to evaluate external fuse holders before the beginning of the extended period of operation for possible aging effects. The staff reviewed the applicant's commitment and finds that evaluation of the external fuse holders before the beginning of the extended period of operation is not consistent with the staff's position as described in ISG-5. Also, in the LRA, the applicant credits the program for the electrical cables and connectors not subject to 10 CFR 50.49 EQ requirements as the applicable AMP. The staff reviewed the program for electrical cables and connectors not subject to 10 CFR 50.49 EQ requirements and finds that, with respect to fuse holders, this AMP only addresses the aging effects of insulation portions of fuse holders and that it does not address the aging effects from fatigue, mechanical stress, or vibration on the metallic portions of fuse holders. During the audit, the staff requested that the applicant provide an aging management program to address the metallic portion of fuse holders or provide justification as to why an AMP is not required.

By letter dated February 15, 2005, the applicant provided its response. In its response, the applicant stated that a scoping and screening review had been performed to identify fuse holders that meet the requirements as delineated in ISG-5. For Millstone Units 2 and 3, the review identified fuse holders that are not a part of a larger active assembly and that support intended functions under 10 CFR 54.4(a)(1) and (a)(2), and therefore are subject to aging management review. The aging management review performed for these fuse holders concluded that there are no aging effects that require management. The applicant, in its response, provided the following information which describes the scoping and screening process and the aging management review performed for fuse holders:

> Scoping and Screening Process - Millstone Units 2 and 3 fuse holders were identified through plant walkdowns and a review of the Millstone master equipment list, electrical drawings, and electrical specifications. Fuse holders that were located within larger active assemblies were subsequently eliminated from further consideration with respect to the requirements of ISG-5. Active components were determined based on the guidance contained in NUREG-1800.
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> The fuse holders installed in safety related (SR) fuse panels were included in scope in accordance with 10 CFR 54.4(a)(1) and were determined to be subject to aging management review. Of the remaining fuse holders, a number of non-safety related fuse holders that do not perform an intended function in accordance with 10 CFR 54.4(a)(2) were identified based on an electrical circuit review and were not included in the scope

of license renewal. The remaining non-safety related fuse holders were included in scope and subject to aging management review.

Aging Management Review - An aging management review has been performed for the fuse holders identified above (including both the insulation material and the metallic clips). The fuse holders that are subject to aging management review are associated with low-voltage circuits and are mounted on fuse panels that are installed in gasketed enclosures located indoors.

ISG-5 states that an aging management program would be required for the aging stressors of fatigue, mechanical stress, vibration, chemical contamination, and corrosion, if these stressors are applicable for fuse holders subject to aging management review.

The non-metallic insulation material of the fuse holders was previously evaluated and found to have no aging effects requiring management. The insulation material is identified in LRA Table 3.6.2-1 as the Insulation commodity group with Inorganic Materials as the material and "air" as the environment.

The aging stressors identified in ISG-5 have been evaluated for fuse holder metallic clips and the following is a summary of the four aging management review results.

(1) Fatigue - NUREG-1760, "Aging Assessment of Safety-Related Fuses Used in Low- and Medium-Voltage Applications in Nuclear Power Plants," states that fatigue of fuse holders can typically occur due to elevated temperature, mechanical stress, and repeated insertion and removal of fuses. NUREG-1760 further states that fuse failures resulting from thermal cycling are associated with the fuse element, and not the fuse holder.

The fuse holders requiring aging management review are located indoors in a mild environment. There are no significant sources of heat in close proximity to the fuse holders such that elevated temperatures are not expected. Therefore, fatigue due to elevated temperature was determined not to require management for these fuse holders.

Fatigue related to mechanical stress and/or repeated insertion and removal is evaluated under Mechanical Stress.

(2) Mechanical Stress - For the fuse holders subject to aging management review, the fuses are not routinely removed and reinserted into the fuse clips. With the exception of one panel of fuse holders, the fuse holders are comprised of a block assembly of two or three fuses (i.e., two or three sets of fuse clips on a removable block). The removable block assembly permits interruption of the circuit for testing or isolation without removal of the fuses from the fuse holder metallic clips. The block assembly fuses are only removed from the fuse clips during fuse replacement. For the other panel, the fuse holders are the typical base insulating material with attached fuse clips. The fuses for this configuration are also only removed during fuse replacement with circuit isolation performed by other

devices in the circuit. Therefore, these fuse clips are not subject to repeated manipulation, which could lead to mechanical fatigue.

Mechanical stress resulting from electrical faults and transients is not considered a credible aging mechanism since electrical faults are infrequent and random in nature. Stresses resulting from electrical faults and transients are mitigated by fast acting circuit protective devices. Therefore, no aging management is required for mechanical stress.

(3) Vibration - The fuse holders subject to aging management review are located in fuse panels. These panels are not mounted on rotating equipment or in close enough proximity to rotating equipment to be affected by vibration. Therefore, no aging effects related to vibration require management.

(4) Chemical Contamination/Corrosion - The fuse panels containing fuse holders that are subject to aging management review consist of gasketed enclosures that are located indoors. The fuse holders are not subject to moisture or chemicals inside the panel enclosures that would provide a corrosive environment. Therefore, chemical contamination and corrosion do not require management for the fuse holders.

The results of the aging management review are summarized in the LRA supplemental tables 3.6.2-1a for Unit 2 and Unit 3. The aging management review for fuse holders concludes that there are no aging effects that require management. These aging management review results are supported by a Millstone operating experience review which did not identify any instances of fuse holder age related degradation.

As a result of this review of fuse holders, the commitment described in LRA Table A6.0-1, Item 6 is completed.

In ISG-5, the staff indicates that the AMR for fuse holders (metallic clamps) needs to include the following stressors, if applicable: fatigue, mechanical stress, vibration, chemical contamination, and corrosion. Where environments or operating conditions preclude such aging effects (e.g., fuse holders not subject to vibration from rotating machinery), they need not be addressed by the AMP. For the fuse holders subject to aging management review at Millstone Units 2 and 3, the fuses are not routinely removed and reinserted into the fuse clips. With the exception of one panel of fuse holders, these fuse holders are comprised of a block assembly of two or three fuses (i.e., two or three sets of fuse clips on a removable block). The removable block assembly permits interruption of the circuit for testing or isolation without removal of the fuses from the fuse holder metallic clips. The block assembly fuses are only removed from the fuse clips during fuse replacement. For the other panel, the fuse holders are the typical base insulating material with attached fuse clips. The fuses for this configuration are also only removed during fuse replacement with circuit isolation performed by other devices in the circuit. Therefore, these fuse clips are not subject to repeated manipulation, which could lead to mechanical fatigue. For other aging effects identified in ISG-5, the staff reviewed the applicant's response and determined that the applicant provided adequate technical justification of why an AMP for the metallic portions of these fuse holders is not required. On the basis of its review, the staff finds that applicant's response adequately addresses each aging effects identified in ISG-5, and therefore, finds the applicant's response acceptable.

Operating Experience. The staff reviewed operating experience for the applicant's program for electrical cables and connectors not subject to 10 CFR 50.49 EQ requirements. The applicant stated in the LRA that electrical cables and connectors not subject to 10 CFR 50.49 EQ requirements is a new program for which there is no operating experience. The operating experience data associated with implementing this program will be addressed in the applicant's corrective action program.

During the audit, in discussions with the staff, the applicant stated that its review of prior operating experience found that no significant non-EQ cable jacket or fuse holder anomalies have been identified that can be attributed to age-related degradation. As a part of the documentation supporting this program, the applicant screened and compiled condition reports involving cable or connection degradation for Units 2 and 3. The staff reviewed a sample of these condition report summaries, compiled by the applicant, and found the evaluation and disposition of the various conditions as reported therein to be consistent with that conclusion.

On the basis of its review of the above operating experience, the staff concludes that the applicant's program for electrical cables and connectors not subject to 10 CFR 50.49 EQ requirements adequately manages the aging effects that have been observed at the applicant's plant.

FSAR supplement. In Appendix A, Section A2.1.8 of the MPS Unit 2 LRA, Appendix A, Section A2.1.7 of the MPS Unit 3 LRA, and subsequent LRA supplements, the applicant provided the FSAR supplement for the applicant's program for electrical cables and connectors not subject to 10 CFR 50.49 EQ requirements. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the enhancement and confirmed that the implementation of the enhancement prior to the period of extended operation would result in the aging management program being consistent with the GALL Report AMP to which it was compared. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.6 Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits

Summary of Technical Information in the Application. The applicant's program for electrical cables not subject to 10 CFR 50.49 EQ requirements used in instrumentation circuits is described in LRA Section B2.1.9, "Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits." In the LRA, the applicant stated that this is an existing program. This program is consistent, with an enhancement, with GALL AMP XI.E2, "Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits."

The applicant stated in the LRA that the program includes instrumentation cable and connectors used in circuits with sensitive low-level signals (such as nuclear instrumentation and radiation monitoring), within the scope of license renewal, that are exposed to an adverse localized environment but are not subject to the EQ requirements of 10 CFR 50.49. Adverse local environments include heat, radiation, or moisture local to the cables or connectors. The program manages the aging effects of cracking and embrittlement to ensure that the cables and connectors within the scope of the program are capable of performing their intended functions. For cables within the scope of this program that are energized during calibration of the associated instrumentation, the program relies on in-situ calibration data and results from surveillance required by technical specifications for the instrumentation. Surveillance of this type includes channel calibrations, channel functional testing, and channel checks. For these sensitive, low-level signal channels, the applicant expects to detect reduced insulation resistance during calibration. In addition, troubleshooting of these instrumentation channels includes visual inspection of cables and connections.

The applicant stated in the LRA that for instrument channels within the scope of this program where the applicant does not perform in-situ calibration, such as for certain area radiation monitors, the applicant will monitor cable degradation by an alternate method that tests the cable. The applicant stated in its license renewal project position paper for in-scope non-environmentally qualified instrumentation circuits with sensitive low-level signals, that appropriate tests would be used to determine the cable insulation condition, such as insulation resistance tests or time domain reflectometry. The test program will be developed using the guidance cited in GALL AMP XI.E2 and articulated in EPRI TR-109619, IEEE Std 1205-2000, NUREG/CR-5643, and SAND96-0344.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's audit evaluation are documented in the MPS audit and review report. Furthermore, the staff reviewed the enhancement and justification to determine whether the AMP, with the enhancement, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.9 of the LRA, the applicant stated that its program for electrical cables not subject to 10 CFR 50.49 EQ requirements used in instrumentation circuits will be consistent with GALL AMP XI.E2 with an enhancement. The applicant stated that it will enhance the "scope of program" and "detection of aging effects" program elements by developing procedures to employ an alternate testing methodology to confirm the condition of cables and connectors in circuits that have sensitive, low-level signals and where the instrumentation is not calibrated in-situ, such as the area radiation monitors. For the "scope of program" program element associated with the enhancement proposed by the applicant, the GALL Report states that this program applies to electrical cables used in circuits with sensitive, low-level signals such as radiation monitoring and nuclear instrumentation that are within the scope of license renewal.

For the "detection of aging effects" program element associated with the enhancement by the applicant, the GALL Report states that calibration provides sufficient indication of the need for corrective actions by monitoring key parameters and providing trending data based on acceptance criteria related to instrumentation loop performance. The normal calibration frequency specified in the plant technical specifications provides reasonable assurance that severe aging degradation will be detected prior to loss of the cable intended function. The first tests for license renewal are to be completed before the period of extended operation.

As stated in the LRA, for instrumentation equipment in circuits that have sensitive, low-level signals, and where in-situ calibration is not performed, the applicant will develop procedures that use an alternate test method to confirm the condition of the cables and connectors. The testing may include insulation resistance tests, time domain reflectometry tests, or other testing judged to be effective in determining cable insulation condition. The tests will be completed prior to the period of extended operation and not to exceed a 10-year frequency. This commitment is identified in Appendix A, Table A6.0-1 License Renewal commitments, Item 7.

The applicant stated that its program for electrical cables not subject to 10 CFR 50.49 EQ requirements used in instrumentation circuits is consistent with the program as modified in the staff's ISG-15. ISG-15 requires that "review of calibration results or findings of surveillance program can provide an indication of the existence of aging effects based on acceptance criteria related to instrumentation circuit performance. By reviewing the results obtained during normal calibration or surveillance, an applicant may detect severe aging degradation prior to the loss of the cable and connection intended function. The first review will be completed before the end of the initial 40-year license term and at least 10 years thereafter. All calibration or surveillance results that fail to meet acceptance criteria will be reviewed for aging effects when the results are available." The staff reviewed the applicant's program for electrical cables not subject to 10 CFR 50.49 EQ requirements used in instrumentation circuits. The staff finds that the applicant's program does not require a review of calibration or surveillance results for indication of cable degradation. Since the enhancement, as proposed by the applicant, is not consistent with the staff's ISG-15, the staff requested that the applicant revise its program to include this requirement or provide justification of why the review of calibration or surveillance results is not necessary.

In a supplement letter dated December 3, 2004, the applicant provided its response. The applicant stated that to clarify the monitoring of aging effects for instrumentation cables that are tested in-situ, a commitment will be added to the LRA Appendix A, "FSAR Supplement" Section A2.1.9 for Unit 2 and Section A2.1.8 for Unit 3. This commitment is identified in the applicant's license renewal commitment list in the MPS Units 2 and 3 LRA, Appendix A, Table A6.0-1, as Item 32 and Item 33, respectively. The applicant has committed to review calibration results for cables tested in situ to detect severe aging degradation of the cable insulation. The initial review will be completed prior to the period of extended operation and will include at least 5 years of surveillance test data for each cable reviewed. Subsequent reviews will be performed on a period not to exceed 10 years.

On the basis of its review, the staff finds the applicant's response acceptable because the applicant has committed to review calibration or surveillance results for indication of cable degradation, as required by ISG-15.

The staff concludes that this enhancement is acceptable because the alternate testing methodology will be in place, prior to the period of extended operation. The staff also finds by reviewing the results obtained during normal calibration or surveillance, that the applicant can detect severe aging degradation prior to the loss of the cable and connection intended function.

Operating Experience. The staff reviewed operating experience for the applicant's program for electrical cables not subject to 10 CFR 50.49 EQ requirements used in instrumentation circuits. The review indicated that this program is effective in identifying age-related degradation, implementing repairs, and maintaining the integrity of instrumentation components. The applicant stated in the LRA that its review of prior operating experience has not identified any age-related degradation of instrumentation cables. As a part of the documentation supporting this program, the applicant reviewed condition reports involving cable or connection degradation for both units, and presented examples they considered in evaluating the effectiveness of the program. The staff reviewed the condition reports referenced in the applicant's license renewal project position paper for in-scope non-environmentally qualified instrumentation circuits with sensitive low-level signals and found the evaluation and disposition of the conditions as reported therein to be consistent with that conclusion.

The alternate cable testing that the applicant proposes as an enhancement, to be used when in-situ calibration is not performed, is a new part of the program, so no operating experience associated with this aspect of the program was available to the staff. The operating experience data associated with implementing this program will be addressed in the applicant's corrective action program.

On the basis of its review of the above operating experience, the staff concludes that the applicant's program for electrical cables not subject to 10 CFR 50.49 EQ requirements used in instrumentation circuits adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.9 of the MPS Unit 2 LRA and Appendix A, Section A2.1.8 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the applicant's program for electrical cables and connectors not subject to 10 CFR 50.49 EQ requirements used in instrumentation circuits. Also, in an LRA supplement letter dated December 3, 2004, the applicant stated that a commitment will be added to the LRA Appendix A, "FSAR Supplement" Section A2.1.9 for Unit 2 and Section A2.1.8 for Unit 3. The applicant has committed to review calibration results for cables tested in-situ to detect severe aging degradation of the cable insulation. The initial review will be completed prior to the period of extended operation and will include at least 5 years of surveillance test data for each cable reviewed. Subsequent reviews will be performed on a period not to exceed 10 years. The staff reviewed these sections and the supplement and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the enhancement and confirmed that the implementation of this enhancement prior to the period of extended operation would result in the existing aging management program being consistent with the GALL Report AMP to which it was compared. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.7 Fire Protection Program

Summary of Technical Information in the Application. The applicant's fire protection program is described in LRA Section B2.1.10, "Fire Protection Program." In the LRA, the applicant stated that this is an existing program. This program is consistent, with an exception and enhancements, with GALL AMPs XI.M26, "Fire Protection," and XI.M27, "Fire Water System," and with the revised guidance described in NRC ISG-04, "Aging Management of Fire Protection Systems for License Renewal," dated December 3, 2002.

The applicant stated in the LRA that the fire protection program manages the aging effects of loss of material, cracking, and change of material properties for plant fire protection features and components. The program manages these aging effects through the use of periodic inspections and tests.

The applicant also stated in the LRA that the fire protection program manages the aging effects for the diesel-driven fire pump fuel supply line, the reactor coolant pump oil collection systems, and 10 CFR 50 Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," support equipment.

The halon/carbon dioxide fire suppression systems for Units 2 and 3 are included within the scope of the license renewal program and subject to an AMR. The AMP for halon and carbon dioxide fire suppression systems for Unit 2 is consistent with GALL Report. However, the applicant takes exceptions over the AMP for halon and carbon dioxide fire suppression systems for Unit 3. Specifically the exception with the inspection interval to test the halon and carbon dioxide fire suppression systems every 12-month and 18-month respectively, instead of biannually as recommended by the GALL Report.

In addition, the applicant stated in the LRA that visual inspection of fire protection piping internal surfaces that are exposed to water is performed when the system is opened for maintenance and/or repair. The work control process provides guidance for the performance of internal inspections of fire protection piping and components whenever the system is entered for maintenance or repair.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's audit evaluation are documented in the MPS audit and review report. Furthermore, the staff reviewed the exception and enhancements and their justifications to determine whether the AMP, with the exception and enhancements, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.10 of the LRA, the applicant stated that the fire protection program is consistent with GALL AMPs XI.M26 and XI.M27, and with the revised guidance described in NRC ISG-04, with an exception and enhancements. The fire protection program takes an exception to inspection interval to test the halon and carbon dioxide fire suppression system for Unit 3 every 12-month and 18-month respectively, instead of biannually as recommended by the GALL Report.

> Exception 1: XI.M26 - Aging Management of the Halon and Carbon Dioxide Systems NUREG-1801 recommends that periodic visual inspection and function tests of Halon and CO_2 fire suppression systems be performed at once every six months to detect degradation in the system. Per the Millstone Unit 3 Current Licensing Basis (CLB), the Technical Requirements Manual (TRM) requires functional tests of the Unit 3 Halon and CO_2 systems be performed at a 12-month and 18-month frequency, respectively. In addition, (not required by the TRM) comprehensive system walkdowns inspections are performed by the system engineer on an annual basis. Plant operating experience has

demonstrated that this frequency is adequate to maintain the intended function of these systems.

Exception 2: XI.M26 - Aging Management of the Halon and Carbon Dioxide Systems NUREG-1801 recommends that periodic visual inspection and function tests of Halon and CO_2 fire suppression systems be performed at once every six months to detect degradation in the system. In lieu of a functional test of the Unit 3 Normal Switchgear Area, the Auxiliary Boiler Enclosure Fuel Oil Pump Pit, and the Alternator/Exciter Bearing and Casing Enclosure CO_2 systems, comprehensive system walkdowns inspections are conducted on an annual basis. These walkdowns visually verify that degradation of the system is not occurring. Any noticeable degradation is addressed using the Corrective Action Program.

The staff reviewed Exception 1, plant operating experience and fire surveillance procedures. Plant operating experience indicate that no aging effects have been identified in the halon and CO_2 systems and components and that there has been no aging-related event that has adversely affected systems operation. Therefore, the staff concluded that 12-month and 18-month test interval frequency for Unit 3 halon and CO_2 fire suppression systems respectively will be sufficient to detect aging of halon and CO_2 fire suppression systems. The 12-month and 18-month test interval frequency is included in the Millstone Unit 3 CLB.

The staff reviewed Exception 2, and concurred that the CO_2 fire suppression system protecting Unit 3 normal switchgear area, the auxiliary boiler enclosure fuel oil pump pit, and the alternator/exciter bearing and casing enclosure does not required a function test, since these areas do not contain any safety-related equipment or equipment that is important to safety. Annual system walkdowns are adequate for managing the effect of aging of CO_2 fire suppression system in these areas.

In addition, the applicant stated in the LRA that the fire protection program will be enhanced for the "detection of aging effects" program element such that a baseline visual inspection will be performed on a representative sample of the buried fire protection piping and components whose internal surfaces are exposed to raw water to confirm there is no degradation.

For the detection of aging effects program element associated with the enhancement by the applicant, the GALL Report states that visual inspection of fire protection system internals will be used for monitoring the age-related degradation of system piping and component internals.

ISG-4 provides additional guidance as follows:

> However, internal inspections performed during each refueling cycle by disassembling portions of the fire protection system piping, as stated in GALL AMP XI.M27, may not be the most effective means to detect this aging effect. Each time the system is opened, oxygen is introduced into the system and this accelerates the potential for general corrosion. Therefore, the staff recommends that the applicant perform a baseline pipe wall thickness evaluation of the fire protection piping using a non-intrusive means of evaluating wall thickness, such as volumetric inspection, to detect this aging effect before the current license term expires.

The applicant stated in the LRA that it will evaluate, develop, and implement appropriate activities (e.g., baseline inspections) for assessing the buried fire water system piping to identify or preclude wall thinning due to internal corrosion prior to the period of extended operation. Consistent with ISG-4, the applicant stated that subsequent inspections may be required based on engineering evaluation. The staff finds this enhancement is required and is acceptable as any such changes to the fire protection program will provide additional assurance that the effects of aging will be adequately managed. This commitment is identified on the applicant's license renewal commitment list in the MPS Units 2 and 3 LRA, Appendix A, Table A6.0-1, Item 8.

The applicant also stated in the LRA that the fire protection program will be enhanced for the "preventive actions" and "detection of aging effects" program elements such that testing or replacing a representative sample of sprinkler heads that have been in service for 50 years is not specifically included in the applicant's fire protection program. Licensee follow-up action items have been initiated to ensure that a representative sample of sprinkler heads will be tested, or all affected sprinkler heads will be replaced in accordance the requirements of the National Fire Protection Association (NFPA) Code 25, Section 2.3.3.1. This commitment is also identified on the applicant's license renewal commitment list in the LRA, Appendix A, Table A6.0-1, Item 9.

For the preventive actions and detection of aging effects program elements associated with the with the second enhancement, the GALL Report states that this program element identifies methods or techniques to ensure appropriate fire prevention measures are maintained and no significant degradation occurs (XI.M26 and XI.M27). To ensure no significant corrosion, MIC, or biofouling has occurred in water-based fire protection systems, periodic flushing, system performance testing, and inspections are conducted (XI.M27). This program element identifies methods or techniques to ensure timely detection of aging effects (XI.M26 and XI.M27). Sprinkler systems are inspected once every refueling outage to ensure that signs of degradation, such as corrosion, are detected in a timely manner (XI.M27).

ISG-4 provides additional guidance as follows:

> NFPA 25, 1999 Edition, Section 2.3.3.1, "Sprinklers," states, where sprinklers have been in place for 50 years, they shall be replaced or representative samples from one or more sample areas shall be submitted to a recognized testing laboratory for field service testing. NFPA 25 also contains guidance to perform this sampling every 10 years after the initial field service testing.
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> The 50-year service life of sprinkler heads does not necessarily occur at the 50th year of operation in terms of licensing. The service life is defined from the time the sprinkler system is installed and functional. The staff recommends, in accordance with NFPA 25, that sprinkler head testing should be performed at year 50 of sprinkler system service life, not at year 50 of plant operation, with subsequent sprinkler head testing every 10 years thereafter.

The staff noted that applicant stated in the LRA that it has included follow-up items to accommodate the requirements of NFPA 25 but does not clearly state when the fire protection program will identify and test, or replace, sprinkler heads. During the audits, the staff requested that the applicant clarify this enhancement. In LRA supplement letter dated July 7, 2004, the applicant stated the following:

The commitment regarding sprinkler head testing or replacement should have the wording "The first tests will be completed prior to the sprinkler heads achieving 50 years of service life. The frequency of subsequent tests will not exceed a 10-year interval." inserted after the words "Testing a representative sample of fire protection sprinkler heads or replacing those that have been in service for 50 years will be included in the Fire Protection Program." This commitment appears in the Unit 2 LRA and the Unit 3 LRA in the following locations:

Unit 2 Appendix B, Section B2.1.10
Unit 3 Appendix B, Section B2.1.10
Unit 2 Appendix A, Section A2.1.10
Unit 3 Appendix A, Section A2.1.9

The staff finds that this enhancement is consistent with the recommendations set forth in ISG-4. On that basis, the staff finds this enhancement is required and is acceptable as any such changes to the fire protection program will provide additional assurance that the effects of aging will be adequately managed.

Operating Experience. The staff reviewed operating experience for the applicant's fire protection program. The review indicated that the fire protection program is effective in identifying age-related degradation, implementing repairs, and maintaining the integrity of the fire protection system components.

In the LRA, the applicant stated that component inspections and surveillance tests are performed in compliance with the applicable sections of the corresponding technical requirements manuals and in accordance with approved station procedures. Surveillance tests have been performed routinely and have been successful in identifying fire protection suppression system degradation. Station operating experience indicates that while degradation has occurred, the fire protection program has been effective in identifying any anomalies, implementing corrective actions, and trending the parameters. When inspection results have exceeded allowable values, corrective actions have been implemented to ensure the continued capability of the system to perform its intended functions.

On the basis of its review of the above operating experience, the staff concludes that the fire protection program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.10 of the MPS Unit 2 LRA, Appendix A, Section A2.1.9 of the MPS Unit 3 LRA, and the July 7, 2004, LRA supplement, the applicant provided the FSAR supplement for the fire protection program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exception and the associated justifications and determined that the AMP, with the exception is adequate to manage the aging effects for which it is credited. Also, the staff has reviewed the enhancements and confirmed that the implementation of the enhancements prior to the period of extended operation would result in the existing aging management program being consistent with the GALL Report AMP to which it was compared. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.8 Flow-Accelerated Corrosion

Summary of Technical Information in the Application. The applicant's flow-accelerated corrosion program is described in LRA Section B2.1.11, "Flow-Accelerated Corrosion." In the LRA, the applicant stated that this is an existing program. This program is consistent, with an exception, with GALL AMP XI.M17, "Flow-Accelerated Corrosion."

The applicant stated in the LRA that the flow-accelerated corrosion (FAC) program manages the aging effect of loss of material in accordance with the EPRI guidelines defined in the Nuclear Safety Analysis Center (NSAC) Report, NSAC-202L, "Recommendation for an Effective Flow Accelerated Corrosion Program," Revision 1, dated January 1996. The FAC program includes controls to assure that the structural integrity of carbon steel and low-alloy steel piping and components is maintained.

The applicant further stated in the LRA that specific procedures and methods satisfy NRC Bulletin 87-01, "Thinning of Pipe Wall in Nuclear Power Plants," dated July 9, 1987, and NRC GL- 89-08, "Erosion/Corrosion-Induced Pipe Wall Thinning," dated May 2, 1989. The program predicts, detects, and monitors FAC as identified by wall thinning (loss of material) in plant piping and components.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's audit evaluation are documented in the MPS audit and review report. Furthermore, the staff reviewed the exception and its justification to determine whether the AMP, with the exception, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.11 of the LRA, the applicant stated that the flow-accelerated corrosion program is consistent with GALL AMP XI.M17, with an exception. The flow-accelerated corrosion program takes exception to the "scope of program" program element in that GALL AMP XI.M17 recommends that the program follow guidance identified in NSAC-202L, "Recommendation for an Effective Flow-Accelerated Corrosion Program," Revision 2. The MPS program is based on Revision 1 of the same guidance.

The applicant stated in the LRA that it reviewed the differences between the two revisions of NSAC-202L and concluded that no changes that are relevant to the flow-accelerated corrosion program were made from Revision 1 to Revision 2.

The staff reviewed NSAC-202L and relevant current EPRI technical documents, and interviewed the applicant's technical staff. On the basis of these reviews and interviews, the staff concludes that the differences between the two revisions are not applicable to the flow-accelerated corrosion program and, therefore, finds this exception to be acceptable.

Operating Experience. The staff reviewed operating experience for the applicant's flow-accelerated corrosion program. The number of planned and unplanned replacements has generally trended downward over the past several years due to the establishment of the flow-accelerated corrosion program and following the recommendations identified in NSAC-202L.

The applicant stated in the LRA that operating experience indicates that while wall thinning has occurred since implementation of the flow-accelerated corrosion program, the flow-accelerated corrosion inspection activities have effectively identified degraded components for repair or replacement. These corrective actions have been effective in maintaining the integrity of FAC-susceptible components.

On the basis of its review of the above operating experience, the staff concludes that the flow-accelerated corrosion program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.11 of the MPS Unit 2 LRA and Appendix A, Section A2.1.10 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the flow-accelerated corrosion program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exception and the associated justifications and determined that the AMP, with the exception is adequate to manage the aging effects for which it is credited. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.9 Fuel Oil Chemistry

Summary of Technical Information in the Application. The applicant's fuel oil chemistry program is described in LRA Section B2.1.12, "Fuel Oil Chemistry." In the LRA, the applicant stated that this is an existing program. This program is consistent, with six exceptions, with GALL AMP XI.M30, "Fuel Oil Chemistry."

The applicant stated in the LRA that the fuel oil chemistry program activities control the aging effect of loss of material by monitoring and controlling fuel oil quality to ensure that it is compatible with the materials of construction for in-scope components containing diesel fuel oil. Fuel oil quality limits are established to ensure the operability of the respective diesels, and compliance with applicable technical specifications and technical requirements, and to reduce the likelihood of loss of material within the fuel oil systems. The program basis document indicates that poor fuel oil quality could lead to (1) degradation of fuel oil storage tanks or (2) accumulations of particulate or biological growth that could interfere with the operation of plant equipment.

The applicant stated, as documented in the staff's MPS audit and review report for the fuel oil chemistry program, that the fuel oil chemistry program involves the sampling and testing of fuel oil used for equipment that is within the scope of license renewal. Testing is performed to ensure the acceptability of fuel oil quality, thus maintaining the integrity of the fuel oil system. The fuel oil chemistry sampling and testing activities mitigate the aging effect of loss of material in the fuel oil system. The effectiveness of the fuel oil chemistry program for in-scope tanks is verified by the tank inspection program, and by the work control process for other diesel fuel system components. These programs provide input to the corrective action program if aging effects are identified. The corrective action program evaluates the cause and extent of the condition and, if required, recommends enhancements to ensure continued effectiveness of the fuel oil chemistry program.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's audit evaluation are documented in the MPS audit and review report. Furthermore, the staff reviewed the exceptions and their justifications to determine whether the AMP, with exceptions, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.12 of the LRA, the applicant stated that the fuel oil chemistry program is consistent with GALL AMP XI.M30, with exceptions. The fuel oil chemistry program takes exception to the "preventive actions," "detection of aging effects," and "monitoring and trending" program elements such that (1) this program does not include the addition of biocides, stabilizers, or corrosion inhibitors and (2) sampling and testing of the fuel and dewatering of the security diesel fuel oil storage tank is performed semi-annually. For the program elements associated with the first and second exceptions taken by the applicant, the GALL Report states that the quality of fuel oil is maintained by additions of biocides to minimize biological activity, stabilizers to prevent biological breakdown of the diesel fuel, and corrosion inhibitors to mitigate corrosion. Periodic cleaning of a tank allows removal of sediments, and periodic draining of water collected at the bottom of a tank minimizes the amount of water and the length of contact time. Accordingly, these measures are effective in mitigating corrosion inside diesel fuel oil tanks. Coatings, if used, prevent or mitigate corrosion by protecting the internal surfaces of the tank from contact with water and microbiological organisms.

Degradation of the diesel fuel oil tank cannot occur without exposure of the tank internal surfaces to contaminants in the fuel oil, such as water and microbiological organisms. Compliance with diesel fuel oil standards and periodic multi-level sampling provide assurance that fuel oil contaminants are below acceptable levels. Internal surfaces of tanks that are drained for cleaning are visually inspected to detect potential degradation. However, corrosion may occur at locations in which contaminants may accumulate, such as a tank bottom, and an ultrasonic thickness measurement of the tank bottom surface ensures that significant degradation is not occurring.

Water and biological activity or particulate contamination concentrations are monitored and trended at least quarterly. Based on industry operating experience, quarterly sampling and analysis of fuel oil provide for timely detection of conditions conducive to corrosion of the internal surface of the diesel fuel oil tank before the potential loss of its intended function.

The applicant stated in the LRA that the fuel oil chemistry program does not include the addition of biocides, stabilizers, or corrosion inhibitors. Operating experience and sample results confirm that microbiologically influenced corrosion (MIC) and breakdown of the fuel oil have not been issues requiring the use of fuel oil additives. On the basis of its review of the operating experience and determination that mitigation of the effects of MIC and fuel oil breakdown has not necessitated the use of fuel oil additives at MPS, the staff finds the first exception to be acceptable.

The applicant stated, as documented in the staff's MPS audit and review report for the fuel oil chemistry program that, although the Unit 3 emergency diesel fuel tanks and the station blackout storage tanks are coated, these coatings are not credited for preventive actions for the purpose of license renewal. The applicant stated that the fuel oil tanks are included in the tank inspection program and are subjected to a 10-year draining, cleaning, and inspection activity. The applicant added the diesel fire pump fuel oil tank and the security diesel fuel oil storage tank to the tank inspection program, so that they undergo the semi-annual tank inspection and cleaning in order to mitigate corrosion at the bottom of the tanks. The staff reviewed four work orders that documented that the security diesel fuel oil storage tank was tested and dewatered on a semi-annual basis beginning in July 2002. The results indicate that no water has been found.

The GALL AMP XI.M30 detection of aging effects program element recommends periodic, multilevel sampling and visual inspection of the internal surfaces of the tanks that are drained for cleaning. In addition, the GALL AMP XI.M30 monitoring and trending program element recommends that water and biological activity or particulate contamination concentrations are monitored and trended at least quarterly. As documented in the staff's MPS audit and review report for the fuel oil chemistry program, the applicant stated that loss of material is an aging effect that is detected through condition monitoring via periodic tank inspection activities. In addition, the applicant stated that implementation of new fuel oil testing and periodic multilevel surveillance for fuel oil quality in the various storage tanks is accomplished using surveillance procedures and automated work orders. Periodic sampling and testing is performed monthly for the Unit 3 emergency diesel fuel oil storage tanks, quarterly for most of the in-scope tanks, and semi-annually for the security diesel fuel oil storage tank. The staff requested that the applicant add justification for this exception to the GALL Report (e.g., the size of the tank, negligible water accumulation due to the location of the tank outlet piping connection, and the frequency of fuel oil testing) to the fuel oil chemistry program.

In a subsequent onsite visit to the plant, the applicant presented the staff with Revision 3 of the fuel oil chemistry program, as documented in the staff's MPS audit and review report, which provides justification for size and frequency of testing. However, Revision 3 does not acknowledge that there would be negligible accumulation in the tank due to the location of the tank outlet. During its review of the tank drawings, the applicant confirmed that the outlet is on the bottom of the side of the tank and not directly on the bottom of the tank. Therefore, the applicant did not make the statement that there would be a negligible amount of accumulation in the tank. The staff reviewed the examples of operating experience regarding the "like new" condition of the tank internals and the lack of water found in the fuel oil tanks and discussed the examples with the applicant. On the basis of its review of this operating experience and the clarifications provided by the applicant in Revision 3, as documented in the staff's MPS audit and review report for the fuel oil chemistry program, the staff finds the second exception to be acceptable.

The fuel oil chemistry program also takes exception to the "parameters monitored/inspected" and "acceptance criteria" program elements such that (3) this program uses an unmodified ASTM D 2276 Method A for the determination of particulates. For the program elements associated with the third exception taken by the applicant, the GALL Report states that for determination of particulates, modified ASTM D 2276, Method A, is used. The modification consists of using a filter with a pore size of 3.0 micrometers (μm), instead of 0.8 μm. These are the principal parameters relevant to tank structural integrity.

Modified ASTM D 2276, Method A, is used for determination of particulates. The modification consists of using a filter with a pore size of 3.0 μm, instead of 0.8 μm.

The applicant stated in the LRA that the fuel oil chemistry program does not use the modified ASTM Standard D 2276, Method A, for determination of particulates. The unmodified version of the same standard is used. The unmodified version is considered to be more conservative than the modified version because it uses a smaller filter pore size. On the basis that the applicant uses a more conservative version of the ASTM standard for the determination of particulates, the staff finds the third exception to be acceptable.

The fuel oil chemistry program also takes exception to the "detection of aging effects" program element such that (4) the in-scope tanks are included in the tank inspection program, which provides for ultrasonic testing activities based on the evaluation of the conditions found during visual inspections. For the program element associated with the fourth exception taken by the applicant, the GALL Report states that degradation of the diesel fuel oil tank cannot occur without exposure of the tank internal surfaces to contaminants in the fuel oil, such as water and microbiological organisms. Compliance with diesel fuel oil standards and periodic multilevel sampling provide assurance that fuel oil contaminants are below acceptable levels. Internal surfaces of tanks that are drained for cleaning are visually inspected to detect potential degradation. However, corrosion may occur at locations in which contaminants may accumulate, such as a tank bottom, and an ultrasonic thickness measurement of the tank bottom surface ensures that significant degradation is not occurring.

As documented in the staff's MPS audit and review report for the fuel oil chemistry program, the applicant stated that loss of material is detected through condition monitoring via periodic tank inspections. However, the ultrasonic thickness measurement of the tanks is not addressed in this report. The applicant stated in the LRA that the in-scope tanks are included in the tank inspection program, which provides for ultrasonic testing activities based on an evaluation of the conditions found during visual inspections. On the basis that the tank inspection program provides an adequate means for evaluating the integrity of the tank internals, the staff finds the fourth exception to be acceptable.

In addition, the fuel oil chemistry program takes exception to the "preventive actions" program element in that (5) this program cannot perform dewatering of the Unit 2 emergency diesel day tanks because the bottom drains are located in the side of the tanks. For the program element associated with the fifth exception taken by the applicant, the GALL Report states that the quality of fuel oil is maintained by additions of biocides to minimize biological activity, stabilizers to prevent biological breakdown of the diesel fuel, and corrosion inhibitors to mitigate corrosion. Periodic cleaning of a tank allows removal of sediments, and periodic draining of water collected at the bottom of a tank minimizes the amount of water and the length of contact time. Accordingly, these measures are effective in mitigating corrosion inside diesel fuel oil tanks. Coatings, if used, prevent or mitigate corrosion by protecting the internal surfaces of the tank from contact with water and microbiological organisms.

The applicant stated in the LRA that the fuel oil chemistry program cannot perform dewatering of the Unit 2 emergency diesel day tanks because the bottom drains are located on the side of the tanks. However, the applicant also stated that the tanks are inspected and cleaned as required by the tank inspection program. The staff reviewed the examples of operating experience regarding the "like new" condition of the tank internals and the lack of water found in the fuel oil tanks and discussed these findings with the applicant. On the basis of its review of the operating experience and discussion with the applicant, the staff concludes that corrosion caused by prolonged water contact with tank bottoms is not an aging effect of significance for the Unit 2 emergency diesel day tanks and, therefore, finds the fifth exception to be acceptable.

Also, the fuel oil chemistry program takes exception to the "parameters monitored/inspected" and "acceptance criteria" program elements such that (6) the Unit 3 technical specifications require the use of American Society for Testing and Materials (ASTM) Standard D 1796 for the determination of water and sediment contamination in the diesel fuel. For the program elements associated with the sixth exception taken by the applicant, the GALL Report states that the AMP monitors fuel oil quality and the levels of water and microbiological organisms in the fuel oil, which cause the loss of material of the tank internal surfaces. The ASTM Standard D 4057 is used for guidance on oil sampling. The ASTM Standards D 1796 and D 2709 are used for determination of water and sediment contamination in diesel fuel.

The ASTM Standards D 1796 and D 2709 are used for guidance on the determination of water and sediment contamination in diesel fuel.

The applicant stated in the LRA that the Unit 3 technical specifications require the use of ASTM Standard D 1796 for the determination of water and sediment contamination in the diesel fuel. The fuel oil chemistry program is a common program for both Units 2 and 3 and the fuel oil for both units is procured to the same specification. The staff review of the ASTM Standards D 1796 and D 2709 reveals that ASTM D 1796 is acceptable for the fuel oil used at Unit 2 based on the Unit 3 technical specification requirement to use ASTM D 1796 and the fact that the program is common to Units 2 and 3. On the basis of its review, the staff finds the sixth exception to be acceptable.

Operating Experience. The staff reviewed operating experience for the applicant's fuel oil chemistry program. The applicant stated in the LRA that operating experience indicates that while fuel oil deliveries from commercial vendors and tank samples do not always meet MPS quality specifications, fuel oil chemistry activities are effective in identifying any anomalies, implementing corrective actions, and trending the parameters. When chemistry results have exceeded allowable values, corrective actions have been implemented to ensure that the quality of the fuel oil in the storage tanks has not been compromised and that the continued use of the fuel oil in the other tanks is considered based on the extent of condition requirements of the corrective action program. The applicant further stated that no failures of fuel oil system components were identified at MPS due to contamination or water-induced degradation.

On the basis of its review of the above operating experience, the staff concludes that the fuel oil chemistry program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.12 of the MPS Unit 2 LRA and Appendix A, Section A2.1.11 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the fuel oil chemistry program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exceptions and the associated justifications and determined that the AMP, with the exceptions is adequate to manage the aging effects for which it is credited. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.10 Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Summary of Technical Information in the Application. The applicant's program for inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements is described in LRA Section B2.1.14, "Inaccessible Medium-Voltage Cables not Subject to 10 CFR 50.49 Environmental Qualification Requirements." In the LRA, the applicant stated that this is an existing MPS program. This program will be consistent, with an exception and an enhancement, with GALL AMP XI.E3, "Inaccessible Medium Cables not Subject to 10 CFR 50.49 Environmental Qualification Requirements."

The applicant stated in the LRA that its program for inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements manages the aging effect of formation of water trees and ensures that inaccessible medium-voltage cables within the scope of license renewal that have been submerged and exposed to significant voltage will remain capable of performing their intended function. Exposure to both conditions is necessary for age-related degradation of insulation resulting from water treeing. This program considers the combined effects of submergence (i.e., significant moisture exposure) and significant voltage exposure, using the definitions for these exposures as defined in GALL AMP XI.E3. This program identifies areas where the potential for submergence exists, and relies upon inspection and pumping of cable vaults, manholes, and handholes to prevent significant moisture exposure. The inspections verify that the cables, including those protected by conduit, are not submerged and that no evidence of cable submergence since the last inspection is detected.

The applicant's structures monitoring program ensures that underground cable enclosures such as vaults, manholes, and handholes containing in-scope medium-voltage cables, which could potentially become submerged, are pumped and inspected at specified frequencies. Pumping frequencies are adjusted as necessary to ensure that cables do not become submerged between preventive maintenance activities. The staff reviewed the applicant's structures monitoring program, as documented in the staff's MPS audit and review report, which describes preventive maintenance work orders associated with the structures monitoring program.

The applicant stated, as documented in the staff's MPS audit and review report for the structures monitoring program, that if in-scope medium-voltage cables are found to have been exposed to significant moisture under significant voltage conditions, the structures monitoring program personnel will coordinate with engineering to ensure that the cables are evaluated to assess any potential impact on the integrity of the insulation.

GALL AMP XI.E3 stipulates that any tests that might be performed will be proven tests for detecting deterioration of the insulation due to wetting, and will be acceptable to the nuclear industry and the NRC. Examples of possible test methods considered power factor, partial discharge, or polarization index, as described in EPRI Technical Report TR-103834-P1-2, "Effects of Moisture on the Life of Power Plant Cables," dated August 1994, or other appropriate testing.

The applicant stated in the LRA that the program will consider the technical information and guidance cited in GALL AMP XI.E3 that is provided by EPRI TR-109619, IEEE Std 1205-2000, NUREG/CR-5643, and SAND96-0344.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's audit evaluation are documented in the MPS audit and review report. Furthermore, the staff reviewed the exception and enhancement and their justifications to determine whether the AMP, with the exception and enhancement, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.14 of the LRA, the applicant stated that the applicant's program for inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements is consistent with GALL AMP XI.E3, with an exception and enhancement. The program takes exception to the "scope of program," "parameters monitored/inspected," and "detection of aging effects" program elements such that an engineering evaluation will be performed to determine the appropriate actions to fully address the identified condition of the cables, including the identification of testing requirements as necessary, and the corresponding test frequency should evidence of submerged medium-voltage cables with significant voltage be identified.

The staff noted that inaccessible medium-voltage cables may be exposed to condensation and wetting in inaccessible locations, such as conduits, cable trenches, cable troughs, and duct banks. When an energized medium-voltage cable is exposed to wet conditions for which it is not designed, water treeing or a decrease in the dielectric strength of the conductor insulation can occur. Water trees occur when the insulating materials are exposed to long-term, continuous electric stress and moisture; these water trees eventually result in breakdown of the dielectric and ultimate failure. The growth and propagation of water trees is somewhat unpredictable.

The applicant stated that its program for inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements uses periodic actions, such as pumping and inspection of cable vaults (manholes), to prevent cables from being submerged. In the event that submerged cables are found, an engineering evaluation will be performed and the appropriate testing required will be specified, as necessary to confirm the condition of the cable insulation. For the program elements associated with the exception taken by the applicant, the GALL Report states that in-scope, inaccessible medium-voltage cables exposed to significant moisture (periodic exposure to moisture that last more than few days) and significant voltage are tested at least once every 10 years to provide an indication of the cable insulation condition.

During the audit, the staff requested that the applicant provide the frequency of manholes inspection and technical justification of how visual inspections are adequate to conclude that the cables are not subject to significant moisture that lasts more than few days.

In a supplement letter dated December 3, 2004, the applicant stated that it has identified two Unit 3 duct lines with low points that are susceptible to moisture accumulation. These two duct lines contain 26 in-scope medium-voltage cables. No similar duct lines were identified for Unit 2. Prior to the period of extended operation, these cables will be tested to demonstrate that water treeing will not prevent the cables from performing their intended function.

Further, the applicant stated that the other duct banks for both units are not susceptible to moisture accumulation due to the slope of the embedded conduit between manholes and the inspections performed by the applicant's structures monitoring program. The duct banks consist of 5-inch Schedule 40 PVC pipe embedded in reinforced concrete, which is founded on dense soil over bedrock. The applied contact pressure by the duct banks is well below the allowed bearing pressure of the supporting material resulting in insignificant settlement (Ref. Unit 2 FSAR Section 2.7.5.2). Therefore, the duct banks will maintain the design cable run slope to their respective termination points in manholes or buildings and the structures monitoring program inspections will identify any water intrusion.

For the cable in these duct banks, the design, in conjunction with the structures monitoring program inspections, ensures that any cable that becomes submerged will be identified by the structures monitoring program inspections. The inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements program currently addresses the testing of cables that have been submerged. For the cables that have not been submerged, the aging effect of water treeing is precluded and testing is not required.

To implement the testing of inaccessible medium-voltage cables identified in the two Unit 3 duct lines with low points that are susceptible to moisture accumulation, the applicant will add the following commitment to the MPS LRA Appendix A, "FSAR Supplement" Unit 2, Section A2.1.14 and Unit 3, Section A2.1.13:

> Testing of Inaccessible Medium-Voltage Cables:
>
> "The Unit 3 duct lines # 929 (SBO Diesel to Unit 3 4.16kV Normal Switchgear) and # 973 (RSST 3RTX-XSR-B to 6.9kV Normal Switchgear Bus 35A, 35B, 35C and 35D) have low points that are susceptible to moisture accumulation. Prior to the period of extended operation, the in scope cables in these two duct lines will be tested to demonstrate that water treeing will not prevent the cables from performing their intended function. Subsequent testing will be performed on a frequency not to exceed a 10-year interval."

An additional item will be added to Unit 2 and Unit 3 Appendix A "FSAR Supplement," Table A6.0 -1 as follows:

> Item: "33" (Unit 2) and "34" (Unit 3)
>
> <u>Commitment</u> - "The in scope cables in Unit 3 duct lines # 929 (SBO Diesel to Unit 3 4.16kV Normal Switchgear) and # 973 (RSST 3RTXXSR-B to 6.9kV Normal Switchgear

Bus 35A, 35B, 35C and 35D) will be tested to demonstrate that water treeing will not prevent the cables from performing their intended function."

Source - "Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements"

Schedule - "Prior to Period of Extended Operation Not to Exceed a 10 Year Frequency Thereafter."

The staff reviewed the applicant's response. The staff finds, other than the duct lines #929 and #973 (26 cables) which the applicant committed to test, that the slope of these duct banks between manholes and the inspection performed, as required by the applicant's structures monitoring program, are not adequate to preclude significant moisture for these duct banks. It was not clear to the staff how the applicant's structures monitoring program will identify water intrusion in these duct banks because these banks are underground and are not accessible.

Periodic actions are taken to prevent cables from being exposed to significant moisture, such as inspection of water collection in cable manholes and conduit, and draining the water, as needed. However, those actions are not sufficient to assure that water is not trapped elsewhere in the raceways. For example, if duct bank conduit has low points in the routing, there could potentially be long term submergence at these low points. In addition, concrete raceways may crack due to soil settling over a long period of time and that the conduit between manhole covers may not be water tight. Additionally, in certain areas, the water table is high in seasonal cycles and therefore, the raceways may get refilled with water soon after purging. Further, the potential uncertainties involved with water trees exist even with duct banks that are sloped to minimize water accumulation. Experience has shown that insulation degradation will occur if the cables are exposed to 100 percent relative humidity. Periodically removal of water in manholes is required to minimize the potential for insulation degradation. In addition to removal of water, in-scope, medium-voltage cables exposed to significant moisture and significant voltage must be tested to provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined prior to the initial test and is to be a proven test for detecting deterioration of the insulation material due to wetting.

The staff finds, other than the duct lines #929 and #973 (26 cables) which the applicant committed to test, that the slope of these duct banks between manholes and the inspection performed, as required by the applicant's structure's monitoring program, are not adequate to preclude significant moisture for these duct banks.

On the basis of its review, the staff finds that the slope of these duct banks between manholes and the inspection performed, as required by the applicant's structures monitoring program, are not adequate to preclude significant moisture for these duct banks and not adequate to prevent cables from being subject to water trees due significant moisture and significant voltage. The staff determined that inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirement AMP at MPS are not consistent with GALL AMP XI.E3. In its letter dated January 11, 2005, the applicant stated that it has decided to perform testing of a representative sample of inaccessible medium-voltage cables. The applicant stated that the following commitment will be added to its LRA Appendix A, FSAR Supplement Unit 2 Section A2.1.14 and Unit 3 Section A2.1.13:

- Sample Testing of Inaccessible Medium-Voltage

  Prior to the period of extended operation, a representative sample of inscope medium-voltage cables will be tested to demonstrate that water treeing will not prevent the cables from performing their intended function. This sample testing is in addition to the testing specified in the previous commitment. Subsequent testing will be performed on a frequency not to exceed a 10-year interval.

  This commitment is identified in Appendix A, Table A6.0-1 License Renewal Commitments as Item (34 for Unit 2) (35 for Unit 3).

An additional item will be added to Millstone Power Station Unit 2 and Unit 3 Appendix A FSAR Supplement, Table A6.0-1 as follows:

Item: 34 (Unit 2) and 35 (Unit 3)

<u>Commitment</u> - In addition to the testing specified in Commitment (33 for Unit 2) (34 for Unit 3), a representative sample of in-scope medium-voltage cables will be tested to demonstrate that water treeing will not prevent the cables from performing their intended function.

<u>Source</u> - Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Environmental Qualification Requirements.

<u>Schedule</u> - Prior to Period of Extended Operation Not to Exceed a 10 Year Frequency Thereafter.

The staff reviewed the applicant response and finds it acceptable because in addition to inspect manholes and draining water, as needed, the applicant will also test a representative sample of inaccessible medium-voltage cables which would provide an indication of the condition of the cable insulation.

The applicant stated in the LRA that it will enhance the program for inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements "scope of program" and "detection of aging effects" program elements such that engineering will identify testing requirements, as necessary, to confirm the condition of the cable insulation for inaccessible medium-voltage cables having significant voltage and having been submerged. If cables have become submerged during the period of extended operation, engineering will evaluate to determine the appropriate testing, as necessary, to be performed during the corresponding ten-year interval. Any tests performed will be proven tests for detecting deterioration of the insulation due to wetting. This commitment is identified in Appendix A, Table A6.0-1 License Renewal commitments, Item 11.

The applicant stated in the LRA that the enhancement uses periodic action, such as pumping of cable vaults to prevent cables from being submerged and inspections to determine that cables are not submerged. In the event that submerged cables are found, an engineering evaluation will be performed and the appropriate testing required will be specified, as necessary to confirm the condition of the cable insulation. The staff finds that periodic action, as suggested by the applicant's program, may not be sufficient as compared to GALL AMP XI.E3. In its letter dated January 11, 2005, the applicant committed to inspect manholes and test a representative sample of inaccessible medium-voltage cables to provide an indication of the condition of cable insulation. The staff reviewed the applicant's response and finds the applicant's response acceptable.

Operating Experience. The staff reviewed operating experience for the applicant's inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements program. The applicant stated during audit discussions that there was minimal plant-specific operating experience regarding the testing of non-environmentally qualified, medium-voltage cables to confirm the condition of insulation after submergence. The applicant stated that it recently established the periodic pumping and inspections of cable vaults, manholes, and handholes based on industry operating experience with submerged cables and the recognition of water treeing as an aging effect. The operating experience data associated with implementing this aspect of the program is being addressed in the applicant's corrective action program.

The staff's review of prior operating experience included the applicant's evaluation of condition reports addressing issues similar to those identified in NRC Information Notice 2002-12, "Submerged Safety-Related Electrical Cables," dated March 2002. Initial investigations by the applicant determined that some manholes containing safety-related cables had the potential for cable submergence. Each unit identified seven manholes with this potential vulnerability. The Unit 3 manholes had been governed by a preventive maintenance program whereby they were being routinely inspected and pumped out as necessary. Through this program, the applicant concluded that the Unit 3 cables had not been submerged.

Unit 2 did not have a similar preventive maintenance program. Therefore the applicant concluded that the Unit 2 cables in question might have been submerged. To address this concern, the applicant identified the specific safety-related cables and reviewed the applicable purchase specifications, manufacturers' specifications, and qualification records. The applicant also inspected the cables for indications of degradation resulting from submergence, but found none. The applicant's engineering evaluation determined that the cables were acceptable for continued use. The applicant added the Unit 2 manholes to a preventive maintenance program requiring periodic inspection and pumpout (if necessary) of the manholes.

On the basis of its review of the above operating experience, the staff concludes, that the applicant's program for inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.14 of the MPS Unit 2 LRA and Appendix A, Section A2.1.13 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements program. The staff reviewed these sections, together with the supplement letters, and determined the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exception and the associated justifications and determined that the AMP, with the exception is adequate to manage the aging effects for which it is credited. Also, the staff has reviewed the enhancement and confirmed that the implementation of the enhancement prior to the period of extended operation would result in the existing aging management program being consistent with the GALL Report AMP to which it was compared. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.11 Inservice Inspection Program: Containment Inspections

Summary of Technical Information in the Application: The applicant's inservice inspection program for containment inspections is described in LRA Section B2.1.16, "Inservice Inspection Program: Containment Inspections." In the LRA, the applicant stated that this is an existing program. This program is consistent, with exceptions, with GALL AMPs XI.S1, "ASME Section XI, Subsection IWE;" XI.S2, "ASME Section XI, Subsection IWB;" and XI.S4, "10 CFR Part 50, Appendix J."

The applicant stated in the LRA that the inservice inspection program: containment inspections program manages the aging effects of change of material properties, cracking, and loss of material. The program is consistent with the ASME "Boiler and Pressure Vessel Code," Section XI, Subsections IWE and IWB, and 10 CFR 50.55a(b)(2), which provide the criteria for inservice inspections of containment structural components. ASME Section XI, Subsection IWE specifies the examination requirements for steel containments (Class MC) and the steel liners of concrete containments (Class CC), including their integral attachments. ASME Section XI, Subsection IWB specifies the examination requirements for reinforced and prestressed concrete containments (Class CC).

The scope of Subsection IWE and IWB examinations includes the surface areas and components identified in IWE-1231 and IWB-1210. Exempted or inaccessible areas as allowed by Subsections IWE and IWB are specifically identified by the program.

The applicant stated in the LRA that the prestressed, post-tensioned concrete containment is assessed pursuant to the examination requirements of ASME Section XI, Subsection IWB, Examination Category L-B for unbonded post-tensioning systems. Examination requirements similar to those specified in Subsection IWB are also identified in the technical specifications in order to meet the requirements of Regulatory Guide 1.35, "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containments," Revision 3, dated July 1990.

Appendix J leakage rate testing is included as part of the inservice inspection program: containment inspections. The program implements Type A tests to measure the overall primary containment integrated leakage rate.

Prestress on the Unit 2 containment tendons is expected to decrease over the life of the unit as a result of such factors as elastic deformation, creep and shrinkage of concrete, anchorage seating losses, tendon wire friction, stress relaxation, and corrosion. The evaluation of containment tendon examination and surveillance test results is considered a time-limited aging analysis (TLAA) for license renewal. This TLAA is addressed in the Unit 2 LRA, Section 4.5, and is addressed in Section 4 of this SER.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's evaluation of the audit and review are documented in the audit and review report. Furthermore, the staff reviewed the exceptions and their justifications to determine whether the AMP, with the exceptions, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.16 of the LRA, the applicant stated that the inservice inspection program: containment inspections is consistent with GALL AMPs XI.S1, XI.S2, and XI.S4, with exceptions. The inservice inspection program: containment inspections takes exception to the "scope of program," "parameters monitored/inspected," "detection of aging effects," "monitoring and trending," and "acceptance criteria" program elements such that GALL AMPs XI.S1 and XI.S2 cover both the 1992 Edition with the 1992 Addenda and the 1995 Edition with the 1996 Addenda of ASME Section XI, as approved in 10 CFR 50.55a. The ASME Section XI, Subsections IWE/IWB inservice inspection program complies with ASME Section XI, 1998 Edition with no addenda. Significant changes have been made to Subsections IWE/IWB between these respective Code editions.

The staff noted that the ASME Section XI, Subsections IWE and IWB inservice inspection program complies with an edition of Section XI approved by the NRC for use at MPS. The NRC mandated that all operating reactor licensees bring their Code of record uniformly compliant with the ASME Section XI, 1998 Edition with no addenda, which is current with programs such as the Program Demonstration Initiative (66 FR 40626).

On the basis that the Code edition of record for MPS is a later version of the ASME Section XI Code that also meets the intent of the GALL Report, the staff finds the first exception to be acceptable.

The inservice inspection program: containment inspections also takes exception to the "scope of program" program element in that the program credits only the Type A integrated leak rate test to manage the effects of aging. For the program element associated with the second exception taken by the applicant, the GALL Report states that the scope of the containment leakage rate testing program includes all pressure-retaining components. Two types of tests are implemented. Type A tests are performed to measure the overall primary containment integrated leakage rate. Type B tests are performed to measure local leakage rates across each pressure-containing or leakage-limiting boundary for containment penetrations. Type A and B tests described in 10 CFR 50, Appendix J, are acceptable methods for performing these leakage rate tests. Leakage testing for containment isolation valves (normally performed under Type C tests), if not included under this program, is included under leakage rate testing programs for systems containing the isolation valves.

The applicant stated in the LRA that the inservice inspection program: containment inspections credits only Type A integrated leak rate testing to manage the effects of aging. However, the staff noted that the Type B test is a local leak rate test intended to measure leakage of containment penetrations whose design incorporates resilient seals and gaskets, including air locks door seals and equipment hatch gaskets. The staff found that not crediting the Type B test in accordance with the guidance in GALL AMP XI.S.4 was unacceptable and requested additional clarifications from the applicant regarding how the aging effects on resilient seals and gaskets, including air locks door seals and equipment hatch gaskets, will be managed. In an LRA supplement letter dated July 7, 2004, the applicant stated the following:

> For Unit 2 and Unit 3 Appendix B, Section B2.1.16 (page B-63), the fourth paragraph should read:
>
> "The Containment Appendix J Leakage Rate Test Program implements Type A tests to measure the overall primary Containment integrated leakage rate (ILRT) and Type B tests to detect and measure local leakage across each pressure-containing or leakage limiting boundary for Containment penetrations, airlock doors and hatches, whose design incorporates a resilient seal, gasket or expansion bellows, and for electrical penetrations."
>
> For Unit 2 and Unit 3 Appendix B, Section B2.1.16, Exception 2: XI.S4 - Leak Rate Testing (page B-67), the exception wording should read:
>
> "The NUREG-1801, Section XI.S4 discusses 10 CFR 50 Appendix J, Type A Integrated Leak Rate Testing (ILRT) as well as Type B and C Local Leak Rate Testing (LLRT). The Inservice Inspection Program: Containment Inspections credits only the Type A ILRT and Type B LLRT to manage the effects of aging identified in the NUREG-1 801 program element, Detection of Aging Effects.
>
> Program Elements Affected
> Scope of Program
> "This program element identifies three types of leak rate testing (Type A, B and C) as defined by 10 CFR 50, Appendix J. The Inservice Inspection Program: Containment Inspections utilizes only the Type A integrated leak rate testing and Type B local leak rate tests to manage the effects of aging."

On the basis that the exception, as revised by the supplement letter, credits both Types A and B testing for management of aging effects for license renewal, the staff finds this exception to be acceptable.

Operating Experience. The staff reviewed operating experience for the applicant's inservice inspection program: containment inspections program. The applicant stated in the LRA that operating experience indicates that the inspection and corrective action activities have successfully maintained the integrity of in-scope components. Any degradation of the containment found during inspections has been noted and corrected, as necessary, to preclude adverse effects on plant safety and operability.

On the basis of its review of the above operating experience, the staff concludes that the inservice inspection program: containment inspections adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.16 of the MPS Unit 2 LRA and Appendix A, Section A2.1.15 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the inservice inspection program: containment inspections. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exceptions and the associated justifications and determined that the AMP, with the exceptions is adequate to manage the aging effects for which it is credited. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.12 Inservice Inspection Program: Reactor Vessel Internals

Summary of Technical Information the application. The applicant's inservice inspection program: reactor vessel internals is described in LRA Section B2.1.17, "Inservice Inspection Program: Reactor Vessel Internals." In the LRA, the applicant stated that this is an existing MPS program. This program will be consistent, with exceptions and an enhancement, with GALL AMPs XI.M12, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)," XI.M13, "Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)," and XI.M16, "PWR Vessel Internals."

The applicant stated in the LRA that the inservice inspection program: reactor vessel internals manages the aging effects of loss of material, cracking, loss-of-preload, change in dimension, and loss of fracture toughness (which presents itself as cracking due to embrittlement) through the use of inspections. The stainless steel and nickel-based alloy internals components susceptible to stress corrosion cracking, irradiation-assisted stress corrosion cracking, primary water stress corrosion cracking, void swelling, fretting wear, stress relaxation, and neutron irradiation embrittlement that support the intended function of the reactor vessel in a passive manner are in scope for this AMP. Reactor vessel internals components made from cast austenitic stainless steel (CASS) are in scope for this program and additionally are susceptible to thermal aging embrittlement. The inclusion of CASS components precludes the need for susceptibility screening (based on casting method, molybdenum content, and ferrite content) to determine applicability of the identified aging mechanisms. The reactor vessel internals components that are in scope for this AMP include the interior of the reactor vessel, integrally welded core support structure and interior attachments to the reactor vessel, and removable core support structures. Examinations conducted under the inservice inspection program: reactor vessel internals include inservice inspections performed in accordance with ASME Section XI, Class 1, examination categories B-N-1, B-N-2, and B-N-3 for accessible reactor vessel internals surfaces, and augmented examinations not required by ASME Section XI.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's evaluation of the audit and review are documented in the audit and review report. Furthermore, the staff reviewed the exceptions and the applicant's justifications for the exceptions and enhancement to determine whether the AMP remains adequate to manage the aging effects for which it is credited. The staff's evaluation of the exceptions taken by the applicant in the program for the reactor vessel internals program is given in the paragraphs that follow.

Exceptions to NUREG-1801

Exception Number 1 in LRA, Section B2.1.17. In Appendix B2.1.17 of the LRA, the applicant took an exception to the staff's position recommending augmented examinations in addition to the current inspections required by the ISI program. Generally, the staff's positions in Sections X1.M12, X1.M13, and X1.M16 of NUREG-1801, is to use enhanced volumetric examinations, enhanced visual VT-1 examinations or perform a plant-specific or component-specific flaw tolerance evaluations.

The applicant stated that it will not perform these augmented inspections, but will follow the industry efforts on reactor vessel internals regarding such issues as thermal or neutron irradiation embrittlement (loss of fracture toughness), void swelling (change in dimensions), stress corrosion cracking (PWSCC and IASCC), and loss of pre-load for baffle and former-assembly bolts and will implement the appropriate recommendations resulting from this guidance. The EPRI MRP's activities include the issues of thermal or neutron irradiation embrittlement (loss of fracture toughness), void swelling (changes in dimensions), and stress corrosion cracking (PWSCC and IASCC) for the in-scope components. In addition, the issue of loss of pre-load for baffle and former assembly bolts for Millstone Unit 3 will also be addressed by the EPRI MRP activities. Millstone Unit 2 is a Combustion Engineering design and therefore the aging management of the baffle and former assembly bolts are not applicable. The applicant will implement these appropriate recommendations and is identified as Commitment 13 in Appendix A, Table A6.0-1 of the LRA.

Since it has been adopted in NUREG-1801, use of industry (EPRI MRP) research studies and activities on age-related degradation of PWR RV internal components may be used as an alternative basis for determining which age-related degradation mechanisms are applicable to PWR RV internals and what types of examinations are necessary to manage these mechanisms. This is a process-oriented approach to aging management that will ensure that the inspections proposed for PWR RV internals are those that the industry research studies have demonstrated are necessary to maintain the structural integrity or functionality of the components. NRC review of the recommended activities is an integral part of the industry initiative process.

Therefore, any proposal to use the industry's research studies and activities on RV internals as the basis for aging management should be coupled with: (1) a formal commitment to submit the inspection plans for the RV internals to the NRC for review and approval no later than three years prior to the period of extended operation, and (2) including this commitment in the Millstone Units 2 and 3 LRAs commitment tracking system. The staff addressed this in RAI B2.1.17-1(1) and B2.1.17-1(2).

In response to RAI B2.1.17-1(1) in a letter dated December 3, 2004, the applicant provided the following:

> The LRAs for Millstone Units 2 and 3 (Appendix A, Table A6.0-1, commitment 13) identify that Millstone will follow the industry efforts on reactor vessel internals regarding such issues as thermal or neutron irradiation embrittlement (loss of fracture toughness), void swelling, stress corrosion cracking (PWSCC and IASCC), and for the Millstone Unit 3 commitment only, loss of pre-load for the baffle and former-assembly bolts. Dominion provided a supplemental response applicable to commitment 13 for both Millstone Unit 2 and 3 as

documented in the Dominion letter (Serial Number 04-320) dated July 7, 2004, (Audit Item Number 6). The supplemental response letter identifies the statement, "The revised program description, including a comparison to the 10 program elements of the NUREG-1801 program, will be submitted to the NRC for approval," should be inserted at the end of the [current] commitment. Appendix A, Table A6.0-1 for both the Unit 2 LRA and the Unit 3 LRA already states that commitment 13 is scheduled to be completed prior to the period of extended operation. The supplemental response letter also identifies the other applicable locations in both the Unit 2 LRA and the Unit 3 LRA where this additional wording should be inserted.

The staff found this commitment unacceptable since the applicant had not specifically committed to submit the program two years prior to the period of extended operation in order for the NRC to review and approve the program prior to its implementation at the facility during the period of extended operation. Therefore, the applicant was requested to revise commitment 13 of Appendix A, Table A6.0-1 of the Millstone Units 2 and 3 LRAs to state that the revised program implementing the industry efforts on reactor vessel internals will be submitted to the NRC for approval "two years" prior to the period of extended operation.

In response to supplemental RAI B2.1.17-1(1) in a letter dated February 8, 2005, the applicant has revised commitment 13 of Appendix A, Table A6.0-1 of the Millstone Units 2 and 3 LRAs to state that the revised program implementing the industry efforts on reactor vessel internals will be submitted to the NRC for approval two years prior to entering the period of extended operation. This commitment is acceptable to the staff. This resolves RAI B2.1-17(1).

In response to RAI B2.1.17-1(2) in a letter dated December 3, 2004, the applicant stated that commitment 13 in LRAs for Millstone Unit 2 and 3 will be included in the commitment tracking system, as is done for all new licensing commitments. Since the applicant confirmed that the commitment will be included in the commitment tracking system, the staff finds the proposal to use the industry's research studies and activities on RV internals acceptable for implementing into their aging management program and to be submitted to the NRC for approval prior to entering the extended period of operation. This resolves RAI B2.1.17-1(2).

Exception Number 2 in LRA, Section B2.1.17. The applicant's second exception to NUREG-1801, is the use of ASME Section XI, 1989 Edition with no addenda in lieu of the 1995 Edition with the 1996 Addenda recommended by GALL AMP XI.M16. However, both editions identify the same inspections (VT-3) for the applicable ASME Section XI examination requirements for Category B-N-3 PWR internals. Therefore, since the inspections are the same, the use of ASME Section XI, 1989 Edition with no addenda in lieu of the 1995 Edition with the 1996 Addenda is acceptable to the staff for the PWR vessel internals. It should be noted that these inspections will be augmented by the industry recommendations guidelines that will be implemented prior to entering the extended period as discussed above.

Enhancement to NUREG-1801. NUREG-1801, Section IVB2.1-d identifies the use of the ASME Section XI Inservice Inspection AMP to manage loss of preload for the core barrel holddown spring. The applicant proposed an enhancement to the core barrel holddown spring inspection. Specifically, the augmented inspection of the Millstone Unit 3 core barrel holddown spring will be performed to detect gross indication of loss of preload. However, in order for the staff to determine whether this is an enhancement to the current requirements, the staff required the applicant to provide the type of inspections to be performed, the inspection frequency and the acceptance criteria to justify that these inspections will be will be effective in managing the aging effects specified in Table 3.1.2-2 of the LRA for the holddown springs. This was addressed in RAI B2.1.17-2.

In response to RAI B2.1.17-2, in a letter dated December 3, 2004, the applicant stated that the exact examination method, acceptance criteria and frequency of inspections are in the process of being determined. Currently, commitment 14 of Table A6.0-1 of the Millstone Unit 3 LRA states that the proposed inspection will detect gross indication of loss of preload as an aging effect and be performed prior to the period of extended operation. However, the applicant has stated that as an alternative to performing an augmented inspection, the holddown spring may be replaced prior to the period of extended operation. Therefore, the applicant will include the following statement in commitment 14 of the Millstone Unit 3 LRA, "As an alternative to performing an augmented inspection, the holddown spring will be replaced prior to the period of extended operation." Since the proposed augmented inspection has not be developed or approved, the staff requests the applicant to commit to submit this inspection plan to the NRC for approval two years prior to entering the extend period or commit to replace the holddown springs two years prior to entering the extended period.

In response to supplemental RAI B2.1.17-1(2) in a letter dated February 8, 2005, the applicant has revised commitment 14 of Appendix A, Table A6.0-1 of the Millstone Units 3 LRA to state that as an alternative to performing an augmented inspection, the holddown spring will be replaced at least two years prior to entering the period of extended operation. This commitment is acceptable to the staff. This resolves RAI B2.1.17-2.

The staff also requested in RAI B2.1.17-1(3), that the applicant include loss of preload in List of Commitments, Table A6.0-1 in Appendix A of the Millstone Units 2 and 3 LRA to fully describe all of the necessary aging effects and their management. In response to RAI B2.1.17-1(3) in a letter dated December 3, 2004, the applicant stated that for both Millstone Units 2 and 3, loss of pre-load is an applicable aging effect that is managed by the inservice inspection program: reactor vessel internals program for bolting used in the reactor vessel. The Millstone Unit 3 LRA (Appendix A, Table A6.0-1, commitment 13) identifies that Millstone Unit 3 will follow the industry efforts on the loss of pre-load for the baffle and former assembly bolts. This is applicable to Millstone Unit 3 only since Millstone Unit 2 is a Combustion Engineering design, and therefore the aging management of the baffle and former assembly bolts is not applicable. The staff finds this acceptable since the bolting in the reactor vessel internals for Millstone Units 2 and 3 will be inspected in accordance with the ASME Code, Section XI, and the baffle and former assembly bolts in Millstone Unit 3 will have augmented inspections performed. This augmented inspection will be based on industry efforts and will be submitted to the NRC for approval prior to entering the period of extended operation. Since the proposed augmented inspection had not be developed or approved, the staff requested the applicant to commit to submit this inspection plan to the NRC for approval three years prior to entering the period of extended operation.

In response to supplemental RAI B2.1.17-1(3) in a letter dated February 8, 2005, the applicant has revised Commitment 13 of Appendix A, Table A6.0-1 of the Millstone Unit 3 LRA to state that the revised program implementing the industry efforts on reactor vessel internals, including the augmented inspection of the baffle and former bolts, will be submitted to the NRC for approval two years prior to entering the period of extended operation. This commitment is acceptable to the staff. This resolves RAI B2.1.17-1(3).

NUREG-1801, Sections IVB2.1k, IVB2.5-l, and IVB2.5-h, recommends loss of preload to be managed by the AMP XI.M1, "ASME Section XI Inservice Inspection," which correlates to the applicant's AMP B2.1.18, "Inservice Inspection Program: Systems, Components and Supports." The applicant stated that AMP B2.1.17, "Reactor Vessel Internals," will be used to manage loss of preload/stress relaxation for the clevis insert bolts, upper support column bolts and the lower support plate column bolts. However, the applicant's AMP B2.2.17, has no requirement for these bolts. The applicant was requested in RAI B2.1.18-4 to specify the correct AMP as recommended by NUREG-1801 or provide the necessary information in AMP B2.1.17.

In response to RAI B2.1.18-4 in a letter dated December 3, 2004, the applicant stated that the inservice inspection program: reactor vessel internals, AMP B2.1.17 includes the requirements for examination category B-N-3 of the ASME Code, Section XI, Subsection IWB.

Category B-N-3 of Table IWB-2500-1 of the ASME Code includes examination requirements for removable core support structures (i.e., reactor vessel internals) including the clevis insert bolts, the upper support column bolts, and the lower support plate column bolts. This is acceptable to the staff since these examinations are identical to the examinations recommended by GALL AMP XI.M1, "ASME Section XI Inservice Inspection," which correlates to the applicant's AMP B2.1.18 for these components. Therefore, RAI B2.1.18-4 is resolved.

Operating Experience. The staff reviewed operating experience for the applicant's inservice inspection program: reactor vessel internals program. The review indicated that this program is in compliance with the inspection requirements of ASME Section XI and has identified no issues related to age degradation of in-scope reactor vessel internals components.

On the basis of its review of the above operating experience the staff concludes that the inservice inspection program: reactor vessel internals adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.17 of the MPS Unit 2 LRA and Appendix A, Section A2.1.16 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the inservice inspection program: reactor vessel internals. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exceptions and the associated justifications, and determined that the AMP, with the exceptions is adequate to manage the aging effects for which it is credited. Also, the staff has reviewed the enhancement and confirmed that the implementation of the enhancement prior to the period of extended operation would result in the existing aging management program being consistent with the GALL Report AMP to which it was compared. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.13 Inservice Inspection Program: Systems, Components and Supports

Summary of Technical Information in the Application. The applicant's inservice inspection program: systems, components and supports is described in LRA Section B2.1.18, "Inservice Inspection Program: Systems, Components & Supports." In the LRA, the applicant stated that this is an existing MPS program. This program will be consistent, with exceptions, with GALL AMPs XI.M1, "ASME Section XI Inservice Inspection, Subsection IWB, IWC, and IWD," XI.M3, "Reactor Head Closure Studs," XI.M11, "Ni-Alloy Nozzles and Penetrations," XI.M12, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)," and XI.S3, "ASME Section XI Inservice Inspection, Subsection IWF."

The applicant stated in the LRA that the inservice inspection program: systems, components, and supports is an existing program that was developed to comply with the requirements of ASME Section XI. The ASME Code provides the requirements for inservice inspection, repair, and replacement of all Class 1, 2, and 3 components and associated component supports. For license renewal, the applicant credits managing the effects of aging for only Class 1 and specific Class 2 components (on the secondary side of the steam generators as determined through the AMR process), and for Class 1, 2, and 3 component supports. The applicant's program manages the aging effects of cracking, loss of fracture toughness, loss of material, and loss of preload.

The applicant stated in the LRA that the program addresses the inservice inspection requirements for reactor vessel closure bolting, including those associated with detection of aging effects and those associated with performing the preventive measures presented in Regulatory Guide 1.65, "Identification and Characterization of Seismic Sources and Determination of Safe Shutdown Earthquake Ground Motion," dated March 1997.

ISG-12, "Addition of Generic Aging Lessons Learned (GALL) Aging Management Program (AMP) XI.M35, 'One-Time Inspection of Small-Bore Piping,' for License Renewal," dated November 3, 2003, addresses cracking of small-bore Class 1 piping as a result of thermal fatigue or stress corrosion cracking. ISG-12 states that for plants that have not experienced cracking of small-bore Class 1 piping, a one-time inspection is an acceptable method to confirm that these aging effects are not occurring. However, if a plant has experienced cracking in small-bore Class 1 piping resulting from these aging effects, periodic inspections may be necessary as a plant-specific AMP. The applicant stated that although cracking of small-bore Class 1 piping from thermal fatigue or stress corrosion cracking has not been a problem, it has included small-bore piping in the Units 2 and 3 risk-informed inservice inspection (RI-ISI) programs. Based on risk significance (determined by an evaluation of the consequence of failure) and on the probability of failure; a volumetric, surface, or VT-2 visual examination is performed for specific small-bore pipe welds and base metal areas as defined in the unit-specific RI-ISI inspection plans. These examination methods detect cracking and leakage resulting from thermal fatigue, cyclic loading, stress corrosion cracking, and primary water stress corrosion cracking.

Industry programs are currently investigating aging effects applicable to nickel-based alloys (i.e., primary water stress corrosion cracking in Alloy 600 base metal and Alloy 82/182 weld metals) and are attempting to identify appropriate aging management activities to manage these aging effects. The applicant stated in the LRA that it will follow these industry efforts and will implement the appropriate recommendations resulting from this guidance. This commitment is identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 14, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 15.

The applicant stated in the LRA that for potentially susceptible CASS materials, either enhanced volumetric examinations or a unit- or component-specific flaw tolerance evaluation (considering reduced fracture toughness and unit-specific geometry and stress information) will be used to demonstrate that the thermally embrittled material has adequate fracture toughness..

The applicant stated in the LRA that as a result of NRC Bulletin 88-09, "Thimble Tube Thinning in Westinghouse Reactors," dated July 26, 1988, Unit 3 actively manages incore thimble tube degradation through performance of eddy current testing during each outage.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's evaluation of the audit and review are documented in the audit and review report. Furthermore, the staff reviewed the exceptions and their justifications to determine whether the AMP, with the exceptions, remains adequate to manage the aging effects for which it is credited.

The applicant describes the reactor head closure stud program in LRA Section B2.1.18, "Inservice Inspection Program: Systems, Components and Supports." The applicant's discussion in LRA Section B2.1.18, "Inservice Inspection Program: Systems, Components and Supports," indicates that the inservice inspection program incorporates program attributes from GALL AMPs XI.M1, "ASME Section XI Inservice Inspection, Subsection IWB, IWC, and IWD;" XI.M3, "Reactor Head Closure Studs;" AMP XI.M11, "Nickel Alloy Nozzles and Penetrations;" XI.M12, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS);" and XI.S3, "ASME Section XI, Subsection IWF," and include discussions on thimble tube inspection and mechanical nozzle seal assemblies.

The applicant stated in the LRA that the ASME Class 2 and Class 3 components that are not in the scope of this AMP will continue to be inspected during the period of extended operation as part of the ASME Section XI inservice inspection program. However, the staff noted that the applicant has opted to use other appropriate preventive and condition monitoring programs, such as the general condition monitoring, to manage the effects of aging for these components.

The applicant stated that this program is an existing program that is consistent with the GALL Report, with exceptions that will be discussed in the evaluation below. This AMP will be reviewed in subsections that correspond to the incorporated NUREG-1801 AMPs discussed above to determine if they are consistent and provide the necessary information to manage the appropriate aging effects such that there is reasonable assurance that their intended functions will be maintained.

ASME Section XI Inservice Inspection (GALL AMP XI.M1)

Staff Evaluation. The applicant describes the ASME Section XI Inservice Inspection, Subsection IWB, IWC, and IWD program in LRA Section B2.1.18, "Inservice Inspection Program: Systems, Components and Supports." The aging effects that are managed by this AMP include cracking, loss of fracture toughness, loss of material, and loss of pre-load. This AMP is an existing program that was developed to comply with the requirements of Section XI of the ASME Boiler and Pressure Vessel Code. The ASME program provides the requirements for ISI, repair, and replacement of all Class 1, 2, and 3 components and the associated component supports. For license renewal, the Millstone program has been credited to manage the effects of aging for Class 1, specific Class 2 components, and the Class 1, 2, and 3 component supports. The applicant stated that this program is consistent with GALL AMP XI.M1, with exceptions.

Exception Number 1: XI.M1 – Risk-Informed Inservice Inspection

GALL AMP XI.M1 does not currently recognize risk informed - inservice inspection (RI-ISI) programs as an alternative to the current ASME Section XI inservice inspection requirements. Millstone Unit 2 has submitted a request to implement a RI-ISI program by letter dated November 10, 2003. The Unit 3 RI-ISI program was approved by the staff by letter dated March 12, 2002. The RI-ISI program is applicable to the nondestructive examination (NDE) requirements for ASME Section XI Examination Category B-F and B-J welds and, for Unit 3 only, base metal locations. (Note: The RI-ISI analysis performed at Millstone Unit 2 identified no base metal locations that were considered to be potentially susceptible to thermal fatigue.) For these locations, examination requirements are determined on a component-specific basis. Pressure tests and VT-2 visual examinations shall continue to be performed as currently required by the Code. While the number of examinations is reduced, the risk from implementation of this program is expected to slightly decrease when compared to that estimated from the current requirements. The primary basis for the risk reduction is that examinations will be required for safety significant piping segments, which may not be currently inspected per the existing ASME Section XI program. In addition, the RI-ISI program is a living program that requires updating and expansion based on industry and site specific inspection findings. At present, a RI-ISI program is approved for use on an ASME Code 10-year ISI interval specific basis. Therefore, the applicant will have to request approval to use the RI-ISI program for the specific intervals during the period of extended operation in accordance with the appropriate ASME Code of record for the fifth and sixth ISI intervals, as referenced in 10 CFR 50.55a twelve months prior to each interval. Therefore, the staff finds that the ASME Code Section XI, as referenced in 10 CFR 50.55a, twelve months prior to each inspection interval of extended operation, as modified by a staff approved or authorized RI-ISI program, is acceptable for the period of extended operation.

Since the V.C. Summer main coolant loop weld cracking event involving Alloy 82/182 weld material, the staff has considered the effect of primary water stress-corrosion cracking on Alloy 82/182 piping welds as an operating plant issue affecting all piping. To resolve this issue, the industry has taken the initiative to (1) develop overall inspection and evaluation guidance, (2) assess the current inspection technology, and (3) assess the current repair and mitigation technology. An interim industry report, "PWR Materials Reliability Project Interim Alloy 600 Safety Assessment for US PWR Plants (MRP-44), Part 1: Alloy 82/182 Pipe Butt Welds," was published in April 2001 to justify the continued operation of PWRs while the industry completes the development of the final report. The staff accepted this interim report in an SE dated June 14, 2001, stating that, "Should the industry not be timely in resolving inspection capabilities to identify PWSCC in Alloy 600 welds, regulatory action may result." These industry initiatives and/or regulatory requirements will supersede the RI-ISI program requirements for dissimilar metal welds.

The inservice inspection program: systems, components and supports also takes exception to the "scope of the program," "parameters monitored/inspected," "detection of aging effects," and "monitoring and trending" program elements such that for the Units 2 and 3 Class 1 examination category B-F and B-J type welds and, for Unit 3 only, base metal locations, inspection, examination, and additional examination requirements have been developed on a component-specific, risk-informed basis as part of an integrated approach for risk-informed analyses. For the program elements associated with the second exception taken by the applicant, the GALL Report, in GALL AMP XI.M1, stated that the program element refers to ASME Section XI, Table IWB-2500-1 for the identification of examination and inspection requirements for Class 1 components. The examination methods are based on the requirements in ASME Section XI, Table IWB-2500-1 for Class 1 components. The inspection extent and frequency are based on IWB-2500, which provides for timely detection of degradation for Class 1 components. Indications during examination which exceed acceptance standards are to be extended to include additional examinations in accordance with IWB-2430 for Class 1 components.

The applicant stated in the LRA that Unit 2 has submitted a request to implement an RI-ISI program and Unit 3 has received approval from the NRC to implement an RI-ISI program. The process of developing the scope for the RI-ISI programs includes not only an evaluation of risk significance and failure probability, but also considers operating experience. RI-ISI implementation will reduce the risk and failure probability. The inspection and examination requirements, examination methods, and inspection extent and frequency are determined on a component-specific, risk-informed basis as part of an integrated approach for risk-informed analyses. The staff reviewed the Unit 3 RI-ISI program plan, and determined that the reduction in risk provides sufficient justification for this exception.

Reactor Head Closure Studs Program (GALL AMP XI.M3)

Staff Evaluation. The applicant describes the Reactor Head Closure Stud program in LRA Section B2.1.18, "Inservice Inspection Program: Systems, Components and Supports." The aging effects that are managed by this AMP include cracking, loss of fracture toughness, loss of material and loss of pre-load. This AMP addresses the inservice inspection requirements for the reactor vessel closure bolting, including inservice inspection to detect aging effects and preventive measures of Regulatory Guide 1.65, "Materials and Inspections for Reactor Vessel Closure Studs," to mitigate cracking. The applicant stated that this program is consistent with GALL AMP XI.M3 with some exceptions, discussed in the evaluation below (Section 3.1.2.3.3.2 of this SER).

Exception Number 3 in LRA, Section B2.1.18. The applicant stated that Millstone Unit 3 complies with ASME Code Section XI, 1989 Edition with no addenda. GALL AMP XI.M3 describes a reactor head closure stud program that is, in part, based upon the 1995 Edition of the Code through the 1996 addenda. The 1995 Edition of the ASME Code through the 1996 addenda requires a visual (VT-1) examination of the closure head studs. The 1989 Edition to the ASME Code with no addenda requires a surface examination (e.g., magnetic particle, or liquid penetrant). Therefore, the Millstone Unit 3 inservice inspection plan specifies a surface examination (e.g., magnetic particle, or liquid penetrant) in accordance with the requirements of the 1989 ASME Code Edition in lieu of a visual (VT-1) examination of the surface of the closure head nuts. The examination method for nuts used in other Class 1 components, such as steam generators, pressurizer, heat exchangers, piping, pumps and valves, has always been a VT-1 visual examination. Therefore, the 1995 Edition of the Code through the 1996 addenda is consistent with the examination method used for the other Class 1 components. The 1995 Edition of the Code through the 1996 addenda also included a more detailed acceptance standard for the VT-1 visual examination, thereby making the visual examination comparable to the surface examination. Therefore, the surface examination is comparable to the visual examinations required by the later editions of the ASME Code. In addition, the surface examination is a well-qualified examination method that is widely used to detect cracking in ASME Code components and therefore, the staff finds the use of the surface inspection to the ASME Code Section XI, 1989 Edition with no addenda acceptable.

Exception Number 4 in LRA, Section B2.1.18: The applicant stated that the closure studs at Millstone Unit 2 are consistent with the recommendations of Regulatory Guide 1.65, except that the material requirements used for the corresponding nuts and washers are in accordance with ASTM A540, Grade B-23 in lieu of ASME SA 540, Grade B-23 material identified in Regulatory Guide 1.65. Based on the review of these material specifications, the materials chemical and mechanical properties are the same. Therefore, the staff finds this exception to be acceptable since it uses material similar to the regulatory guide requirements.

In addition, Section B2.1.18 of the LRA stated that Millstone Unit 2 complies with ASME Code Section XI, 1989 Edition with no addenda. GALL AMP XI.M3 describes a reactor head closure stud program that is, in part, based upon the 1995 Edition of the Code through the 1996 addenda which requires a visual (VT-1) examination on the surfaces of the closure head nuts. Although Millstone Unit 2 complies with the 1989 Edition of the ASME Code, relief was granted from performing the surface examination of the nuts as required by the 1989 Edition. Thus, Millstone Unit 2 performs a visual examination. This is acceptable to the staff in that this is the inspection identified by GALL AMP XI.M3 and the 1995 Edition of ASME Code through the 1996 Addenda. Therefore, the applicant is performing the inspections as required by the ASME Code to manage the aging effects of the closure studs, nuts and washers.

NUREG-1801 indicates that reactor head closure studs are susceptible to loss of material due to wear and to crack initiation and growth due to stress corrosion cracking (SCC). GALL recommends Chapter XI.M3, "Reactor Head Closure Studs" program as a program acceptable for mitigating and monitoring these aging effects. This program relies on ASME Code Section XI, Subsection IWB to monitor and detect this aging effects. Preventive measures identified in the GALL program include avoiding the use of metal-plated stud bolting to prevent degradation due to corrosion or hydrogen embrittlement and using manganese phosphate or other acceptable surface treatments and stable lubricants (RG 1.65). In RAI B2.1.18-5, the staff requested that the applicant provide the operating experience of the reactor vessel closure studs, including the use of coatings or lubrication, and what degradation, if any, that was found during these inspections with the corresponding corrective actions.

In response to RAI B2.1.18-5 in a letter dated December 3, 2004, the applicant provided the following:

> Millstone Unit 2 uses ASME SA 540, Grade B-24 as the material for the vessel studs, with a manganese phosphate coating on the studs. ASTM A 540, Grade B-23 material is used for the reactor vessel closure nuts and washers, and "parkerizing" (manganese phosphate) is the specified coating. The bolting is lubricated at installation with Fel-Pro-N-5000, a nickel-based, anti-seize lubricant, which can be used in applications with a dry surface temperature as high as 2400°F.
>
> For Millstone Unit 3, the reactor vessel closure bolting is fabricated from ASME SA-540 material. The closure studs are Grade B-24 material and the nuts and washers are Grade B-23 material. A phosphate coating is applied to the bolting. In accordance with a design modification, the threaded portions of the studs

have a PlasmaBond coating applied in lieu of the original phosphate coating. PlasmaBond is a Nickel-Silver/Palladium coating using a vapor deposition process that eliminates the potential for hydrogen embrittlement. This newer anti-galling coating was added to provide for lubrication, and has no adverse metallurgical interactions. This coating is fully endorsed by Westinghouse for use on vessel head closure studs. Application of Fel-Pro-N-5000 is not needed when vessel closure studs have been PlasmaBond coated.

As recommended by Regulatory Guide 1.65, plugs are installed in the empty stud hole cavities following stud removal during refueling for both Millstone Unit 2 and 3 in order to provide protection against contamination and corrosion. Nondestructive examinations are performed to comply with the requirements of ASME Section XI, Subsection IWB. To date, no age related degradation has been identified for the vessel closure bolting for either Millstone Unit.

For Millstone Unit 2, the applicant follows the recommendations of RG 1.65. However, for Millstone Unit 3, the staff notes that the response to RAI B2.1.18-5 stated that the closure bolting for Unit 3 uses Plasma Bond coating (Nickel-Silver/Palladium). RG 1.65 stated that silver plated studs had severe galling and severe corrosion damage in the thread roots of the studs at LaCrosse (BWR) and Yankee Rowe. Therefore, in accordance with RG 1.65, section C.1.b(3), the applicant should demonstrate that the plating will not degrade the quality of the material in any significant way (e.g., corrosion, H2 embrittlement) or reduce the quality of results attainable by the various required inspection procedures.

In response to supplemental RAI B2.1.18-5 in a letter dated February 8, 2005, the applicant stated that the use of PlasmaBond coating was applied to the threaded portions of the studs as an alternative to the phosphate coating. The PlasmaBond coating was developed and tested by the Millstone Unit 3 NSSS vendor (Westinghouse) for use on vessel head closure studs and other locations such as steam generator manway studs. This newer anti-galling coating was added to provide for enhanced lubrication. The coating has no adverse metallurgical interactions and will not affect the base metal physical properties. The applicant also stated that industry experience includes the use of the PlasmaBond coating for reactor vessel studs at Comanche Peak, Units 1 and 2, Catawba Unit 2, Beaver Valley Units 1 and 2, and Seabrook without any issues. Comanche Peak has had the most operating experience with PlasmaBond, which included six operating cycles without any degradation of the studs due to the PlasmaBond coating. In addition, Millstone Unit 3 has inspected the closure studs with the PlasmaBond coating and found no indications from the volumetric or magnetic particle examinations performed during their inservice inspection program.

PlasmaBond is a Nickel-Silver/Palladium coating that uses a vapor deposition process in lieu of an electrolytic process. Therefore, there is no hydrogen generation and no potential for hydrogen embrittlement of the fastener. The applicant also stated that this improved anti-galling coating is an approved coating recommended by Westinghouse and does not increase corrosion attack or introduce any new material degradation mechanisms. The PlasmaBond coating process precludes degradation due to hydrogen embrittlement, has no effect on ultrasonic, magnetic particle, or dye penetrant inspection techniques, and will not mask any defects. The staff finds this response acceptable since it addressed the requirements of RG 1.65, and demonstrated that this coating does not degrade the quality of the material through mechanisms such as corrosion or hydrogen embrittlement or reduce the quality of the required inspection. This resolves RAI B2.1.18-5.

NUREG-1801, Sections IVB2.1k, IVB2.5-I, and IVB2.5-h, recommends loss of preload to be managed by the AMP XI.M1, "ASME Section XI Inservice Inspection," which correlates to the applicant's AMP B2.1.18, "Inservice Inspection Program: Systems, Components and Supports." The applicant stated that AMP B2.1.17, "Reactor Vessel Internals," will be used to manage loss of preload/stress relaxation for the clevis insert bolts, upper support column bolts and the lower support plate column bolts. This issue was discussed and resolved in Section 3.0.3.2.1 of this SER.

Nickel Alloy Nozzles and Penetrations (GALL AMP XI.M11)

Summary of Technical Information. In Section B2.1.18 of Appendix B of the LRA, the applicant addressed Nickel Alloy Nozzles and Penetrations and stated it is consistent with NUREG 1801, Section XI.M11 with an exception.

Exception Number 6: XI.M11 – Reactor Vessel Top Head Inspections

GALL AMP XI.M11 references the development of an industry wide integrated, long-term inspection program based on industry responses to Generic Letter (GL) 97-01 as contained in NEI correspondence. However, since the issuance of GL 97-01, significant operating experience has been gained and corresponding staff guidance has been issued to better characterize and address the PWSCC of nickel alloys issue.

In response to the more recent staff guidance such as NRC Bulletins 2002-01 and 2002-02, Millstone Unit 2 has performed vessel top head examinations during its most recent refueling outages to assess the overall condition of the reactor vessel head. The head inspections are further discussed in the "Operating Experience" section of this program.

Staff Evaluation. In accordance with 10 CFR 54.21(a)(3), the staff reviewed the nickel alloy nozzles and penetration program to determine if the program demonstrates that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation.

The staff's original basis for inspection nickel-based reactor vessel head (RVH) penetration nozzles in U.S. PWRs is provided in GL 97-01, "Degradation of Control Rod Drive Mechanism Nozzle and Other Vessel Head Penetrations," issued on April 1, 1997. Between November 2000 and April 2001, reactor coolant pressure boundary leakage was identified from the RVH penetration nozzles of four U.S. PWR-designed light water reactor facilities. Supplemental examinations of the degraded nozzles indicated the presence of circumferential cracks in four of the RVH nozzles. These cracks initiated from the outer surface of the nozzle, either in the associated J-groove weld or heat-affected-zone, and not from the inside surface of the nozzle, as was assumed in the industry responses to NRC GL 97-01. These cracks penetrated through the nozzles and were identified as circumferential cracking. In NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," issued on August 3, 2001, the staff discussed the generic safety significance and impacts of these cracks on RVH penetration nozzles and recommended that enhanced visual examinations or volumetric examination methods be used for the inspection of RVH nozzles.

In March 2002, during a refueling outage at the Davis-Besse Nuclear Power Station, the licensee for the plant reported the occurrence of reactor coolant leakage from RVH penetration nozzles. As a result of follow-up evaluations of the reactor coolant leakage, the licensee reported that the leakage resulted in significant boric-acid-related wastage of the RVH. The wastage affected the entire thickness of the RVH with the exception of the RVH cladding (stainless steel). On March 18, 2002, the NRC issued NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," to owners of PWR designed plants, requesting that EH licensee's address the impact of the Davis-Besse event on the structural integrity of their RVHs and associated penetration nozzles. On August 9, 2002, the staff issued NRC Bulletin 2002-02, "Reactor Vessel Head and Vessel Head Penetration Nozzle Inspection Programs," to address additional technical issues resulting from the Davis-Besse event. In NRC Bulletin 2002-02, the staff specifically suggested that further augmented inspections, more comprehensive than those suggested in NRC Bulletin 2001-01, be performed on RVH penetration nozzles. On February 11, 2003, the staff issued Order EA-03-009, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," to further define to the licensee's the frequency and extent of inspection of the RPV head nozzles. On August 21, 2003, the staff issued NRC Bulletin 2003-02, "Leakage form Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity," to advise licensee's that RPV lower head inspections may need to be supplemented with additional measures to assure that the RCPB leakage is detected. On February 20, 2004, the staff issued First Revised Order EA-03-009, to modify the inspection requirements for reactor pressure vessel heads at pressurized water reactors.

The applicant stated that Millstone will follow the industry efforts investigating the aging effects applicable to nickel-based alloys (i.e., PWSCC in Alloy 600 base metal and Alloy 82/182 weld metals) and identifying the appropriate aging management activities and will implement the appropriate recommendations resulting from this guidance. This commitment is identified in Appendix A of the LRA, Table A6.0-1 License Renewal Commitments, Item 14 for Unit 2 and Item 15 for Unit 3.

In RAI B2.1.18-1 the staff requested that the applicant modify its commitment to state that the aging management activities to monitor the aging effects of nickel-based alloys will be submitted three years prior to the period of extended operation in order for the staff review and approval to determine if the program demonstrates the ability to manage the effects of aging in nickel-based components per 10 CFR 50.54.21(a)(3). In addition, the applicant needs to address how nickel-based components will be evaluated in terms of susceptibility to PWSCC.

The applicant, by letter dated December 3, 2004, modified its commitment to submit its program prior to the period of extended operation for staff review and approval. The applicant's response did not meet with the staff's request to submit the program three years prior to the period of extended operation to allow the staff time to review and approve the program. This was identified as Confirmatory Item B2.1.18-3.

In response to Confirmatory Item B2.1.18-3, in a letter dated April 1, 2005, the applicant stated that in LRA Appendix A "FSAR Supplement," Sections A2.1.18 and A2.1.22 for Unit 2 and Sections A2.1.27 and A2.1.21 for Unit 3, the commitment to follow industry efforts regarding nickel-based alloys has been modified to read:

> The revised program description will be submitted at least two years prior to the period of extended operation for staff review and approval to determine if the program

demonstrates the ability to manage the effects of aging in nickel-based components per 10 CFR 54.21(a)(3).

Additionally, the schedule for Table A6.0-1, Commitment 14 (Unit 2) and 15 (Unit 3), in LRA Appendix A will be changed to:

At Least Two Years Prior to the Period of Extended Operation.

Based on this revised commitment, Confirmatory Item B2.1.18-3 is closed.

Thermal Aging Embrittlement of CASS (GALL AMP XI.M12)

Summary of Technical Information in the Application. In Section B2.1.18 of Appendix B of the LRA, the applicant stated that the AMP "Inservice Inspection Program: Systems, Components and Supports" is consistent with the NUREG 1801 AMP XI.M12, Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS).

Staff Evaluation. The applicant stated in Section B2.1.18 of Appendix B of the LRA that the potential for thermal aging embrittlement of CASS components is addressed through the performance of plant-specific or component-specific evaluations in accordance with Section XI.M12 of NUREG-1801, to assess whether the material has adequate fracture toughness. This is consistent with the NUREG-1801 screening for susceptibility to thermal aging embrittlement of CASS piping. NUREG-1801 does not require additional inspections beyond those required by the ASME Code for pump casings and valve bodies and the ASME Code Case N-481 for pump casings. If CASS piping is not susceptible, then no additional inspections are required. However, susceptible CASS piping is required to be inspected by an enhanced volumetric examination to detect and size cracks. Therefore, the applicant was requested in RAI B2.1.18-6 to update the AMP to include the necessary inspections recommended by NUREG-1801 for CASS piping that are found to be susceptible (inadequate fracture toughness).

In response to RAI B2.1.18-6 in a letter dated December 3, 2004, the applicant stated that the following information will be added to the inservice inspection program: systems, components and supports aging management program (AMP B2.1.18) to assure that the necessary inspections will be performed for CASS piping that are found to be susceptible to thermal aging embrittlement:

> For potentially susceptible CASS materials, either enhanced volumetric examinations or a unit specific flaw tolerance evaluation considering reduction in fracture toughness and using specific geometry and stress information will be used to demonstrate that the thermally embrittled material has adequate toughness in accordance with NUREG-1801, Section XI.M12, April 2001. This commitment is identified in the FSAR Supplement, Table A6.0-1 License Renewal Commitments, Item 27 for Unit 2 and Item 28 for Unit 3.

The staff finds this response acceptable because the applicant has included the necessary management for thermal aging embrittlement of CASS components by an enhanced volumetric examination or a plant-specific flaw evaluation as recommended by NUREG -1801, Section XI.M12. This resolves RAI B2.1.18-6.

ASME Section XI, Subsection IWF (GALL AMP XI.S3)

Staff Evaluation. GALL AMP XI.S3 recommends specific percentages of Class 1, 2, and 3 ASME Section XI, Subsection IWF supports to be examined at each inspection interval that are based on later editions of the ASME Code than that used to develop the MPS inservice inspection program. When asked by the staff to justify the use of the earlier edition of the Code, the applicant stated that the percentages of MPS Units 2 and 3 Subsection IWF supports examined by the MPS AMP are based on ASME Code Case N-491-1 (Table -2500-1), which establishes the same percentages as those in the later editions of the Code and acceptable in the GALL Report. The applicant stated in the MPS LRA, that ASME Code Case N-491 was used to obtain a relief request for IWF supports examinations. The staff reviewed the applicant's internal document and identified that ASME Code Case N-491-1 was used to obtain a relief request. To clarify this, the applicant submitted an MPS LRA supplement letter, dated July 7, 2004, which stated that the revision for the referenced ASME Code Case, "N-491" should be replaced with "N-491-1" in MPS Unit 2 and Unit 3 Appendix B, Section B2.1.18 (page B-76). The staff finds this to be acceptable.

Thimble Tube Inspection

The staff's regulatory basis for establishment of the applicant's the Flux detector thimble inspection program is given in NRC Bulletin (BL) 88-09, Thimble Tube Thinning in Westinghouse Reactors [July 26, 1988], which was addressed to all holders of operating licenses or construction permits for Westinghouse-designed nuclear reactors that utilize bottom mounted instrumentation nozzles. In this Bulletin, the staff requested, in part, that each licensee addressed by the Bulletin establish an inspection program for flux detector thimble tubes (henceforth referred to as "thimble tubes") with the following program attributes:

(1) The establishment, with technical justification, of an appropriate thimble tube wear acceptance criteria (for example, based on percent through-wall loss). The staff recommended that the acceptance criteria include allowances for such items as inspection methodology and wear scar geometry uncertainties.

(2) The establishment, with technical justification, of an appropriate inspection frequency (for example, every refueling outage).

(3) The establishment of an inspection methodology that is capable of adequately detecting wear of the thimble tubes (such as eddy current testing).

Summary of Technical Information in the Application In Section B2.1.18 of Appendix B of the LRA, the applicant stated that as a result of NRC Bulletin 88-09, Millstone Unit 3 actively manages incore thimble tube degradation through performance of eddy current testing during each refueling cycle.

Staff Evaluation. In LRA Section B2.1.18, "Inservice Inspection Program: Systems, Components and Supports," the applicant specified eddy current inspections to manage the integrity of the incore neutron monitoring thimble tubes, which serve as a portion of the reactor coolant pressure boundary. As discussed in NRC Bulletin 88-09, "Thimble Tube Thinning in Westinghouse Reactors," July 26, 1988, thimble tube wall-thinning can occur as a result of flow-induced vibration. This wear damage is detected at locations associated with geometric discontinuities or area changes along the reactor coolant flow path, such as areas near the lower core plate, the core support forging, the lower tie plate, and the vessel penetrations.

To determine the acceptability of this AMP, as recommended by NUREG-1801, Section IV B2.6-c, the acceptance criterion, with technical justification, (e.g., percent through-wall loss, and wear scar geometry uncertainty) needed to be submitted to the staff. In addition, the applicant was requested in RAI B2.1.18-8 to provide the scope (the number of total tubes and the percent of the tubes inspected) of the eddy current inspections. The NRC staff also asked that the operating experience of the thimble tubes be provided.

In response to RAI B2.1.18-8 in a letter dated December 3, 2004, the applicant provided the following:

> The structural acceptance criterion for the Millstone Unit 3 BMI flux thimble tubes is 80 percent wall thinning, as determined by current and previous readings conservatively projected to the time of the next inspection. The 80% acceptance figure includes significant margins against structural failure, and is based on evaluations and testing documented in Westinghouse proprietary report WCAP-12866, "Bottom Mounted Instrumentation Flux Thimble Wear," dated January 1991. Thimbles that do not meet the acceptance standards are either capped or replaced. The eddy current calibration standard includes the most severe wear scar geometries, such that readings of actual flaws with less severe geometry are conservative. Therefore no adjustment for postulated wear scar geometry is required. Although the WCAP states that "...it is not necessary to add additional uncertainty margin to the eddy current wall loss indications...," an instrument uncertainty of 3% is assumed. This value is conservative based on the scatter in data observed at Millstone for the highly worn thimbles.
>
> There are a total of 58 BMI flux thimble tubes and currently 100% inspection is performed each outage. The frequency of future inspections may be adjusted, for example, if highly worn tubes are replaced with wear resistant material and the remaining thimbles can be shown to meet acceptance criteria for multiple cycles. To date, fourteen BMI flux thimble tubes have been repositioned and four have been capped because they might not have met the acceptance criterion prior to the next inspection.

The applicant's response demonstrates that the applicant is taking acceptable corrective actions for thimble tubes that are projected to wear beyond the acceptance criterion prior to the next inspection. Since the applicant is using the Millstone Unit 3 eddy current test (ECT) results to project the amount of wear occurring in the Millstone Unit 3 thimble tubes, and since the applicant is taking acceptable corrective action for thimbles tubes that are unacceptable for further service, the staff concludes that the inspection of the Millstone Unit 3 thimble tubes every refueling outage is acceptable.

In NRC BL 88-09, the staff requested each licensee "to establish an inspection program to monitor thimble tube performance, that includes the establishment, with technical justification, of an appropriate thimble tube wear acceptance criterion (for example, percent through-wall loss)."

The staff reviewed Proprietary WCAP-12866 and determined that the acceptance criterion in the topical report was based on conservative burst tests on Westinghouse thimble tube designs that support an 80 percent through-wall acceptance criterion for the thimble tubes at Millstone Unit 3. This value includes an additional safety margin established by Westinghouse for allowable wear in the thimble tube. This safety margin, however, does not include an allowance for instrument uncertainties, which, as a percentage of the wall thickness, must be accounted for by either adding it to the eddy current testing (ECT) wear result data or subtracting it from the acceptance criterion.

As indicated in its response to RAI B1.1.18-8 discussed above, the applicant accounted for the instrument uncertainties of three percent in its wear assessments for the thimble tubes by adding the instrument uncertainties to wall measurement data after the ECT examinations have been performed. This is acceptable. The staff concludes that the applicant's 80 percent through-wall acceptance criterion is acceptable because it is based on conservative burst tests for the thimble tubes and because it includes an acceptable safety margin on allowable wear. Therefore, the staff concludes the acceptance criteria for the flux thimble inspection program is acceptable and RAI B2.1.18-8 is resolved.

Table 3.1.2-1 of the Millstone Unit 3 LRA identified the BMI Flux Thimble Tubes and BMI guide tubes as being susceptible to cracking from SCC. The aging management programs for cracking of the BMI flux thimble tubes and BMI guide tubes includes water chemistry and AMP B2.1.18, "Inservice Inspection Program: Systems, Components and Supports" of the LRA. However, the thimble tube inspections were initially designed to inspect for wear in the thimble tubes and NUREG-1801, Section IVB2.6-a recommends the use of the PWR Vessel Internals AMP to manage cracking in the guide tubes. Details of these inspections including scope, examination method, acceptance criteria, and examination frequencies were not included in AMP B2.1.18 of the LRA. Since the OD surface of the thimble tubes is exposed to the same environment as the ID surface of the guide tube and both components are fabricated from stainless steel they would both be susceptible to SCC. Therefore, the staff requested in RAI B2.1.18-3 that the applicant provide the types of inspections that will be performed to manage cracking in the thimble and guide tubes, along with a discussion on why these types of inspections, their frequency and inspection criteria will be effective in managing cracking. Operating experience of cracking in these tubes and any resulting replacements was also to be provided.

In response to RAI B2.1.18-3 in a letter dated December 3, 2004, the applicant provided the following:

> Although the thimble tubes are inserted into the core, the BMI Flux Thimble Tubes and the BMI Guide Tubes identified in Unit 3 LRA Table 3.1.2-1 are not reactor vessel internals component[s] and the inservice inspection program: reactor vessel internals AMP is not applicable for management of the associated aging effects for these components.
>
> The BMI flux thimble tubes (corresponding to NUREG-1801 item IV.B2.6.2) are the in-core flux detector thimble tubes and are the subcomponents that are inserted and extracted from the core area through the 58 reactor vessel bottom head penetrations. The 5/16" OD BMI flux thimble tubes are exposed to the reactor coolant pressure externally and are loaded in compression in service. This compressive load combined with the small surface area does not result in a significant stress component for SCC to occur in the BMI flux thimble tubes. However, cracking due to SCC has been conservatively applied as an aging effect to the BMI flux thimble tubes. Aging management for cracking is provided by the chemistry control for primary systems program AMP in order to minimize potential contaminants. Additional aging

management is provided by crediting the existing inspection of the seal table pressure boundary during each refueling outage via the inservice inspection program: systems, components, and supports AMP.

The BMI guide tubes (no corresponding NUREG-1801 item) are the guide tubes in which the BMI flux thimble tube travels. The stainless steel BMI guide tubes extend from the seal table to the nickel-based alloy instrument tubes that are attached to the reactor vessel bottom head. This configuration results in a significant temperature reduction in the BMI guide tubes from RCS operating temperature, which greatly reduces susceptibility of the stainless steel material to SCC. Based on service temperature, the most susceptible location for cracking due to SCC in the BMI tubes is the interface weld between the BMI guide tubes and the [Instrumentation Tubes (bottom head)] in Table 3.1.2-1. This weld is inspected as part of the inservice inspection program: systems, components, and supports AMP and provides a leading indicator for BMI guide tube cracking. The reduced temperature, along with control of contaminants provided by the chemistry control for primary systems program AMP, reduces the potential for stress corrosion cracking of the BMI guide tubes.

There have been no instances of cracking found in the Millstone Unit 3 BMI flux thimble tubes or the BMI guide tubes.

The applicant's response credits the water chemistry AMP for controlling contaminants to reduce the potential of stress corrosion cracking in the flux thimble tubes and the guide tubes. For the flux thimble tubes, the applicant also credits the existing inspection of the seal table pressure boundary during each refueling outage in accordance with their inservice inspection program. In supplemental RAI B2.1.18-3(1), the staff requested the applicant specify the type of inspection (i.e. visual inspection or ultrasonic).

In its response to supplemental RAI B2.1.18-3(1) dated February 8, 2005, the applicant stated that a VT-2 examination is performed during the system leakage test performed at normal operating temperature and pressure in accordance with Examination Category B-P of the ASME Code, Section XI, Subsection IWB, during each refueling outage. The acceptance criteria for the examination is no signs of leakage, and any indications of leakage would be evaluated through the plant-specific corrective action system. The applicant also stated that operating experience related to the thimble tubes at Millstone Unit 3 has identified no occurrences of SCC. In addition, there is no known operating experience with SCC of thimble tubes having occurred in the nuclear industry. Based on the plant-specific and industry experience, the staff agrees that a VT-2 examination every refueling outage is sufficient to monitor cracking in these components. This resolves RAI B2.1.18-3(1).

For the guide tubes, the applicant credits the water chemistry AMP for reducing the potential for stress corrosion cracking and the inservice inspection program: systems, components, and supports AMP for inspecting the most susceptible location to stress corrosion cracking, which is the weld between the BMI guide tubes and instrumentation tubes on the reactor vessel bottom head, in Table 3.1.2-1 of the LRA. To determine if the inspections of the inservice inspection AMP is capable of managing SCC in the guide tubes the applicant was requested to address the following:

- Specify the type of inspection or the inspection frequency.

- In addition, if indications in this weld are found, what increase in the sampling will be performed since this is being used as an indicator that SCC is occurring?
- Also, the applicant stated that the reduced temperature from that of the RCS operating temperature reduces the potential for SCC. What temperatures do the Guide Tubes experience?
- Generic Letter 88-01 indicates that at temperatures below 200 °F stainless steel components are not susceptible to SCC. If the temperature of the guide tubes is above 200 °F, the potential for SCC is not reduced, and the applicant was requested to determine whether the inspection frequency is acceptable to detect cracking of the guide tube.

In its response to supplemental RAI B2.1.18-3(2) dated February 8, 2005, the applicant stated that to confirm that the water chemistry program is effective in mitigating SCC, a VT-2 examination during the system leakage test in accordance with the ASME Code Section XI, Subsection IWB, is performed every refueling outage. In addition, the BMI guide tubes are welded to the instrumentation tubes which penetrate and are welded to the reactor vessel bottom head. Therefore, the Instrumentation Tubes are more susceptible to SCC due to the higher operating temperature than the BMI guide tubes. The instrumentation tubes then become a leading indicator of SCC. The aging of the Instrumentation Tubes is managed the inservice inspection program: systems, components, and supports AMP. The applicant also committed to perform a 360-degree bare metal visual examination of all 58 penetrations during each refueling outage, as documented in Dominion letter S/N 03-459A dated November 17, 2003, that responded to the NRC Bulletin 2003-02. The acceptance criterion is no evidence of leakage. Any indications of leakage would be evaluated through the corrective action system. Leakage in this area would result in further examinations, including the BMI guide tubes, to determine the extent of the condition. he applicant also reviewed their operating experience, and found no occurrences of SCC at the BMI guide tubes. The staff finds that the applicant conservatively applied SCC as an aging effect for the BMI guide tubes, based on the operating experience that has identified no occurrences of SCC. In addition, the applicant has provided an inspection program to manage SCC in the BMI guide tubes. This resolves RAI B2.1.18-3(2).

Mechanical Nozzle Seal Assemblies (MNSA)

Summary of Technical Information in the Application In Appendix B, AMP B2.1.3 of the LRA, the applicant stated that nickel-based pressurizer heater penetrations for Millstone Unit 2, two penetrations were found to show evidence of leakage. A design change was generated to address the issue by installing mechanical nozzle seal assembly (MNSA) clamps on the leaking heater penetrations to prevent leaking.

Staff Evaluation. Table 3.1.2-3 of the LRA specified AMP B2.1.18, inservice inspection program, to manage cracking of the nickel-based pressurizer heater sheathes and sleeves. However, AMP B2.1.18 did not provide specific information on these components. In addition, Appendix B, AMP B2.1.3 of the LRA stated that during ISI visual inspection of the nickel-based pressurizer heater penetrations for Millstone Unit 2, two penetrations were found to show evidence of leakage. A design change was generated to address the issue by installing MNSA clamps on the leaking heater penetrations to prevent leaking. However, MNSAs are currently not considered long-term repairs, in particular for the extended period of operation, without providing justification which includes an analysis of the pressure boundary component and an inservice inspection program to be maintained throughout the licensed life of the plant. As stated in NRC letter dated December 8, 2003, to the Westinghouse Owners Group, the analysis and inservice inspection program required NRC approval. Therefore, in RAI B2.1.18-7 the applicant was requested to provide the information, set forth in the December 8, 2003, letter to justify the continued approval of the MNSAs for the period of extended operation. This information was also to include corrective actions, such as weld repairs, half-nozzle repairs or pressurizer replacements that may be performed in the future to eliminate the MNSAs. The applicant was requested to include this information in AMP B2.1.18 which manages cracking of the pressurizer penetrations.

In response to RAI B2.1.18-7 in a letter dated December 3, 2004, the applicant stated Dominion intends to replace the pressurizer during the fall of 2006 refueling outage for Millstone Unit 2 using materials that are resistant to PWSCC, as documented in its letter dated June 3, 2004. To track this commitment, the applicant was requested to revise the List of Commitments (Table A6.0-1 of Appendix A to the Millstone Unit 2 LRA) to include the commitment that the Millstone Unit 2 pressurizer will be replaced in fall 2006 with material resistant to PWSCC (i.e. Alloy 690 and 52/152).

In response to supplemental RAI B2.1.18-8 in a letter dated February 8, 2005, the applicant added Commitment Item 36 to the Millstone Unit 2 LRA, Appendix A, FSAR Supplement, Table A6.0-1 which states that Dominion will replace the Millstone Unit 2 pressurizer using materials that are more resistant to PWSCC prior to entering the extended period of operation. This commitment is acceptable to the staff and resolves RAI B2.1.18-1.

Operating Experience. The staff reviewed operating experience for the applicant's inservice inspection program: systems, components, and supports. The applicant stated in the LRA that the program identifies examples to demonstrate how the portions of the inservice inspection program related to GALL AMPs XI.M1 and XI.S3 are adequate to manage the aging effects during the extended period of operation. These examples were considered during the staff's evaluation of this AMP.

The applicant stated in the LRA that the portion of the inservice inspection program related to GALL AMP XI.M12 is new and will be implemented prior to the period of extended operation. The applicant stated in the LRA that no plant-specific operating experience exists for thermal aging embrittlement of CASS. The applicant also stated in the LRA that its program for thermal aging embrittlement of CASS was developed using research data obtained on both laboratory-aged and service-aged materials.

On the basis of its review of the above operating experience, the staff concludes that the inservice inspection program: systems, components and supports adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.18 of the MPS Unit 2 LRA and Appendix A, Section A2.1.17 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the inservice inspection program: systems, components and supports. The staff reviewed these sections and the information provided by the LRA supplements, dated July 7, 2004, and December 3, 2004, and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exceptions and the associated justifications and determined that the AMP, with the exceptions is adequate to manage the aging effects for which it is credited. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.14 Inspection Activities: Load Handling Cranes and Devices

Summary of Technical Information in the Application. The applicant's inspection activities: load handling cranes and devices program is described in LRA Section B2.1.19, "Inspection Activities: Load Handling Cranes and Devices Program." In the LRA, the applicant stated that this is an existing MPS program. This program will be consistent, with enhancements, with GALL AMP XI.M23, "Inspection of Overhead Heavy Load (Related to Refueling) Handling Systems."

The applicant stated in the LRA that the inspection activities: load handling cranes and devices program manages the aging effect of loss of material for the load handling cranes and devices within the scope of license renewal. The in-scope load handling cranes and devices are either safety-related or seismically designed to ensure that they will not adversely impact safety-related components during or subsequent to a seismic event.

Load handling cranes and devices inspections address the overall condition of the crane or device, including checking the condition of the structural members (i.e., rails, girders, etc.) and fasteners on the crane or device, the runways along which the crane or device moves, and the base plates and anchorages for the runways and monorails.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's evaluation of the audit and review are documented in the audit and review report. Furthermore, the staff reviewed the enhancements and their justifications to determine whether the AMP, with the enhancements, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.19 of the LRA, the applicant stated that the inspection activities: load handling cranes and devices program will be consistent with GALL AMP XI.M23, with enhancements. The applicant stated that it will enhance the scope of program, program element to include those lifting devices that require monitoring for license renewal, but are not already included in the program. This enhancement will be implemented prior to the period of extended operation. This commitment is also identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 15, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 16. The applicant will also enhance the detection of aging effects program element to include visual inspections for the loss of material on the crane and trolley structural components and the rails in the scope of license renewal added by the first enhancement. This enhancement will be implemented prior to the period of extended operation. This commitment is also identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 16, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 17.

The staff noted that the inspection activities: load handling cranes and devices program does not currently include all lifting devices required for license renewal. The applicant has initiated followup items to ensure that this program will be modified to include those lifting devices required for license renewal but not already managed by the program. Although this enhancement comprises more than the list of items specifically identified in the scope for GALL AMP XI.M23, the staff determined that this enhancement will bring the applicant's program into agreement with the intent of the GALL AMP XI.M23 program element. On this basis, the staff finds the first enhancement to be acceptable.

The staff noted that the AMP's implementing procedures and documentation do not currently provide all of the inspection criteria required to manage aging effects for lifting devices. The applicant has initiated followup items to ensure that the applicant's lifting and handling program implementing procedures and/or automated work orders are modified, or new ones created, to provide the required structural inspection guidance for monitoring the effects of aging. Evidence of aging effects that are potentially adverse to quality are entered into the corrective action program.

The staff finds that the applicant's proposed changes to the implementing procedures and documentation for the inspection criteria will ensure that degradation of the lifting devices will be identified before there is a loss of intended function. On this basis, the staff finds this enhancement to be acceptable since it will bring the applicant's program into agreement with the GALL Report.

<u>Operating Experience</u>. The staff reviewed operating experience for the applicant's inspection activities: load handling cranes and devices program. The review indicated the inspection activities: load handling cranes and devices program is effective in identifying and implementing repairs, and maintaining the integrity of load handling cranes and devices.

The applicant stated in the LRA that during the operating history of MPS, anomalous conditions with cranes and lifting devices have been identified. These anomalies have included principally administrative or operational issues. None of these issues has resulted from age-related degradation and they are not a concern associated with license renewal. However, in the few instances where inspection results have indicated signs of potential degradation, corrective actions have been implemented to ensure the continued capability of the system to perform its intended functions.

On the basis of its review of the above operating experience, the staff concludes that the inspection activities: load handling cranes and devices program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.19 of the MPS Unit 2 LRA and Appendix A, Section A2.1.18 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the inspection activities: load handling cranes and devices program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the enhancements and confirmed that the implementation of the enhancements prior to the period of extended operation would result in the existing aging management program being consistent with the GALL Report AMP to which it was compared. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.15 Service Water System (Open-Cycle Cooling)

Summary of Technical Information in the Application. The applicant's service water system (open-cycle cooling) program is described in LRA Section B2.1.21, "Service Water System (Open-Cycle Cooling)." In the LRA, the applicant stated that this is an existing MPS program. This program will be consistent, with three exceptions, with GALL AMP XI.M20, "Open-Cycle Cooling Water System."

The applicant stated, in the LRA, that the service water systems for Units 2 and 3 are open-cycle, once-through cooling systems that are subject to the requirements of GL 89-13, "Service Water System Problems Affecting Safety-Related Equipment," dated July 1989. The applicant uses the surveillance and control techniques recommended by GL 89-13 to manage the effects of aging on the service water systems. The program addresses the aging effects of corrosion (including MIC), erosion, protective coating failure, silting, and biofouling of service water piping and components.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's evaluation are documented in the MPS audit and review report. Furthermore, the staff reviewed the exceptions and their justifications to determine whether the AMP, with the exceptions, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.21 of the LRA, the applicant stated that the service water system (open-cycle cooling) program will be consistent with GALL AMP XI.M20, with exceptions. The service water system (open-cycle cooling) program takes exception to the "scope of program," "detection of aging effects," and "monitoring and trending" program elements in that (1) Unit 2 relies on frequent, regular inspection and cleaning of heat exchangers, in lieu of thermal performance testing as recommended by the GALL Report. Fouling determinations are made based on established differential pressure limits (fixed or derived from curves) under maximum service water flow conditions.

The staff determined that frequent, regular inspection and cleaning is allowed by GL 89-13 and meets the intent of the GALL Report for ensuring that heat exchangers are capable of performing their intended function of heat transfer during the period of extended operation. On the basis of a review of GL 89-13 and interviews with the applicant's technical staff, the staff determined that this exception is consistent with the CLB and therefore finds this first exception to be acceptable.

The service water system (open-cycle cooling) program also takes exception to the "scope of program," "detection of aging effects," and "monitoring and trending" program elements such that (2) the Unit 3 reactor plant component cooling system heat exchangers and containment recirculation coolers are not testable. For the program element associated with the exception taken by the applicant, the GALL Report states that thermal performance testing is an effective method for assessing the effects of aging on heat exchangers. The staff determined that the containment recirculation coolers are maintained in a dry lay-up condition and the service water supply to these heat exchangers is flushed on a semi-annual basis, greatly reducing the possibility of biofouling and potential reduction in heat transfer rate. The reactor plant component cooling system heat exchangers are cleaned on the tube side and inspected annually. As with the other service water heat exchangers, trending and assessments of biofouling are performed for the reactor plant component cooling system heat exchangers to detect the presence of macro-fouling, and the necessary actions are taken to preclude fouling and reduction in heat transfer rate. On the basis of a review of GL 89-13 and interviews with the applicant's technical staff, the staff determined that this exception is consistent with the CLB and therefore finds the second exception to be acceptable.

The service water system (open-cycle cooling) program also takes exception to the "preventive actions" program element in that, generally, (3) the Unit 3 redundant cooling loops for the service water system are rotated into service on a regular basis; therefore, flushing and testing requirements do not apply. The only exceptions are the Unit 3 containment recirculation coolers and the service water supply piping to these heat exchangers. For the program element associated with the exception taken by the applicant, the GALL Report discusses flushing and testing requirements in accordance with GL 89-13 for "infrequently used cooling loops."

The staff agrees with the applicant's statement in the LRA that because the containment recirculation coolers are maintained in a dry lay-up condition, no mechanism exists for tube-side fouling and the ability of the coolers to perform their intended function is maintained. The applicant stated in the LRA that the service water supply piping to these heat exchangers is flushed on a semi-annual basis. On the basis of a review of GL 89-13 and interviews with the applicant's technical staff, the staff determined that this exception is consistent with the CLB and therefore finds the third exception to be acceptable.

Operating Experience. The staff reviewed the operating experience for the applicant's service water system (open-cycle cooling) program. The applicant stated in the LRA that repairs and design changes have been implemented to replace degraded portions of the service water systems. Continuing adherence to existing service water system inspection and testing procedures provides reasonable assurance that deficiencies will be identified and corrected so that the service water components remain capable of performing their intended functions.

On the basis of its review of the above operating experience, the staff concludes that the service water system (open-cycle cooling) program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.21 of the MPS Unit 2 LRA and Appendix A, Section A2.1.20 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the service water system (open-cycle cooling) program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the exceptions and the associated justifications and determined that the AMP, with the exceptions is adequate to manage the aging effects for which it is credited. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.16 Structures Monitoring Program

Summary of Technical Information in the Application. The applicant's structures monitoring program is described in LRA Section B2.1.23, "Structures Monitoring Program." In the LRA, the applicant stated that this is an existing MPS program. This program will be consistent, with enhancements, with GALL AMPs XI.S5, "Masonry Wall Program," XI.S6, "Structures Monitoring Program," and XI.S7 "RG 1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants."

The applicant stated in the LRA that the structures monitoring program manages the aging effects of cracking, loss of material, and change of material properties. The applicant's program monitors those structures and structural support systems that are within the scope of license renewal. The majority of these structures and structural support systems are monitored under 10 CFR 50.65, as addressed in NRC Regulatory Guide (RG) 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2, dated March 1997, and NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2, dated April 1996. These two documents provide guidance for development of licensee-specific programs to monitor the condition of structures and structural components within the scope of the Maintenance Rule, such that there is no loss of structure or structural component intended function. The remaining structures in the scope of license renewal (such as non-safety-related buildings and enclosures, duct banks, valve pits and trenches, high-energy line break barriers, and flood gates) are also monitored to ensure there is no loss of intended function.

The applicant stated in the LRA that the scope of the structures monitoring program includes all masonry walls and water-control structures identified as performing intended functions in accordance with 10 CFR 54.4.

The applicant stated in the LRA that the structures monitoring program does not include the inspection of the supports specifically inspected per the requirements of the inservice inspection program: systems, components, and supports program, or inspection of the structural condition of the hangers and supports incorporated into the general condition monitoring program.

The applicant stated in the LRA that the structures monitoring program takes no credit for coatings applied to external surfaces of structural members in the determination of the aging effects for the underlying materials. The structures monitoring program does, however, evaluate the condition of the coatings as an indication of the condition of the underlying materials.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's evaluation of the audit and review are documented in the audit and review report. Furthermore, the staff reviewed the enhancements and their justifications to determine whether the AMP, with five enhancements, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.23 of the LRA, the applicant stated that the structures monitoring program will be consistent with GALL AMPs XI.S5, "Masonry Wall Program," XI.S6, "Structures Monitoring Program," and XI.S7, "RG 1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants," with enhancements. The applicant stated that it will enhance the "parameters monitored/inspected," "detection of aging effects," and "acceptance criteria" program elements such that program (1) procedures will be revised to include American Concrete Institute (ACI) Standard 349.3R-96, "Evaluation of Existing Nuclear Safety Related Concrete Structures," dated 1996, and American Nuclear Standards Institute/American Society of Chemical Engineers (ANSI/ASCE) Standard 11-90, "Guideline for Structural Condition Assessment of Existing Buildings," dated 1990, as references and input documents for the inspection program. This is identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 17, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 18.

The staff reviewed the applicant's technical document in which the applicant stated that it will revise program procedures to include ACI 349.3R-96 and ANSI/ASCE 11-90 as references and input documents for the structures monitoring program. The existing program procedures generally follow the recommendations of ACI 349.3R-96 and ANSI/ASCE 11-90. However, these two documents were not specifically used or referenced in the development of the current program procedures. The applicant stated in the LRA that these revisions will be initiated prior to the period of extended operation. This enhancement will bring the applicant's program into agreement with the GALL AMP XI.S6 program elements. The staff finds the first enhancement to be acceptable.

The applicant also stated that it will enhance the "scope of program," program element such that (2) the implementing engineering procedures will be modified to include all additional structures inspections required for license renewal. This is identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 18, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 19. The applicant's structures monitoring program does not currently monitor all structures required for license renewal. In addition, the applicant stated, as documented in the staff's MPS audit and review report for the structures monitoring program, that the structures monitoring program does not currently identify certain types of structural members (concrete beams, columns, etc.) and structural components (flood barriers, stairs, sumps, etc.) that are subject to inspection. In order to ensure that all in-scope structural members and components are addressed, the program procedures shall be further clarified and enhanced so that all in-scope structural members and components are identified. The applicant stated in the LRA that the procedures will be revised prior to the period of extended operation. This enhancement will bring the applicant's program into agreement with the GALL AMP XI.S6 program element. The staff finds the second enhancement to be acceptable.

The applicant also stated that it will enhance the "parameters monitored/inspected" and "detection of aging effects" program elements such that (3) additional groundwater samples will be taken to establish a baseline with regard to the aggressiveness of the water and its effect on concrete structures. The staff reviewed the applicant's structures monitoring program, as documented in the its MPS audit and review report, in which the applicant stated that groundwater samples will be collected to establish a baseline with regard to the aggressiveness of the water and its effect on concrete structures. Also, the applicant stated that additional samples need to be taken on a periodic basis, considering seasonal variations, to ensure that the groundwater is not of a nature that could cause the below-grade concrete to degrade. This is identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 19, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 20. The applicant stated in the LRA that the samples will be taken prior to the period of extended operation. This enhancement will bring the applicant's program into agreement with the GALL AMP XI.S6 program elements. The staff finds the third enhancement to be acceptable.

In addition, the applicant stated that it will enhance the "parameters monitored/inspected" program element such that (4) the structures monitoring program procedures will be modified so that the electrical engineering staff will be alerted if medium-voltage cables in scope of license renewal have been found to be exposed to significant moisture during structures inspections. This is identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 20, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 21. The staff reviewed the applicant's structures monitoring program, as documented in the staff's MPS audit and review report, in which that applicant stated that the structures monitoring program procedures will be modified so that the electrical engineering staff will be alerted if, during structures inspections, in-scope medium-voltage cables are found to have been exposed to significant moisture. Water intrusion can occur within the in-scope structures due to groundwater in-leakage or leakage of a plant system. The applicant stated in the LRA that the procedures will be revised prior to the period of extended operation. This enhancement will bring the applicant's program into agreement with the GALL AMP XI.S6 program element. The staff finds the fourth enhancement to be acceptable.

The applicant will also enhance the "parameters monitored/inspected" program element such that (5) the maintenance and work control procedures will be revised to take advantage of inspection opportunities for structures required for license renewal and identified as "inaccessible." This is identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 21, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 22. The staff reviewed the applicant's, as documented in the staff's MPS audit and review report for the structures monitoring program, in which the applicant stated that the maintenance and work control procedures will be revised to take advantage of inspection opportunities for structures required for license renewal and identified as "inaccessible." As inaccessible areas become accessible by such means as excavation or installation of shielding or for any other reason, additional inspections of those areas will be performed. As determined by the corrective action program, engineering evaluation of the examination results will determine the need for any subsequent inspections. The applicant stated in the LRA that this enhancement will be implemented prior to the period of extended operation. This enhancement will bring the applicant's program into agreement with the GALL AMP XI.S6 program element. The staff finds the fifth enhancement to be acceptable.

Operating Experience. The staff reviewed operating experience for the applicant's structures monitoring program. The review indicated the structures monitoring program is effective in identifying structural degradation, implementing corrective actions, and trending the parameters. When degradation has been identified, corrective actions have been implemented to ensure that the integrity of the affected structure is maintained.

On the basis of its review of the above operating experience, the staff concludes that the structures monitoring program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.23 of the MPS Unit 2 LRA and Appendix A, Section A2.1.22 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the structures monitoring program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the enhancements and confirmed that the implementation of the enhancements prior to the period of extended operation would result in the existing aging management program being consistent with the GALL Report AMP to which it was compared. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.17 Tank Inspection Program

Summary of Technical Information in the Application. The applicant's tank inspection program is described in LRA Section B2.1.24, "Tank Inspection Program." In the LRA, the applicant stated that this is an existing MPS program. This program will be consistent, with enhancements, with GALL AMP XI.M29, "Aboveground Carbon Steel Tanks."

The applicant stated in the LRA that the tank inspection program manages the aging effect of loss of material through periodic internal and external tank inspections. The program includes inspections of the sealant and caulking in and around the tank and concrete foundation, and evaluations to monitor the condition of coatings, linings, and structural elements to prevent deterioration of the tanks to unacceptable levels. The program also includes performance of volumetric examinations of inaccessible locations, such as the external surfaces of tank bottoms. The acceptance criterion for visual inspections of paint, coatings, sealant, caulking, and structural elements is the absence of anomalous indications that are signs of degradation. Thickness measurements of the tank walls and bottoms are evaluated against design thickness, established baseline values, or loss of material allowances.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report. Details of the staff's evaluation of the audit and review are documented in the audit and review report. Furthermore, the staff reviewed the enhancements and their justifications to determine whether the AMP, with three enhancements, remains adequate to manage the aging effects for which it is credited.

In Appendix B, Section B2.1.24 of the LRA, the applicant stated that the tank inspection program will be consistent with GALL AMP XI.M29, with enhancements. The applicant stated that it will enhance the "scope of the program," "parameters monitored/inspected," "detection of aging effects," and "acceptance criteria" program elements such that (1) inspections of sealants and caulking used for moisture intrusion prevention in and around aboveground tanks will be performed. This is identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 22, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 23. For the program elements associated with the enhancement, the GALL Report states that the AMP consists of (a) preventive measures to mitigate corrosion by protecting the external surfaces of carbon steel tanks protected with paint or coatings and (b) periodic system walkdowns to manage the effects of corrosion on the intended function of these tanks. Plant walkdowns cover the entire outer surface of the tank up to its surface in contact with soil or concrete.

The GALL Report also states that the AMP utilizes periodic plant system walkdowns to monitor degradation of coatings, sealants, and caulking because it is a condition directly related to the potential loss of materials.

In addition, the GALL Report states that degradation of exterior carbon steel surfaces cannot occur without degradation of paint or coatings on the outer surface and of sealant and caulking at the interface between the component and concrete. Periodic system walkdowns to confirm that the paint, coating, sealant, and caulking are intact is an effective method to manage the effects of corrosion on the external surface of the component.

The GALL Report also states that any degradation of paint, coating, sealant, and caulking is to be reported and will require further evaluation. Degradation consists of cracking, flaking, or peeling of paint or coatings, and drying, cracking, or missing sealant and caulking. Thickness measurements of the tank bottom are evaluated against the design thickness and corrosion allowance.

The staff reviewed the applicant's tank inspection program, as documented in the staff's MPS audit and review report, in which the applicant stated that it will perform appropriate inspections of sealants and caulking used for moisture intrusion prevention in and around aboveground tanks. The applicant stated in the LRA that these inspections will be initiated prior to the period of extended operation. This enhancement will bring the applicant's program into agreement with the GALL AMP XI.M29 program elements. The staff finds the first enhancement to be acceptable.

The applicant stated that it will enhance the detection of aging effects, monitoring and tending, and acceptance criteria program elements in that (2) non-destructive volumetric examinations of inaccessible locations, such as the external surfaces of tank bottoms for those tanks that require aging management for license renewal, will be performed. This is identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 23, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 24. For the program elements associated with the enhancement, the GALL Report states that degradation of exterior carbon steel surfaces cannot occur without degradation of paint or coatings on the outer surface and of sealant and caulking at the interface between the component and concrete. Periodic system walkdowns to confirm that the paint, coating, sealant, and caulking are intact is an effective method to manage the effects of corrosion on the external surface of the component. However, corrosion may occur at inaccessible locations, such as the tank bottom surface, and thickness measurement of the tank bottom is to be taken to ensure that significant degradation is not occurring and the component intended function will be maintained during the extended period of operation.

The GALL Report also states that the effects of corrosion on the aboveground external surface are detectable by visual techniques. Based on operating experience, plant system walkdowns during each outage provide for timely detection of aging effects. The effects of corrosion of the underground external surface are detectable by thickness measurement of the tank bottom and are monitored and trended if significant material loss is detected.

In addition, the GALL Report states that any degradation of paint, coating, sealant, and caulking is reported and will require further evaluation. Degradation consists of cracking, flaking, or peeling of paint or coatings, and drying, cracking, or missing sealant and caulking. Thickness measurements of the tank bottom are evaluated against the design thickness and corrosion allowance.

The staff reviewed the tank inspection program, as documented in the staff's MPS audit and review report, in which the applicant stated that it will perform non-destructive volumetric examinations of inaccessible locations, such as the external surfaces of tank bottoms for those tanks that require aging management for license renewal. The applicant stated in the LRA that these volumetric examinations will be performed prior to the period of extended operation and will be performed on a frequency consistent with scheduled tank internals inspection activities. This enhancement will bring the applicant's program into agreement with the GALL AMP XI.M29 program elements. The staff finds the second enhancement to be acceptable.

Also, the applicant stated that it will enhance the "scope of program," program element such that (3) the Unit 2 security diesel fuel oil tank and the Unit 3 diesel fire pump fuel oil tank will be added to the list of in-scope components for this program. This is identified on the applicant's license renewal commitment list in the Unit 2 LRA, Appendix A, Table A6.0-1, Item 24, and the Unit 3 LRA, Appendix A, Table A6.0-1, Item 25. For the program element associated with the enhancement, the GALL Report states that the program consists of (a) preventive measures to mitigate corrosion by protecting the external surfaces of carbon steel tanks protected with paint or coatings and (b) periodic system walkdowns to manage the effects of corrosion on the intended function of these tanks.

The staff reviewed the tank inspection program, as documented in the staff's MPS audit and review report, in which the applicant stated that it will add the Unit 2 security diesel fuel oil tank and the Unit 3 diesel fire pump fuel oil tank to the list of in-scope tanks for the tank inspection program and will include the tanks on the respective inspection plans. Although these two tanks have been identified as in scope for license renewal, the applicant noted in the tank inspection program, as documented in the staff's MPS audit and review report, that the tanks are not currently identified on the respective tank inspection plans. This enhancement will bring the applicant's program into agreement with the GALL AMP XI.M29 program elements. The staff finds the third enhancement to be acceptable.

<u>Operating Experience</u>. The staff reviewed operating experience for the applicant's tank inspection program. The review indicated the tank inspection program is effective in identifying age-related degradation, implementing repairs, and maintaining the integrity of aboveground tanks.

On the basis of its review of the above operating experience, the staff concludes that the tank inspection program adequately manages the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.24 of the MPS Unit 2 LRA and Appendix A, Section A2.1.23 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the tank inspection program. The staff reviewed these sections and determined that the information in the FSAR supplement provides an adequate summary of the program activities. The staff finds these sections of the FSAR supplement sufficient, as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that those program elements for which the applicant claimed consistency with the GALL program are consistent with the GALL program. In addition, the staff has reviewed the enhancements and confirmed that the implementation of the enhancements prior to the period of extended operation would result in the existing aging management program being consistent with the GALL Report AMP to which it was compared. The staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.18 Bolting Integrity Program

Summary of Technical Information in the Application. The applicant added bolting integrity to the aging management programs of Appendix B of the LRA in RAI response 3.3.11-A-1 by letter dated December 3, 2004.

The bolting integrity program ensures that the effects of aging associated with the in-scope components will be adequately managed so that there is reasonable assurance that their intended functions will be maintained consistent with the current licensing basis throughout the period of extended operation.

Millstone good bolting practices are established in accordance with plant procedures. These procedures include requirements for proper disassembling, inspecting, and assembling of connections with threaded fasteners. The general practices that are established in this program are based on EPRI NP-5067 Volume 1, "Good Bolting Practices, A Reference for Nuclear Power Plant Maintenance Personnel, Volume 1: Large Bolt Manual," EPRI NP-5067, Volume 2, "Good Bolting Practices, A Reference for Nuclear Power Plant Maintenance Personnel, Volume 2: Small Bolts and Threaded Fasteners," and EPRI TR-104213, "Bolted Joint Maintenance and Applications Guide."

The bolting integrity program is an existing program that manages the aging effects of cracking, loss of material, and for ASME Class 1 bolting, loss of preload. The program includes the good bolting practices established for in scope threaded fasteners in plant procedures in accordance with recognized industry organizations such as EPRI and AISC. The program also includes the inservice inspection requirements established in accordance with ASME Section XI, Subsections IWB, IWC, IWD, and IWF for ASME Class bolting. The applicant stated that the bolting integrity program is consistent with the aging management program described in Chapter XI of GALL AMP XI.M18, with the clarification and exceptions as described below:

Clarification Number 1: XI.M18 - Loss of Preload

GALL AMP XI.M18, identifies loss of preload as an aging effect requiring management for all bolting within the scope of license renewal. The applicant identifies loss of preload as an aging effect requiring management for ASME Class 1 bolting only. The applicant stated that the operating temperature for all in scope bolted connections other than Class 1 bolting are well below the threshold temperature at which stress relaxation of pressure boundary bolting would occur.

Exception 1: XI.M18 - Reference Documents

Documents referenced in NUREG-1801 for safety-related bolted connections are not directly referenced by the Millstone bolting integrity program. NUREG-1801 Section XI.M18 states that the program relies on recommendations for a comprehensive bolting integrity program, as delineated in NUREG-1339, and industry recommendations, as delineated in EPRI NP-5769 (with exceptions as noted in NUREG-1339) for safety-related bolting.

The procedures for ensuring bolting integrity at Millstone identify inspection requirements and general practices for in scope bolting that are consistent with the bolting recommendations identified in Section XI.M18, but do not directly reference EPRI NP-5769 or NUREG-1339 as applicable source documents for these recommendations. However, the Millstone procedures do reference and incorporate the good bolting practices identified in EPRI NP-5067. EPRI NP-5769 and EPRI NP-5067 are very closely related documents that cross-reference one another and reference NUREG-1339.

Exception 2: XI.M18 - Use of Different Code Year than Identified in NUREG-1801

GALL AMP XI.M18 identifies inservice inspection requirements in accordance with Table IWB-2500-1 and the 1995 Edition through the 1996 Addenda of ASME Section XI. The Millstone current ISI program is based on the 1989 Edition with no addenda. There are no differences between these Code years with respect to examination requirements for ASME Class 1, 2, and 3 bolting and their support bolting.

Staff Evaluation. The applicant added bolting integrity to the aging management programs of Appendix B of the LRA in RAI response 3.3.11-A-1, by letter dated December 3, 2004.

The bolting integrity program is an existing program that manages the aging effects of cracking, loss of material, and for ASME Class 1 bolting, loss of preload. The program includes the good bolting practices established for in scope threaded fasteners in plant procedures in accordance with recognized industry organizations such as EPRI and AISC. The program also includes the inservice inspection requirements established in accordance with ASME Section XI, Subsections IWB, IWC, IWD, and IWF for ASME Class bolting. The applicant stated that the bolting integrity program is consistent with the aging management program described in GALL AMP XI.M18, with the clarification and exceptions as reviewed below:

Clarification Number 1: XI.M18 - Loss of Preload

The applicant stated that the operating temperature for all other in-scope bolted connections are well below the threshold temperature at which stress relaxation of pressure boundary bolting would occur. The staff found that other factors such as vibration can contribute to loss of preload. The applicant needed to address other factors which can contribute to loss of preload and justify if loss of preload is an aging effect requiring management for all bolting within the scope of license renewal. This was identified as Open Item 3.0.3.2.18-1.

In response to Open Item 3.0.3.2.18-1, dated July 14, 2005, the applicant stated the Millstone bolting integrity AMP has now been revised to manage loss of preload as an applicable aging effect for all in-scope bolting. Based on this change to the bolting integrity AMP, Open Item 3.0.3.2.18-1 is closed.

Exception 1: XI.M18 - Reference Documents

Documents referenced in NUREG-1801 for safety-related bolted connections are not directly referenced by the Millstone bolting integrity program. NUREG-1801 Section XI.M18 states that the program relies on recommendations for a comprehensive bolting integrity program, as delineated in NUREG-1339, and industry recommendations, as delineated in EPRI NP-5769 (with exceptions as noted in NUREG-1339) for safety-related bolting.

The procedures for ensuring bolting integrity at Millstone identify inspection requirements and general practices for in scope bolting that are consistent with the bolting recommendations identified in Section XI.M18, but do not directly reference EPRI NP-5769 or NUREG-1339 as applicable source documents for these recommendations. However, the Millstone procedures do reference and incorporate the good bolting practices identified in EPRI NP-5067. EPRI NP-5769 and EPRI NP-5067 are very closely related documents that cross-reference one another and reference NUREG-1339. The staff requested clarification on how the guidance in EPRI NP-5067 and EPRI TR-104213 meets the intent of EPRI NP-5769 and NUREG-1339 as identified in GALL AMP XI.M18. This was identified as Open Item 3.0.3.2.18-2.

By letter dated April 1, 2005, the applicant provided a comparison of EPRI NP-5769 and EPRI NP-5067 as they relate to the bolting integrity program at Millstone. In summary, the Millstone bolting integrity program is consistent with the recommendations in NUREG-1801, Section XI.M18. The comparison provided by the applicant demonstrates that EPRI NP-5067 provides adequate guidance for addressing the bolting integrity for Millstone Units 2 and 3. Therefore, Open Item 3.0.3.2.18-2 is closed.

Exception 2: XI.M18 - Use of Different Code Year than Identified in NUREG-1801

The current ISI program for Millstone is based on the 1989 Edition with no addenda of Section XI of the ASME Code. GALL AMP XI.M18 identifies inservice inspection requirements in accordance with Table IWB-2500-1 and the 1995 Edition through the 1996 Addenda of Section XI of the ASME Code.

The regulations require that inservice inspection of components be conducted during the first 10-year interval and subsequent intervals to comply with the requirements in the latest edition and addenda of Section XI of the ASME Code, which was incorporated by referenced in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The current code of record for Millstone is the 1989 Edition with no Addenda of Section XI of the ASME Code. When NUREG-1801 was drafted the edition referenced in 10 CFR 50.55a(b) was the 1995 Edition through the 1996 Addenda of Section XI of the ASME Code. The editions and addenda of Section XI of the ASME Code that are referenced in 10 CFR 50.55a(b) have been reviewed and found acceptable, subject to the limitations and modifications listed therein. Therefore, the staff finds the use of the Code of Record (1989 Edition) for Millstone is acceptable. In addition, for the period of extended operation, the applicant will be required to update its Code of Record to the Edition and Addenda as referenced in 10 CFR 50.55a(b) twelve months prior to the start of each 120-month interval.

FSAR Supplement. The bolting integrity program corresponds to GALL AMP XI.M18, "Bolting Integrity." The program manages the aging effects of cracking, loss of material, and, for Class 1 bolting, loss of preload.

The aging effects are managed by establishing good bolting practices in accordance with EPRI NP-5067 Volume 1, "Good Bolting Practices, A Reference for Nuclear Power Plant Maintenance Personnel, Volume 1: Large Bolt Manual," EPRI NP-5067, Volume 2, "Good Bolting Practices, A Reference for Nuclear Power Plant Maintenance Personnel, Volume 2: Small Bolts and Threaded Fasteners," and EPRI TR-104213, "Bolted Joint Maintenance and Applications Guide."

In addition, ASME Class bolting is managed by the performance of inservice examinations in accordance with ASME Section XI, Subsections IWB, IWC, IWD, and IWF. Engineering evaluations determine if a component needs to be repaired/replaced or is acceptable for continued operation until the next scheduled inspection. Corrective actions for conditions that are adverse to quality are performed in accordance with the corrective action program as part of the quality assurance program. The corrective action process provides reasonable assurance that deficiencies adverse to quality are either promptly corrected or are evaluated to be acceptable.

The staff found that the resolution of Open Items 3.0.3.2.18-1 and 3.0.3.2.18-2 may warrant a modification to the FSAR. This issue was identified as Confirmatory Item 3.0.3.2.18-1. By letter dated July 14, 2005, the applicant provided the revised FSAR sections to reflect resolution of Open Items related to the bolting integrity program. Based on these FSAR changes, Confirmatory Item 3.0.3.2.18-1 is closed.

Conclusion. Based on the information provided by the applicant, the staff finds that the effects of aging will be adequately managed by the bolting integrity program so that the intended functions will be maintained consistent with the CLB for the period of extended operation as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.3 AMPs that are Not Consistent with or Not Addressed in the GALL

In Appendix B of the LRA, the applicant indicated that the following AMPs were plant-specific:

- battery rack inspections (B2.1.1)
- general condition monitoring (B2.1.13)
- infrequently accessed areas inspection program (B2.1.15)
- work control process (B2.1.25)

For AMPs that are not consistent with or not addressed by the GALL Report, the staff performed a complete review of the AMPs to determine if they were adequate to monitor or manage aging. The staff's review of these plant-specific AMPs is documented in the following sections of this SER:

3.0.3.3.1 Battery Rack Inspections

Summary of Technical Information in the Application. The applicant's battery rack inspections program is described in LRA Section B2.1.1, "Battery Rack Inspections." In the LRA, the applicant stated that this is an existing plant-specific program. The applicant credits this program with managing the aging effects for loss of material of such design elements as anchorages, bracing and supports, side and end rails, and spacers between battery cells. Potential degradation of the racks is evaluated for its effect on their structural integrity during a seismic event, and repairs are implemented as necessary.

Staff Evaluation. In accordance with 10 CFR 54.21(a)(3), the staff reviewed the information included in Appendix B, Section B2.1.1, of the LRA, regarding the applicant's demonstration of the battery rack inspections program to ensure that the effects of aging, as discussed above, will be adequately managed so that the intended functions will be maintained consistent with the CLB throughout the period of extended operation.

The staff reviewed the battery rack inspections program against the AMP elements found in the SRP-LR, Appendix A, Section A.1.2.3, and SRP-LR Table A.1-1 and focused on how the program manages aging effects through the effective incorporation of 10 elements (i.e., program scope, preventive actions, parameters monitored or inspected, detection of aging effects, monitoring and trending, acceptance criteria, corrective actions, confirmation process, administrative controls, and operating experience).

The applicant indicated that the corrective actions, confirmation process, and administrative controls are part of the site-controlled quality assurance program. The staff's evaluation of the quality assurance program is provided separately in Section 3.0.4 of this SER. The remaining seven elements are discussed below:

(1) Scope of the Program - The applicant stated, in Appendix B, Section B2.1.1 of the LRA, that for this program element, the battery racks provide support and restraint for various batteries that supply power to equipment in the plant. The applicant stated that the battery racks for the following batteries are within the scope of license renewal for this program: Unit 2 main station batteries, Unit 2 non-safety-grade turbine battery, Unit 2 security diesel generator battery, Unit 3 main station batteries, Unit 3 non-safety-grade battery 5, Unit 3 diesel-driven fire pump batteries, Unit 3 station blackout diesel generator battery, and 345-kilovolt switchyard relaying and control batteries. Seismic design elements such as anchorages (including bolting to the building structure), bracing and supports, side and end rails, and spacers between cells are included as part of this program.

    The existing battery rack inspection program will be modified to include those battery racks that require monitoring for license renewal, but are not already in the program. The enhancement will be implemented prior to the period of extended operation. This commitment is also identified on the applicant's license renewal commitment list in the LRA, Appendix A, Table A6.0-1, Item 1. The staff finds this enhancement is required and is acceptable as any such changes will provide additional assurance that the effects of aging will be adequately managed.

The staff reviewed and confirmed that this program element satisfies the criterion defined in Appendix A.1 of the SRP-LR. The proposed scope, including the enhancements, identifies the specific components for which the program manages aging. On this basis, the staff finds that the applicant's proposed program scope is acceptable.

(2) Preventive Actions - The applicant stated, in Appendix B, Section B.2.1.1 of the LRA that this program element is not applicable because the battery rack inspection program is an inspection program and no actions will be taken as part of this program to prevent or mitigate aging degradation.

The staff confirmed that the preventive actions program element satisfies the criterion defined in Appendix A.1.2.3.2 of the SRP-LR. The staff did not identify the need for preventive actions for this AMP because it is a condition monitoring program. Therefore, the staff finds this acceptable.

(3) Parameters Monitored or Inspected - The applicant stated, in Appendix B, Section B2.1.1 of the LRA that the battery support racks are visually inspected to ensure that their physical condition is not degraded (loss of material). Where installed, items such as anchorages (including bolting to the building structure), bracing and supports, side and end rails, and spacers are also inspected.

The staff confirmed this program element satisfies the criteria defined in Appendix A.1.2.3.3 of the SRP-LR. The battery rack inspection program is acceptable because the visual inspections for material loss are intended to detect the presence and extent of aging effects. On this basis, the staff finds that the parameters monitored or inspected program element is acceptable.

(4) Detection of Aging Effects - The applicant stated, in Appendix B, Section B2.1.1 of the LRA, that battery rack inspections are performed on a periodic basis. Visual inspections identify degradation of the support racks. These inspections include items such as anchorages (including bolting to the building structure), bracing and supports, side and end rails, and spacers. These inspections check for loss of material (such as corrosion) of the support racks.

In the LRA the applicant also stated that implementing procedures will be modified to include loss of material as a potential aging effect and to provide guidance in the inspection of items (such as anchorages, bracing and supports, side and end rails, and spacers), which contribute to battery rack integrity or seismic design of the battery racks. This commitment is identified in Appendix A, Table A6.0-1 License Renewal commitments, Item 2.

The staff reviewed and confirmed that this program element satisfies the criterion defined in Appendix A.1.2.3.4 of the SRP-LR. The detection of aging effects, including the enhancements, identifies the specific components for which the program manages aging. On this basis, the staff finds that the applicant's detection of aging effects program element is acceptable.

(5) Monitoring and Trending - The applicant stated, in Appendix B, Section B2.1.1 of the LRA, that battery rack inspections determine the extent of aging effects. The material condition of the battery racks is recorded. In accordance with inspection procedures and if acceptance criteria are not met, the corrective action program is employed to evaluate the issue and provide corrective actions in a timely manner. Engineering evaluations assess whether the extent of aging could cause a loss of intended function.

The staff confirmed that this program element satisfies the criteria defined in Appendix A.1 of the SRP-LR. Trending of inspection results will be performed and will enhance the applicant's ability to detect aging effects before there is a loss of intended function. On this basis, the staff finds that the applicant's monitoring and trending program element is acceptable.

(6) Acceptance Criteria - The applicant stated, in Appendix B, Section B2.1.1 of the LRA, that the acceptance criterion for visual inspections is the absence of anomalous indications that are signs of degradation. Engineering evaluations determine whether observed deterioration of material condition is significant enough to compromise the ability of a battery rack to perform its intended function. Occurrence of degradation that is adverse to quality will be entered into the corrective action system.

The staff confirmed that this program element satisfies the criteria defined in Appendix A.1 of the SRP-LR. Any anomalous indications that are signs of degradation will be evaluated by an engineer to determine whether the observed deterioration of material condition is significant enough to compromise the ability of a battery rack to perform its intended function. If found unacceptable, corrective measures will be implemented. On this basis, the staff finds that the acceptance criteria program element is acceptable.

(7) Operating Experience - The applicant stated, in Appendix B, Section B2.1.1 of the LRA, that the inspections and corrective actions have been successful in maintaining battery support rack integrity. Incidents of battery rack corrosion have occurred and corrective action has been taken to repair or replace storage rack components as necessary. Periodic inspections of the support racks help ensure their continued integrity and proper functioning during routine operation, as well as during the limiting condition of a seismic event.

On the basis of its review of the above operating experience, the staff concludes that the battery rack inspections program will adequately manage the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.1 of the LRA, the applicant provided the FSAR supplements for the battery rack inspections program and stated that the program will manage the aging effect of loss material for the station battery support racks within the scope of license renewal. Visual inspections will be performed to ensure the absence of anomalous indications that are signs of degradation. Corrective actions for conditions that are adverse to quality are performed in accordance with the applicant's corrective action program as part of the quality assurance program.

The staff reviewed the FSAR supplements and confirmed that they provide an adequate summary description of the program, as identified in the SRP-LR FSAR supplement table and as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.3.2 General Condition Monitoring

Summary of Technical Information in the Application. The applicant's general condition monitoring program is described in LRA Section B2.1.13, "General Condition Monitoring." In the LRA, the applicant stated that this is an existing plant-specific program. The applicant credits this program with managing the aging effects for loss of material, cracking, and change of material properties on the external surfaces of components. The external surfaces of structures and components are monitored for signs of aging that can be detected via visual observations. General condition monitoring includes the observations that are made during focused inspections performed on a periodic basis for plant components and structures, including those within the scope of license renewal. The results of the monitoring activities provide the basis for initiating required corrective action in a timely manner.

Staff Evaluation. In accordance with 10 CFR 54.21(a)(3), the staff reviewed the information included in Appendix B, Section B2.1.13, of the LRA, regarding the applicant's demonstration of the general condition monitoring program to ensure that the effects of aging, as discussed above, will be adequately managed so that the intended functions will be maintained consistent with the CLB throughout the period of extended operation.

The staff reviewed the general condition monitoring program against the AMP elements found in the SRP-LR, Appendix A, Section A.1.2.3, and SRP-LR Table A.1-1 and focused on how the program manages aging effects through the effective incorporation of 10 elements (i.e., program scope, preventive actions, parameters monitored or inspected, detection of aging effects, monitoring and trending, acceptance criteria, corrective actions, confirmation process, administrative controls, and operating experience).

The applicant indicated that the corrective actions, confirmation process, and administrative controls are part of the site-controlled quality assurance program. The staff's evaluation of the quality assurance program is provided separately in Section 3.0.4 of this SER. The remaining seven elements are discussed below.

(1) Scope of the Program - The applicant stated, in Appendix B, Section B2.1.13 of the LRA, that the general condition monitoring program detects aging effects by visual inspections of the exterior surface of plant equipment, whether it is constructed of metal, concrete, or polymers.

    The staff reviewed and confirmed that this program element satisfies the criterion defined in Appendix A.1 of the SRP-LR. The proposed scope identifies the specific components for which the program manages aging. On this basis, the staff finds that the applicant's proposed program scope is acceptable.

(2) Preventive Actions -The applicant stated, in Appendix B, Section B2.1.13 of the LRA, that the general condition monitoring program is an inspection program and no actions will be taken as part of this program to prevent or mitigate aging degradation.

    The staff confirmed that the preventive actions program element satisfies the criterion defined in Appendix A.1.2.3.2 of the SRP-LR. The staff did not identify the need for preventive actions for the general condition monitoring program because it is a condition monitoring program.

(3) Parameters Monitored or Inspected - The applicant stated, in Appendix B, Section B2.1.13 of the LRA, that system engineer walkdown inspections monitor the material

condition of plant systems, structures, and components during normal operation, shutdown conditions, and refueling outages. Inspectors look for the following types of degradation or adverse conditions during visual inspections: worn, flaking, or rusted painted surfaces; excessive rust, material wastage or signs of degradation, cracking or aging on equipment surfaces; leaks, including evidence of boric acid; damaged or degraded hangers and supports; signs of general corrosion on machined or sliding surfaces with close tolerances; signs of unusual concrete or grout deterioration, erosion, corrosion, chipping, cracking, or spalling on equipment foundations; and loose, corroded, stressed, seized, or rusted skids, foundations, supports, hangers, and fasteners.

During performance of radiologically controlled area surveys, health physics personnel look for evidence of boron precipitation and active radioactive system leaks.

During their rounds, plant equipment operators monitor the material condition of plant systems, structures, and components in all modes of operation. During visual inspections, plant equipment operators look for evidence of system leakage, including evidence of boric acid; evidence of groundwater intrusion or leakage; loose or missing pipe hangers; evidence of degradation (e.g., excessive corrosion or scaling); and signs of unusual concrete or grout deterioration, erosion, corrosion, chipping, cracking, or spalling.

The general condition monitoring program also credits visual inspection for the detection of changes in material properties in elastomers in the ventilation systems and in support members. During the audit and review, it was not clear to the staff how visual inspections would be used to monitor this aging effect. In a subsequent staff visit to the plant, the applicant stated that the change of material properties for these elastomer components is visually observable by evidence of cracking and crazing, discoloration, distortion, evidence of swelling, tackiness, evaluation of resilience and indentation recovery, etc. These conditions are observable during the general condition monitoring activities performed by the system engineers as part of comprehensive inspections performed quarterly, and by the plant equipment operators during daily inspections of plant areas to verify component or system operation. The staff reviewed the document change request, as documented in the staff's MPS audit and review report, that will add the details for the visual inspection of elastomers to the general condition monitoring program. The applicant stated in the LRA that the procedures and training for personnel performing general condition monitoring inspections and walkdowns will be enhanced to identify the requirements for the inspection of aging effects. This will provide a reasonable assurance that changes in material properties of elastomer components will be adequately managed. This commitment is identified on the applicant's license renewal commitment list in the LRA, Appendix A, Table 6.0-1, Item 10. Based on discussions with plant staff and the review of the LRA commitment and document change request, the staff concurs that change in material properties can be visually observed.

The staff confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.3 of the SRP-LR. The general condition monitoring program is acceptable because the visual inspections for material loss, cracking, and change in material properties are intended to detect the presence and extent of aging effects. On this basis, the staff finds that the parameters monitored or inspected program element is acceptable.

(4) Detection of Aging Effects -The applicant stated, in Appendix B, Section B2.1.13 of the LRA, that the external condition of components and structures is determined by visual inspection. These inspections provide information to help manage the aging effects of loss of material, cracking, and change in material properties. The applicant also stated, in Appendix B, Section B2.1.13 of the LRA, that visual monitoring of the systems, structures, and components in normally accessed areas is performed in accordance with the guidance provided in administrative and surveillance procedures. The inspection frequency varies from twice a day to once per refueling outage, in accordance with applicable station procedures.

The general condition monitoring program also credits visual inspection for the detection of changes in material properties in elastomers in the ventilation systems and in support members. During the audit and review, it was not clear to the staff how visual inspections would be used to monitor this aging effect. In a subsequent staff visit to the plant, the applicant stated that the change of material properties for these elastomer components is visually observable by evidence of cracking and crazing, discoloration, distortion, evidence of swelling, tackiness, evaluation of resilience and indentation recovery, etc. These conditions are observable during the general condition monitoring activities performed by the system engineers as part of comprehensive inspections performed quarterly, and by the plant equipment operators during daily inspections of plant areas to verify component or system operation. The staff reviewed the document change request, as documented in the staff's MPS audit and review report, that will add the details for the visual inspection of elastomers to the general condition monitoring program. The applicant stated in the LRA that the procedures and training for personnel performing general condition monitoring inspections and walkdowns will be enhanced to identify the requirements for the inspection of aging effects. This will provide a reasonable assurance that changes in material properties of elastomer components will be adequately managed. This commitment is identified on the applicant's license renewal commitment list in the LRA Appendix A, Table 6.0-1, Item 10. Based on the review of the LRA commitment and document change request, the staff concurs that change in material properties can be visually observed.

The staff reviewed and confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.4 of the SRP-LR. The detection of aging effects identifies the specific components for which the program manages aging. On this basis, the staff finds that the applicant's detection of aging effects program element is acceptable.

(5) Monitoring and Trending -The applicant stated, in Appendix B, Section B2.1.13 of the LRA, that observations of significant degradation are identified for engineering evaluation and documented in accordance with governing procedures. Additionally, system health reports provide a quarterly engineering perspective on system conditions and provide an effective tool by which management can focus attention and resources on systems that do not meet performance goals.

Degradation due to boric acid corrosion is monitored and trended by the activities in the general condition monitoring program in conjunction with the corrective action program. When degradation is identified through general condition monitoring, the corrective action program is utilized to track the specific issue, provide corrective actions, and trend the general issue.

The staff confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.5 of the SRP-LR. Trending of the inspection results will be performed and will enhance the applicant's ability to detect aging effects before there is a loss of intended function. On this basis, the staff finds that the applicant's monitoring and trending program element is acceptable.

(6) Acceptance Criteria - The applicant stated, in Appendix B, Section B2.1.13 of the LRA, that the acceptance criterion for visual inspections is the absence of any visual indication of external degradation. Evaluations of anomalies found during general condition monitoring activities determine whether analysis, repair, or further inspection is required. Degraded conditions that are adverse to quality are entered into the corrective action program.

The general condition monitoring program also credits visual inspection for the detection of changes in material properties in elastomers in the ventilation systems and in support members. During the audit and review, it was not clear to the staff how visual inspections would be used to monitor this aging effect. In a subsequent staff visit to the plant, the applicant stated that the change of material properties for these elastomer components is visually observable by evidence of cracking and crazing, discoloration, distortion, evidence of swelling, tackiness, evaluation of resilience and indentation recovery, etc. These conditions are observable during the general condition monitoring activities performed by the system engineers as part of comprehensive inspections performed monthly, and by the plant equipment operators during daily inspections of plant areas to verify component or system operation. The staff reviewed the document change request, as documented in the staff's MPS audit and review report, that will add the details for the visual inspection of elastomers to the general condition monitoring program. The applicant stated in the LRA that the procedures and training for personnel performing general condition monitoring inspections and walkdowns will be enhanced to identify the requirements for the inspection of aging effects. This will provide a reasonable assurance that changes in material properties of elastomer components will be adequately managed. This commitment is identified on the applicant's license renewal commitment list in the LRA, Appendix A, Table 6.0-1, Item 10. Based on discussions with plant staff and the review of the LRA commitment and document change request, the staff concurs that change in material properties can be visually observed.

The staff confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.6 of the SRP-LR. Any anomalous indications that are signs of degradation will be evaluated to determine whether the observed deterioration of material condition is significant enough to compromise the ability of the in-scope structures and components to perform their intended functions. If found unacceptable, corrective measures will be implemented. On this basis, the staff finds that the applicant's acceptance criteria program element is acceptable.

(7) Operating Experience - The applicant stated, in the program basis document, that the effects of aging are found in normally accessed areas during routine work tasks, walkdowns, and inspections. Engineering evaluations and corrective actions are implemented, as necessary, to correct conditions that are adverse to quality. Management of degradation due to aging effects is not typically required and minor degradation is resolved through the work control process. Additionally, inspection results from reviews by outside organizations are used to help confirm that plant integrity and material condition are maintained.

The staff's review of station operating experience indicates that while degradation has occurred, routine work tasks, walkdowns and inspection activities have been effective in identifying anomalies and implementing corrective actions. When inspection results have warranted, corrective actions have been implemented to ensure that the structures and components continue to perform their intended function.

No operating experience was identified that allowed the staff to conclude that general condition monitoring activities have been effective in managing changes in the material properties of elastomers in the ventilation systems or in support structures and components. However, as part of the commitment identified in LRA Appendix A, Table 6.0-1, Item 10, the procedures and training for personnel performing general condition monitoring inspections and walkdowns will be enhanced to identify the requirements for the inspection of aging effects. This will provide reasonable assurance that changes in material properties of elastomer components will be adequately managed.

On the basis of its review of the above operating experience, the staff concludes that the general condition monitoring program will adequately manage the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.13 of the MPS Unit 2 LRA and Appendix A, Section A2.1.12 of the MPS Unit 3 LRA, the applicant provided the FSAR supplement for the general condition monitoring program and stated that the program manages the aging effects of loss of material, change of material properties, and cracking on the external surfaces of components. It is performed in accessible plant areas for components and structures including those within the scope of license renewal and involves visual inspections for evidence of age-related degradation. The acceptance criterion for visual inspections is the absence of anomalous indications that are signs of degradation. Corrective actions for conditions that are adverse to quality are performed in accordance with the corrective action program as part of the quality assurance program.

The staff reviewed the FSAR supplements and confirmed that they provide an adequate summary description of the program, as identified in the SRP-LR FSAR supplement table and as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplements for this AMP and finds that they provide an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.3.3 Infrequently Accessed Areas Inspection Program

Summary of Technical Information in the Application. The applicant's infrequently accessed areas inspection program is described in LRA Section B2.1.15, "Infrequently Accessed Areas Inspection Program." In the LRA, the applicant stated that this program is a new plant-specific program that will be initiated prior to the period of extended operation. The applicant credits this program with managing the aging effects for loss of material, change in material properties, and cracking using visual inspections of the external surfaces of structures and components. All areas not normally accessible for inspection and evaluation, and that contain structures or components subject to aging management, have been identified for inclusion in the program.

The applicant stated in the LRA that a baseline inspection of in-scope structures and components will be performed. An engineering evaluation of the inspection results will be used to determine whether additional inspections of SCs in the infrequently accessed areas inspection program are required.

In the LRA, the applicant stated that the infrequently accessed areas inspection program will be established prior to the period of extended operation. This commitment is identified in Appendix A, Table A6.0-1 License Renewal commitments, Item 12.

Staff Evaluation. In accordance with 10 CFR 54.21(a)(3), the staff reviewed the information included in Appendix B, Section B2.1.15 of the LRA, regarding the applicant's demonstration of the infrequently accessed areas inspection program to ensure that the effects of aging, as discussed above, will be adequately managed so that the intended functions will be maintained consistent with the CLB throughout the period of extended operation.

The staff reviewed the infrequently accessed areas inspection program against the AMP elements found in the SRP-LR, Appendix A, Section A.1.2.3, and SRP-LR Table A.1-1 and focused on how the program manages aging effects through the effective incorporation of 10 elements (i.e., program scope, preventive actions, parameters monitored or inspected, detection of aging effects, monitoring and trending, acceptance criteria, corrective actions, confirmation process, administrative controls, and operating experience).

The applicant indicated that the corrective actions, confirmation process, and administrative controls are part of the site-controlled quality assurance program. The staff's evaluation of the quality assurance program is provided separately in Section 3.0.4 of this SER. The remaining seven elements are discussed below.

(1) Scope of the Program - The applicant stated, in Appendix B, Section B2.1.15 of the LRA, that the following infrequently accessed areas of the plant are in scope of this program: Unit 2 and Unit 3 intake structure circulating water bays (below the floor and above the water); Unit 2 bypass line (interior of the concrete pipe); Unit 3 auxiliary building heat exchanger room at elevation 4-feet, 6-inch elevation; Unit 3 service water pipe enclosure in the control building; Unit 3 regenerative heat exchanger room in containment; Unit 3 auxiliary building to fuel building pipe tunnel; Unit 3 containment enclosure building (supplementary leak collection-and-release system duct); Unit 3 area between the reactor vessel and neutron shield tank in containment; Unit 3 emergency diesel generator cubicles upper level area; Unit 3 cable spreading area, north and south electrical tunnels, tops of the switchgear rooms; Unit 3 recirculation tempering line (interior of concrete pipe) and associated valve pit; Unit 3 auxiliary building demineralizer alley (inside the cubicles); and MPS stack.

The staff reviewed and confirmed that this program element satisfies the criterion defined in Appendix A.1.2.3 of the SRP-LR. The proposed scope identifies the specific components for which the program manages aging. On this basis, the staff team finds that the applicant's proposed program scope is acceptable.

(2) Preventive Actions - The applicant stated, in Appendix B, Section B2.1.15 of the LRA, that the inspection activities for infrequently accessed areas are designated condition monitoring. No preventive actions are performed.

The staff confirmed that the preventive actions program element satisfies the criterion defined in Appendix A.1.2.3.2 of the SRP-LR. The staff did not identify the need for preventive actions for the infrequently accessed areas inspection program because it is a condition monitoring program.

(3) Parameters Monitored or Inspected - The applicant stated, in Appendix B, Section B2.1.15 of the LRA, that infrequently accessed areas will undergo visual inspections to identify degradation or adverse conditions that include component leakage; rust or corrosion products; peeling, bubbling, or flaking coatings; indications of chemical attack; corroded fasteners; deformed or mispositioned piping and cable supports; and cracking of concrete, supports, or sealant.

The staff confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.3 of the SRP-LR. The infrequently accessed areas inspection program is acceptable because the visual inspections for loss of material, change in material properties, and cracking are intended to detect the presence and extent of aging effects. On this basis, the staff finds that the parameters monitored or inspected program element is acceptable.

(4) Detection of Aging Effects - The applicant stated, in Appendix B, Section B2.1.15 of the LRA, that the external conditions of structures and components located in the infrequently accessed areas are determined by visual inspection. These inspections detect the aging effects of loss of material, cracking, and change of material properties. An inspection plan will be developed and inspections in infrequently accessed areas will be performed prior to the period of extended operation. The inspections will assess the aging of in-scope components and structures located in the infrequently accessed areas identified above. An engineering evaluation of the inspection results will determine the need for subsequent inspections.

The staff reviewed and confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.4 of the SRP-LR. The use of visual inspection of the external condition of infrequently accessed structures, supports, piping, and equipment is consistent with industry practices, and is considered by the staff to be a reasonable means of detecting loss of material, cracking, and change in material properties before the loss of intended function. On this basis, the staff finds that the applicant's detection of aging effects program element is acceptable.

(5) Monitoring and Trending - The applicant stated, in Appendix B, Section B2.1.15 of the LRA, that monitoring of the structures and components in infrequently accessed areas will be accomplished through the performance of baseline inspections. These inspections will be conducted prior to the period of extended operation. Inspection results will be documented for engineering evaluation and retention.

The staff confirmed that this program element satisfies the criteria in Appendix A.1.2.3.5 of the SRP-LR. The applicant committed to conducting one-time inspections prior to the end of the current operating license term and will document the results for evaluation and retention. If degradation is identified, it will be evaluated and corrected in accordance with the applicant's corrective action program. Trending is currently not part of this program and none is required by current industry practices for visual inspection activities in similar applications. On this basis, the staff finds that the applicant's monitoring and trending program element is acceptable.

(6) Acceptance Criteria - The applicant stated, in Appendix B, Section B2.1.15 of the LRA, that the acceptance criterion for visual inspections is the absence of anomalous indications that are signs of degradation. Degradation that is adverse to quality will be entered into the corrective action system.

The staff confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.6 of the SRP-LR. Any anomalous indications that are signs of degradation will be evaluated by an engineer to determine whether the observed deterioration of material condition is significant enough to compromise the ability of an SC in an infrequently accessed area to perform its intended function. If found unacceptable, corrective measures will be implemented. On this basis, the staff finds that the acceptance criteria program element is acceptable.

(7) Operating Experience - The applicant stated, in Appendix B, Section B2.1.15 of the LRA, that the infrequently accessed areas inspection program is a new program for which there is no operating experience.

The staff finds that the one-time baseline inspections of infrequently accessed areas are consistent with years of industry practice that has been effective in maintaining similar SCs and, therefore, can reasonably be expected to be effective at maintaining the intended functions of the SCs that are within the scope of this evaluation for the period of extended operation.

On the basis of its review of the above operating experience, the staff concludes that the infrequently accessed areas inspection program will adequately manage the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.15 of the MPS Unit 2 LRA and Appendix A, Section A2.1.14 of the MPS Unit 3 LRA, the applicant provided the FSAR supplements for the infrequently accessed areas inspection program, which state that the program will manage the aging effects of loss of material, change in material properties, and cracking. Visual inspections will be performed to ensure the absence of anomalous indications that are signs of degradation. The acceptance criterion for the visual inspections is the absence of anomalous indications that are signs of degradation. Corrective actions for conditions that are adverse to quality are performed in accordance with the corrective action program as part of the quality assurance program.

The staff reviewed the FSAR supplements and confirmed that they provide an adequate summary description of the program, as identified in the SRP-LR FSAR supplement table and as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplements for this AMP and finds that they provide an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.3.4 Work Control Process

Summary of Technical Information in the Application. The applicant's work control process is described in LRA Section B2.1.25, "Work Control Process." In the LRA, the applicant stated that this is an existing plant-specific program. The applicant credits the work control process as means for planning and conducting maintenance activities to manage the aging effects on system components, commodities, and adjacent piping, and structures within the scope of license renewal. Preventive and corrective maintenance activities are planned and conducted in accordance with the applicant's work control process.

The applicant stated in the LRA that the work control process is used to manage the aging effects of buildup of deposits, change of material properties, cracking, and loss of material for components and plant commodities within the scope of license renewal. Maintenance activities performed under the work control process provide an opportunity to visually inspect system components, commodities, and adjacent piping, and plant structures. Adjacent piping, including surfaces immediately adjacent to a component, is accessible for visual inspection through the component. Plant structures are accessible when an area next to a structure is excavated for other maintenance work. The work control process also provides opportunities to collect oil and engine coolant fluid samples for subsequent analysis of contaminants and chemical properties, which could either indicate or affect aging. The work control process tracks and documents the performance of inspection and surveillance activities, such as Appendix R fire cage inspections and pump-down and inspection of underground electrical cable enclosures. Maintenance activities performed through the work control process also verify the effectiveness of the chemistry control for primary systems, chemistry control for secondary systems, and fuel oil chemistry programs.

Staff Evaluation. In accordance with 10 CFR 54.21(a)(3), the staff reviewed the information included in Appendix B, Section B2.1.25, of the LRA, regarding the applicant's demonstration of the work control process to ensure that the effects of aging, as discussed above, will be adequately managed so that the intended functions will be maintained consistent with the CLB throughout the period of extended operation.

The staff reviewed the work control process against the AMP elements found in the SRP-LR, Appendix A, Section A.1.2.3, and SRP-LR Table A.1-1 and focused on how the program manages aging effects through the effective incorporation of 10 elements (i.e., program scope, preventive actions, parameters monitored or inspected, detection of aging effects, monitoring and trending, acceptance criteria, corrective actions, confirmation process, administrative controls, and operating experience).

The applicant indicated that the corrective actions, confirmation process, and administrative controls are part of the site-controlled quality assurance program. The staff's evaluation of the quality assurance program is provided separately in Section 3.0.4 of this SER. The remaining seven elements are discussed below.

- Scope of the Program - The applicant stated, in Appendix B, Section B2.1.25 of the LRA, that the program encompasses performance testing and maintenance activities (preventive and corrective) that are planned and conducted in accordance with the work control process. These activities provide an opportunity to perform and document visual inspections of the internal and external surfaces of various material and environment combinations of plant components and commodities within the scope of license renewal, including visual examination of the internal and external surfaces of plant components, visual examination of plant commodities, performance (periodic) tests of mechanical components, routine maintenance sampling of motor lubricating oil and engine coolant, recurring inspection and surveillance activities, equipment monitoring, and data trending and analysis. Activities performed by the work control process also verify the effectiveness of other aging management programs.

The staff requested that the applicant provide additional information to confirm that all of the component groups listed in Section 3 of the MPS Units 2 and 3 LRAs that credit the work control process program are covered by the planned maintenance portion (i.e., preventive maintenance, predictive analysis, periodic surveillance) of the work control process program such that these components will be periodically inspected during the period of extended operation.

In an LRA supplement letter, dated July 7, 2004, (ML041900407), the applicant stated the following in response to the staff's request:

The following wording should be added to MPS Unit 2 and Unit 3 Appendix B, Section B2.1.25 (page B-112):

> Enhancement 2 - Verification of Program Scope
>
> A review of the Work Control Process inspection opportunities for each material and environment group, supplemental to the initial review conducted during the development of the LRA, will be performed. Baseline inspections will be performed for the material and environment combinations that have not been inspected as part of the Work Control Process. This commitment is identified in Appendix A, Table A6.0-1 License Renewal Commitments, Items (31 for MPS Unit 2) (32 for MPS Unit 3).
>
> This commitment will be implemented prior to the period of extended operation.

The staff reviewed and confirmed that this program element, as modified, satisfies the criterion defined in Appendix A of the SRP-LR. The proposed scope, including the enhancements change, identifies the specific components for which the program manages aging. On this basis, the staff finds that the applicant's proposed program scope is acceptable.

- Preventive Actions - The applicant stated, in Appendix B, Section B2.1.25 of the LRA, that the inspection activities conducted as part of the work control process program are designated as condition monitoring, the testing activities of the work control process program are designated as performance monitoring, and the chemistry control activities, in conjunction with the maintenance sampling activities, are designated as preventive actions.

  The staff confirmed that this program element satisfies the criterion defined in Appendix A.1.2.3.2 of the SRP-LR. The absence of preventive actions in the condition and performance monitoring portions of the program is consistent with the requirements of the SRP-LR. Description of the chemistry control activities and sampling activities as preventive is appropriate. On this basis, the staff finds the preventive actions program element is acceptable.

- Parameters Monitored or Inspected - The applicant stated, in Appendix B, Section B2.1.25 of the LRA, that visual inspections of the internal and external surfaces of plant components and plant commodities are performed during the performance of maintenance to determine the presence of cracking, loss of material, change of material properties, and buildup of deposits. Lubricating oil and engine coolant samples are analyzed to detect contaminants that may indicate an environment that can lead to material degradation.

This AMP identifies the use of lubricating oil analysis to detect contaminants. During the audit, the staff requested that the applicant provide information to show that oil sampling is performed to specific industry standards and that the samples are representative, and to identify the basis for the frequency of sampling and present operating experience to demonstrate that the sampling is effective in detecting contaminants. The applicant identified to the staff that the governing procedures for oil sampling at MPS are CBM-103 "Oil Sampling" and CBM-106 "Oil Analysis." The sampling procedures include a check for the presence of water. Frequencies for sampling are established based on equipment operating schedules, operating history, etc. Corrective actions are determined to resolve abnormal indications. The staff reviewed oil sampling procedures and finds the information presented therein to be acceptable.

The staff confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.3 of the SRP-LR. On the basis of interviews with the applicant's technical staff and the enhancement to the scope of program element, the staff finds that the applicant's parameters monitored or inspected program element is acceptable.

- Detection of Aging Effects - The applicant stated, in Appendix B, Section B2.1.25 of the LRA, that cracking, loss of material, buildup of deposits, and changes of material properties are the aging effects that are monitored by visual inspections of the internal and external surfaces of structural and mechanical components, and plant commodities. The results of analyses of lubricating oil and engine coolant samples provide indication of any adverse environment that could lead to material degradation.

The applicant stated in the LRA that the program will be enhanced such that changes will be made to maintenance and work control procedures to ensure that inspections of plant components and commodities will be appropriately and consistently performed and documented for aging effects during maintenance activities.

In the LRA, the applicant also stated that maintenance and work control procedures ensure that inspections of plant components and plant commodities will be appropriately and consistently performed and documented during maintenance activities. This commitment is identified in Appendix A, Table A6.0-1 License Renewal commitments, Item 25 (MPS Unit 2) and 26 (MPS Unit 3).

The work control process credits visual inspection for the detection of changes in material properties in rubber in steam generator nozzle dams and holddown rings, elastomers in ventilation systems, rubber expansion joints in the condensate system, O-rings and gaskets in containment structures (personnel hatch and reactor cavity seal) supports, the spent fuel pool gate seal, fire/EQ barrier penetration seals, and gaskets (in junction, terminal, and pull boxes).

The staff could not determine how visual inspections could be used to manage this aging effect and requested further clarification from the applicant. During the audit, the applicant stated to the staff that the change of material properties for these elastomer components is visually observable by such conditions as evidence of cracking and crazing, discoloration, distortion, evidence of swelling, tackiness, evaluation of resilience and indentation recovery, etc. These conditions are observable during the internal inspections performed as part of the work control process program. The staff reviewed the document change request, as documented in the staff's MPS audit and review report, that will add the details for the visual inspection of elastomers to the work control process. The staff finds that change of material properties could be observable visually as clarified by the applicant.

The applicant stated in the LRA that selective leaching was not identified during the applicant's aging management reviews as an aging mechanism requiring management. However, the LRA Table 3.3.1, stated that components (aluminum bronze, brass, cast iron, cast steel) in open- and closed-cycle cooling water systems and the ultimate heat sink are subject to loss of material due to selective leaching. The applicant identified in LRA Table 3.3.1, the work control process and buried pipe inspection programs to manage selective leaching. In discussions between the staff and the applicant, the applicant stated that the purpose of crediting the work control process program with managing the effects of selective leaching was to provide an accounting of which GALL AMPs were being implemented at MPS, and that the wording in LRA Table 3.3.1 was not intended to indicate that selective leaching does not require management at MPS.

GALL AMP XI.M.33, "Selective Leaching of Materials," recommends a combination of one-time inspection and hardness measurement to manage selective leaching. Since selective leaching is a slow-acting corrosion process, it is recommended that this should be performed as late in the plant life as possible, preferably after 30 years of service.

Selective leaching generally does not cause changes in dimension and is difficult to detect by visual inspection. Hence, the GALL Report recommends a Brinnell hardness test be performed on the inside surfaces of a selected set of components to determine if selective leaching has occurred. Alternatively, if a component is removed from service for whatever reason, a destructive test could be performed.

The applicant stated in the LRA that the work control process program credits visual inspection only for detection of selective leaching. During the audit, the staff asked the applicant to justify the use of visual inspection only, or to provide other means of detection such as, Brinnell hardness, destructive testing, or other mechanical means such as scraping, chipping, etc.

In an LRA supplement letter dated July 7, 2004, (ML041900407), the applicant stated the following:

> For MPS Unit 2 and Unit 3 Appendix B, Section B2.1.25, Detection of Aging Effects (page B-109), the following should be inserted after the first sentence:
>
> "When performing field inspections for loss of material due to selective leaching, visual inspections will include mechanical means, such as resonance when struck by another object, scraping, or chipping."
>
> For MPS Unit 2 and Unit 3 Appendix B, Section B2.1.25, new Enhancement 3 should be added and read (page B-112), as follows:
>
> Enhancement 3: Selective Leaching Inspections
>
> Using the Work Control Process, a baseline inspection for the loss of material due to selective leaching will be performed on a representative sample of locations for susceptible materials by visual, and mechanical or other appropriate methods prior to entering the period of extended operation.

This commitment is identified in Appendix A, Table A6.0-1 License Renewal commitments, Item 30 (MPS Unit 2) and 31 (MPS Unit 3).

This enhancement will be implemented prior to the period of extended operation.

Program Elements Affected

Detection of Aging Effects

The NUREG-1801 program element identifies that the program should detect aging effects before there is a loss of structure or component intended function. The baseline inspection for selective leaching will provide reasonable assurance that the loss of material aging effect, due to selective leaching, will be detected before there is a loss of intended function.

The staff finds the revisions to the MPS LRA, as presented in the supplement letter, to be acceptable.

The results of analyses of lubricating oil and engine coolant samples provide indication of any adverse environment that could lead to material degradation. The applicant's work control process program, as described in the LRA, identifies the use of lubricating oil analysis to detect contaminants. During the audit, the staff requested that the applicant provide information to show that oil sampling is performed to specific industry standards and that the samples are representative, and to identify the basis for the frequency of sampling and present operating experience to demonstrate that the sampling is effective in detecting contaminants. The applicant stated to the staff the governing procedures for oil sampling at MPS are CBM-103 and CBM-106. The sampling procedures include a check for the presence of water. Frequencies for sampling are established based on equipment operating schedules, operating history, etc. Corrective actions are determined to resolve abnormal indications. The staff reviewed oil sampling procedures and finds the information presented therein to be acceptable.

The staff reviewed and confirmed that this program element, as modified, satisfies the criteria defined in Appendix A.1.2.3.4 of the SRP-LR with enhancements, revisions, and clarifications as identified above. The measurements and inspections use a frequency and sample size based on operating experience to detect the presence and extent of aging effects. On this basis, the staff finds that the detection of aging effects program element is acceptable.

- Monitoring and Trending - The applicant stated, in Appendix B, Section B2.1.25 of the LRA, that frequencies of preventive maintenance work activities vary, with some activities being performed only during refueling outages. Monitoring these activities involves reviews of the documentation generated by the work control process program, including completed procedures and technical reviews of engineering evaluations. In addition, as described in the applicant's procedures, reviews and evaluations are conducted for changes to preventive maintenance work activities, including deferrals, missed implementation dates, and frequency changes, as well as additions, revisions, or deletions. The applicant stated in the LRA that the reviews are conducted by system engineers, preventive maintenance coordinators, and affected program owners, as appropriate.

In the LRA, the applicant stated that an integral function of the work control process program is to maintain a component work history database to support long-term equipment reliability monitoring, trending, and analysis. The work history database is maintained and accessible.

In the LRA, the applicant also stated that maintenance and work control procedures ensure that inspections of plant components and plant commodities will be appropriately and consistently performed and documented during maintenance activities.

The applicant stated in the LRA that the program will be enhanced such that changes will be made to maintenance and work control procedures to ensure that inspections of plant components and commodities will be appropriately and consistently performed and documented for aging effects during maintenance activities. This commitment is identified in Appendix A, Table A6.0-1 License Renewal commitments, Items 25 (MPS Unit 2) and 26 (MPS Unit 3).

The staff confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.5 of the SRP-LR. Trending of inspection results will be performed and will enhance the applicant's ability to detect aging effects before there is a loss of intended function. On this basis, the staff finds that the applicant's monitoring and trending program element is acceptable.

- Acceptance Criteria - The applicant stated, in Appendix B, Section B2.1.25 of the LRA, that the acceptance criterion for visual inspections is the absence of anomalous signs of degradation. The acceptance criteria for testing or sampling are specified in the various station procedures and/or vendor technical manuals or recommendations. Evidence of aging effects that are potentially adverse to quality is entered into the corrective action program and engineering evaluations are performed as necessary to determine whether the observed condition is acceptable without repair, or if repair or replacement is necessary.

  The staff confirmed that this program element satisfies the criteria defined in Appendix A.1.2.3.6 of the SRP-LR. Appropriate criteria are in place and any evidence of aging effects potentially adverse to quality will be adequately documented and appropriate action taken per the applicant's corrective action program. On this basis, the staff finds that the acceptance criteria program element is acceptable.

- Operating Experience - The applicant stated, in Appendix B, Section B2.1.25 of the LRA, that the work control process activities that involve component inspections, performance testing, and fluid sampling are performed routinely. The applicant has reviewed site-specific work history data to confirm that an adequate number of inspection opportunities are afforded by the work control program. The applicant also stated in the LRA that the plant corrective action program, which captures internal and external plant operating experience issues, provides reasonable assurances that operating experience will be reviewed in the future to provide objective evidence to support the conclusion that the effects of aging will be managed adequately.

  The staff reviewed an assessment based on observations made during industry group evaluations (e.g., Institute of Nuclear Power Operations) regarding the station's operation and material condition. Based on the staff's review of that assessment and of station-specific operating experience, the staff finds that the work control process program has been effective in identifying anomalies, implementing appropriate corrective actions, and trending parameters. When inspection results have indicated signs of degradation, corrective actions have been implemented to ensure the continued capability of the system to perform its intended functions.

On the basis of its review of the above operating experience, the staff finds that the work control process will adequately manage the aging effects that have been observed at the applicant's plant.

FSAR Supplement. In Appendix A, Section A2.1.25 of the MPS Unit 2 LRA and Appendix A, Section A2.1.24 of the MPS Unit 3 LRA, the applicant provided the FSAR supplements for the work control process program which state that the program integrates and coordinates the combined efforts of maintenance, engineering, operations, and other support organizations to manage maintenance activities. The program manages the aging effects of loss of material, change of material properties, cracking, and buildup of deposits for components and plant commodities within the scope of license renewal. The acceptance criterion for visual inspections is the absence of anomalous signs of degradation. The acceptance criteria for testing or sampling are specified in the various station procedures and/or vendor technical manuals or recommendations. Corrective actions for conditions that are adverse to quality are performed in accordance with the corrective action program as part of the quality assurance program.

The staff reviewed the FSAR supplement and the additional information as identified in the LRA supplement letter, and confirmed that it provides an adequate summary description of the program, as identified in the SRP-LR FSAR supplement table and as required by 10 CFR 54.21(d).

Conclusion. On the basis of its review and audit of the applicant's program, the staff finds that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the FSAR supplement for this AMP and finds that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.4 Quality Assurance Program Attributes Integral to Aging Management Program

Pursuant to 10 CFR 54.21(a)(3), a license renewal applicant is required to demonstrate that the effects of aging on SCs subject to an AMR will be adequately managed so that their intended functions will be maintained consistent with the CLB for the period of extended operation. NUREG-1800, Branch Technical Position RLSB-1, "Aging Management Review - Generic," describes ten attributes of an acceptable AMP. Three of these ten attributes (program elements) are associated with the QA activities of (7) corrective action, (8) confirmation process, and (9) administrative control. Table A.1-1, "Elements of an Aging Management Program for License Renewal," of Branch Technical Position RLSB-1 provides the following description of these quality attributes:

- corrective actions, including root cause determination and prevention of recurrence, should be timely;
- the confirmation process should ensure that preventive actions are adequate and that appropriate corrective actions have been completed and are effective; and,
- administrative controls should provide a formal review and approval process.

NUREG-1800, Branch Technical Position IQMB-1, "Quality Assurance For Aging Management Programs," noted that those aspects of the AMP that affect quality of SR SSCs are subject to the QA requirements of 10 CFR Part 50, Appendix B. Additionally, for NSR SCs subject to an

AMR, the existing 10 CFR Part 50, Appendix B, QA program may be used by the applicant to address the program elements of (7) corrective action, (8) confirmation process, and (9) administrative control. Branch Technical Position IQMB-1 provides the following guidance with regard to the QA attributes of AMPs:

Safety-related SCs are subject to 10 CFR Part 50, Appendix B, requirements which are adequate to address all quality-related aspects of an AMP consistent with the CLB of the facility for the period of extended operation.

For NSR SCs that are subject to an AMR for license renewal, an applicant has an option to expand the scope of its 10 CFR Part 50, Appendix B, program to include these SCs to address corrective action, confirmation process, and administrative control for aging management during the period of extended operation. In this case, the applicant should document such a commitment in the FSAR supplement in accordance with 10 CFR 54.21(d).

3.0.4.1 Summary of Technical Information in Application

Section 3.0, "Aging Management Review Results," of the LRAs provides an AMR summary for each unique structure, component, or commodity group at the MPS, Units 2 and 3, determined to require aging management during the period of extended operation. This summary includes identification of aging effects requiring management and AMPs utilized to manage these aging effects. Appendix A, "FSAR Supplement," and Appendix B, "Aging Management Programs," of the LRA, demonstrate how the identified programs manage aging effects using attributes consistent with the industry and NRC guidance. The applicant's programs and activities that are credited with managing the effects of aging can be divided into three types of programs: existing, enhanced, and new AMPs. In Section A2.0, "Programs That Manage the Effects of Aging," the applicant discusses that the QA program includes the program elements of corrective action, confirmation process, and administrative controls and is applied to both SR and NSR SSCs that are within the scope of license renewal. In Section B.1.3, "Quality Assurance Program and Administrative Controls," the applicant discusses the implementation of 10 CFR 50, Appendix B, and its consistency with the summary in Appendix A.2 of NUREG-1800 (Reference B-1). The QA program includes the elements of corrective action, confirmation process, and administrative control, and is applicable to the SR and NSR SSCs that are subject to an AMR. In many cases, existing programs were found to be adequate for managing aging effects during the period of extended operation. Generically, the three elements are applicable as follows:

(1) Corrective Action - A single corrective actions process is applied regardless of the safety classification of the structure or component. Corrective actions are implemented through the initiation of an action request in accordance with plant procedures established pursuant to 10 CFR 50, Appendix B. Plant procedures require the initiation of an action request for actual or potential problems, including unexpected plant equipment degradation, damage, failure, malfunction, or loss. Site documents that implement AMP for license renewal will direct that an action request be prepared in accordance with those procedures whenever non-conforming conditions are found (i.e., the acceptance criteria are not met). Equipment deficiencies are corrected through the initiation of a work order in accordance with plant procedures. Although equipment deficiencies may initially be documented by a work order, the corrective action process specifies that an action request also be initiated if required.

(2) Confirmation Process - The focus of the confirmation process is on the follow-up actions that must be taken to verify effective implementation of corrective actions. The measure of effectiveness is in terms of correcting the adverse condition and precluding repetition of significant conditions adverse to quality. Plant procedures include provisions for timely evaluation of adverse conditions and implementation of any corrective actions required, including root cause determinations and prevention of recurrence where appropriate (e.g., significant conditions adverse to quality). These procedures provide for tracking, coordinating, monitoring, reviewing, verifying, validating, and approving corrective actions, to ensure effective corrective actions are taken. The action request process is also monitored for potentially adverse trends. The existence of an adverse trend due to recurring or repetitive adverse conditions will result in the initiation of an action request. The AMP required for license renewal would also uncover any unsatisfactory condition due to ineffective corrective action. Since the same 10 CFR 50, Appendix B, corrective action and confirmation process is applied for nonconforming SR and NSR SCs subject to AMR for license renewal, the corrective action program is consistent with NUREG-1800.

(3) Administrative Control - Administrative control procedures provide information on procedures and other forms of administrative control documents as well as guidance on classifying documents into the proper document type. Procedure attachments provide a chart showing the administrative controls hierarchy and a document type decision tree.

3.0.4.2 Staff Evaluation

The staff reviewed the applicant's AMPs described in Appendix A, "FSAR Supplement," specifically Appendix A2.0, "Programs That Manage the Effects of Aging," and Appendix B, "Aging Management Programs," specifically Appendix B1.3, "Quality Assurance Program and Administrative Controls," of the MPS Unit 2 and 3 LRAs. The purpose of this review was to assure that the aging management activities were consistent with the staff's guidance described in NUREG-1800, Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)," regarding QA attributes of AMPs. Based on the staff's evaluation, the descriptions and applicability of the plant-specific AMPs and their associated quality attributes provided in Appendix A2.0 and Appendix B1.3, the staff concluded that the program descriptions are consistent with the staff's position and the Branch Technical Position discussed in IQMB-1.

The station switchyard, which is not owned by the applicant, contains components which were determined to be in scope of license renewal in accordance with the SBO criterion in 10 CFR 54.4(a)(3) and have been determined to require an AMP. The applicant documented this conclusion and indicated that the applicable switchyard components would be included in the applicable AMP and that the attributes of corrective action, confirmation process, and administrative controls would be administered in accordance with the applicant's 10 CFR Part 50, Appendix B, QA program as discussed in both Appendix A and B of the LRA. In addition, Appendix B of the LRA also identified the addition of the switchyard components to the applicable AMPs.

3.0.4.3 Conclusion

The staff concludes that the QA attributes of the applicant's AMPs are consistent with 10 CFR 54.21(a)(3). Specifically, the applicant described the quality attributes of the programs and activities for managing the effects of aging for both SR and NSR SSCs within the scope of license renewal and stated that the 10 CFR Part 50, Appendix B, QA program addresses the elements of corrective action, confirmation process, and administrative control. Therefore, the applicant's QA description for its AMPs is acceptable.

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11. ABSTRACT *(200 words or less)*

This safety evaluation report (SER) documents the technical review of the Millstone Power Station (MPS), Units 2 and 3, license renewal applications (LRAs) by the staff of the U.S. Nuclear Regulatory Commission (NRC). By letter dated January 20, 2004, Dominion Nuclear Connecticut, Inc. submitted the LRAs for MPS in accordance with Title 10, Part 54, of the Code of Federal Regulations. Dominion is requesting renewal of the operating licenses for MPS Units 2 and 3, (Facility Operating License Numbers DPR-65 and NPF-49, respectively) for a period of 20 years beyond the current expiration dates of midnight July 31, 2015, and midnight November 25, 2025.

The MPS site is located in Waterford, CT, on the north shore of Long Island Sound. The NRC issued the construction permits for MPS Units 2 and 3 on December 12, 1970, and August 9, 1974, respectively. The operating licenses were issued on September 26, 1975, for Unit 2 and January 31, 1986, for Unit 3.

This SER presents the status of the staff's review of information submitted to the NRC in the applications. The staff's conclusion of its review of the MPS LRAs can be found in Section 6 of this SER.

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