PREFACE

The following describes the information location, layout, and editorial conventions in the Indian Point Energy Center (IPEC) License Renewal Application (hereinafter referred to as "this application" or "the application"). This application seeks renewal for an additional 20-year term of the facility operating licenses (FOL) for IPEC Units 2 and 3 (IP2 and IP3).

Abbreviated names and acronyms used throughout the application are defined at the end of this preface. Commonly understood terms (such as U.S.) and terms used only in referenced document numbers may not be identified in this table. Regulatory documents such as NUREG-1801, *Generic Aging Lessons Learned (GALL) Report*, Revision 1, and 10 CFR 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," are referred to by the document number, i.e., NUREG-1801 and 10 CFR 54, respectively. References to the UFSAR are to the IPEC Updated Final Safety Analysis Report.

Section 1 provides administrative information required by 10 CFR 54.17 and 10 CFR 54.19.

Section 2 describes and justifies the methods used to determine the systems and structures within the scope of license renewal and the structures and components subject to aging management review. The results of the system and structure scoping are provided in Tables 2.2-1 through 2.2-4. Tables 2.2-1a-IP2, 2.2-1a-IP3, 2.2-1b-IP2, 2.2-1b-IP3 and 2.2-3 list mechanical systems for IP2 and IP3, electrical systems for IP2 and IP3, and structures, respectively, within the scope of license renewal. Tables 2.2-2-IP2, 2.2-2-IP3, and 2.2-4 list the systems for IP2 and IP3 and structures, respectively, not within the scope of license renewal. Section 2 also provides descriptions of in-scope systems and structures and their intended functions with tables identifying components and commodities requiring aging management review and their component intended functions. References are provided to the results of the aging management reviews in Section 3. The descriptions of systems in Section 2 identify license renewal drawings that depict components subject to aging management review for mechanical systems. The drawings are provided in a separate submittal.

Section 3 describes the results of aging management reviews of mechanical, electrical and structural components requiring aging management review. Section 3 is divided into sections that address (1) the reactor vessel, internals, and reactor coolant system, (2) engineered safety features, (3) auxiliary systems, (4) steam and power conversion systems, (5) containment, structures, and component supports, and (6) electrical and instrumentation and controls. The tables in Section 3 provide a summary of information concerning aging effects requiring management and applicable aging management programs for component and commodity groups subject to aging management review. The information presented in the tables is based on the format and content of NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants*, Revision 1, U.S. Nuclear Regulatory Commission, September 2005. The tables include comparisons with the evaluations documented in NUREG-1801, *Generic Aging Lessons Learned (GALL) Report*, Revision 1, U.S. Nuclear Regulatory Commission, September 2005.

Section 4 addresses time-limited aging analyses, as defined by 10 CFR 54.3. It includes identification of the component or subject and an explanation of the time-dependent aspects of the calculation or analysis. Section 4 demonstrates whether (1) the analyses remain valid for the period of extended operation, (2) the analyses have been projected to the end of the period of extended operation, or (3) the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.

Section 4 also confirms that no 10 CFR 50.12 exemption involving a time-limited aging analysis as defined in 10 CFR 54.3 is required during the period of extended operation. The information in Section 4 fulfills the requirements in 10 CFR 54.21(c).

Appendix A, Updated Final Safety Analysis Report Supplement, provides a summary description of programs and activities for managing the effects of aging for the period of extended operation. A summary description of the evaluation of time-limited aging analyses for the period of extended operation is also included. Following issuance of the renewed license, the material contained in this appendix will be incorporated into the UFSAR. The information in Appendix A fulfills the requirements in 10 CFR 54.21(d).

Appendix B, Aging Management Programs, describes aging management programs and activities that will manage aging effects on components and structures within the scope of license renewal such that they will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation. Appendix B contains a comparison of site programs to the programs evaluated in NUREG-1801. The information in Section 2, Section 3, and Appendix B fulfills the requirements of 10 CFR 54.21(a).

Appendix C is not used.

Appendix D, concludes that no technical specification changes are necessary to manage the effects of aging during the period of extended operation. The information in Appendix D fulfills the requirements in 10 CFR 54.22.

Appendix E is the environmental information which fulfills the requirements of 10 CFR 54.23 and 10 CFR 51.53(c).

ABBREVIATIONS AND ACRONYMS

Abbreviation or Acronym	**Description**
AC	alternating current
ACI	American Concrete Institute
ACSR	aluminum conductor steel reinforced
ADV	atmospheric dump valve
AEM	aging effect/mechanism
AFW	auxiliary feedwater
AMA	ammonia / morpholine addition
AMP	aging management program
AMR	aging management review
AMSAC	ATWS Mitigating System Actuation Circuitry
ANSI	American National Standards Institute
ARDG	Appendix R diesel generator
ART	adjusted reference temperature
AS	auxiliary steam
ASC	auxiliary steam and condensate return
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATWS	anticipated transient without scram
B&PV	Boiler and Pressure Vessel
BLCA	boron and layup chemical addition
BMI	bottom mounted instrumentation
BVS	building vent sampling
BWR	boiling water reactor
CAR	condenser air removal
CASS	cast austenitic stainless steel
CBHV	control building HVAC

Abbreviation or Acronym	**Description**
CCC	conventional closed cooling
CCF	containment cooling and filtration
CCR	central control room
CCW	component cooling water
CE	conducts electricity
CETNA	core exit thermocouple nozzle assembly
CF	chemical feed system, chemistry factor
CFR	Code of Federal Regulations
CII	containment inservice inspection
CISS	containment isolation support systems
CL	chlorination
CLB	current licensing basis
CO_2	carbon dioxide
COND	condensate
CP	condensate polisher
CPD	condensate pump discharge
CPS	condensate pump suction
CRD	control rod drive
CRDM	control rod drive mechanism
CRHV	control room HVAC
CS, CSS	containment spray, containment spray system
CST	condensate storage tank
Cu	copper
CUF	cumulative usage factor
CVCS	chemical and volume control
C_VUSE	Charpy upper-shelf energy
CW	circulating water
CWM	city water makeup
CXFR	condensate transfer

Abbreviation or Acronym	**Description**
CYW	city water
DBA	design basis accident
DC	direct current, batteries and 125V DC system
DOCK	intake structure (IP2)
DW	demineralized water
EDG	emergency diesel generator
EFPY	effective full power years
EG	emergency generators
EIC	electrical and instrumentation and control
EMA	equivalent margin analysis
EN	shelter or protection
EOL	end of life
EP	electrical penetrations
EPRI	Electric Power Research Institute
EQ	environmental qualification
ER	Environmental Report (Applicant’s Environmental Report—Operating License Renewal Stage)
ESF	engineered safety features
ESS	engineered safeguards initiation logic
EX	extraction steam
ext	external
FAC	flow-accelerated corrosion
FB	fire barrier
FBAR	fire barriers
FC	flow control
FCCH	fuel and core component Handling
FD	flow distribution, floor drains

Abbreviation or Acronym	**Description**
FDA	fire detection and alarms
F_{en}	fatigue life correction factor
FERC	Federal Energy Regulatory Commission
FHS	fuel handling system
FLB	flood barrier
FLT	filtration
FO	fuel oil
FP	fire protection
FRW	fire water
FSAR	Final Safety Analysis Report
FSBHV	fuel storage building HVAC
ft-lb	foot-pound
FW	feedwater
FWC	fresh water cooling
FWP	main feedwater pump and services
FWST	fire water storage tank
GALL	NUREG-1801, Generic Aging Lessons Learned Report
GEN	main generator
GL	Generic Letter
GSI	Generic Safety Issue
GSS	gland seal steam
GT	gas turbine
GWD	gaseous waste disposal
HA	hydrazine addition
HD	heater drain / moisture separator drains/vents
HELB	high-energy line break
HEPA	high efficiency particulate air

Abbreviation or Acronym	**Description**
HR	hydrogen recombiners
HPSD	high pressure steam dump
HPSI	high pressure safety injection
HS	heat sink
HSB	house service boiler
HT	heat transfer
HVAC	heating, ventilation, and air conditioning
I&C	instrumentation and controls
IA	instrument air
IACC	instrument air closed cooling
IASCC	irradiation-assisted stress corrosion cracking
ICI	in-core instrumentation
ID	inside diameter, identification
IGO	ignition oil
IGSCC	inter-granular stress corrosion cracking
ILRT	integrated leak rate testing
ILWH	integrated liquid waste handling
IN	Information Notice, insulation (electrical)
INCOR	incore nuclear instrumentation
INS	insulation
int	internal
IP2	Indian Point Energy Center Unit 2
IP3	Indian Point Energy Center Unit 3
IPA	integrated plant assessment
IPEC	Indian Point Energy Center
IR	insulation resistance
ISG	Interim Staff Guidance
ISI	inservice inspection

Abbreviation or Acronym	**Description**
IVSW	isolation valve seal water
KV or kV	kilo-volt
LAFW	loss of auxiliary feedwater
LAS	low alloy steel
LBB	leak before break
LPSD	low pressure steam dump
LO	lube oil
LOCA	loss of coolant accident
LRA	license renewal application
LWD	liquid waste disposal
MB	missile barrier
MFW	main feedwater
MIC	microbiologically influenced corrosion
MS	main steam
MSCL	miscellaneous
MSIV	main steam isolation valve
MTG	main turbine generator
MWe	megawatts-electric
MWt	megawatts-thermal
N2	nitrogen system, nitrogen gas
NA	neutron absorption, not applicable
n/cm^2	neutrons per square centimeter
NDE	non-destructive examinations
NED	nuclear equipment drains
NEI	Nuclear Energy Institute

Abbreviation or Acronym	**Description**
NFPA	National Fire Protection Association
Ni	nickel
NPS	nominal pipe size
NRC	Nuclear Regulatory Commission
NSG	nuclear service grade makeup
NYPA	New York Power Authority
O_2	oxygen
PAB	primary auxiliary building
PABHV	primary auxiliary building HVAC
PACS	post-accident containment air sample
PACV	post-accident containment vent
PB	pressure boundary
pH	potential of hydrogen
PORV	power-operated relief valve
ppm	parts per million
PRM	process radiation monitor
PS	primary plant sampling
PSPM	periodic surveillance and preventive maintenance
PSS	primary sampling
P-T	pressure-temperature
PT	penetrant testing
PTS	pressurized thermal shock
PV	plant vent
PVC	polyvinyl chloride
PW	primary water makeup
PWR	pressurized water reactor
PWSCC	primary water stress corrosion cracking

Abbreviation or Acronym	**Description**
PZR	pressurizer
QA	quality assurance
RCCA	rod cluster control assembly
RCP	reactor coolant pump
RCPB	reactor coolant pressure boundary
RCS	reactor coolant system
RG	Regulatory Guide
RHR	residual heat removal
RMS	radiation monitoring
RO	refueling outage
RPC	reactor protection and control
RPV	reactor pressure vessel
RS	reheat steam
RT_{NDT}	reference temperature (nil-ductility transition)
RT_{PTS}	reference temperature for pressurized thermal shock
RVID	Reactor Vessel Integrity Database
RVLIS	reactor vessel level indication
RW	radioactive waste, river water service system
RWST	refueling water storage tank
S_A	stress allowables
SA	station air
SAMA	severe accident mitigation alternatives
SBO	station blackout
SCC	stress corrosion cracking
SD	steam generator boiler blowdown system
SE, SER	Safety Evaluation, Safety Evaluation Report

Abbreviation or Acronym	**Description**
SEC	security
SECHV	security building HVAC
SFPC	spent fuel pit/pool cooling, spent fuel pit and cooling
SG	steam generator, steam generator secondary side instrumentation (system)
SGBD	steam generator blowdown
SGBDR	steam generator blowdown recovery
SGLC	steam generator level control
SGS	steam generator sampling
SI	safety injection / recirculation
SIS	safety injection system
SNS	support for Criterion (a)(2) equipment
SO	[main generator] seal oil
SO_2	sulfur dioxide
SPG	security propane generator
SPU	stretch power uprate
SR	surveillance requirement
SRE	support for Criterion (a)(3) equipment
SS	secondary plant sampling, stainless steel
SSC	system, structure, or component
SSFS	safety system function sheets
SSR	support for Criterion (a)(1) equipment
SSS	secondary sampling
STR	structural support
SW, SWS	service water
TLAA	time-limited aging analysis (analyses)
TB	turbine building
TGHC	turbine generator hydraulic control

Abbreviation or Acronym	**Description**
THCC	turbine hall closed cooling
TS	traveling screen
TSC	technical support center
TSCD	technical support center diesel
TURB	main turbine
UFSAR	Updated Final Safety Analysis Report
USE	upper-shelf energy
UT	ultrasonic testing
VCHA	vapor containment hydrogen analyzer
VCHVP	vapor containment purge and supply
VCPR	vapor containment pressure relief
VCV	vapor containment building ventilation
WCAP	Westinghouse Commercial Atomic Power
WCCPP	weld channel and containment penetration pressurization
WCPS	weld channel and penetration pressurization system
WDS	waste disposal system
WHTP	waste holdup tank pit
WTP	water treatment plant
WW	wash water
yr	year
Zn	zinc
1/4 T	one-fourth of the way through the vessel wall measured from the internal surface of the vessel

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1.0 ADMINISTRATIVE INFORMATION

Pursuant to Part 54 of Title 10 of the Code of Federal Regulations (10 CFR 54), this application seeks renewal for an additional 20-year term of the facility operating licenses (FOL) for Indian Point Energy Center (IPEC), Units 2 and 3. For Indian Point Energy Center Unit 2 (IP2), the facility operating license (DPR-26) expires at midnight September 28, 2013. For Indian Point Energy Center Unit 3 (IP3), the facility operating license (DPR-64) expires at midnight December 12, 2015. These applications apply to renewal of the source, special nuclear, and by-product materials licenses that are combined in the facility operating licenses.

The application is based on guidance provided by the U.S. Nuclear Regulatory Commission in NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants*, Revision 1, September 2005, and Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," Revision 1, September 2005, and guidance provided by NEI 95-10, *Industry Guidelines for Implementing the Requirements of 10 CFR 54 - The License Renewal Rule*, Revision 6, June 2005.

The license renewal application is intended to provide sufficient information for the NRC to complete its technical and environmental reviews pursuant to 10 CFR Parts 54 and 51, respectively. The license renewal application is designed to allow the NRC to make the findings required by 10 CFR 54.29 in support of the issuance of renewed facility operating licenses for IPEC.

1.1 GENERAL INFORMATION

Following is the general information required by 10 CFR 54.17 and 10 CFR 54.19.

1.1.1 Name of Applicants

Entergy Nuclear Indian Point 2, LLC
Entergy Nuclear Indian Point 3, LLC
Entergy Nuclear Operations, Inc.

1.1.2 Address of Applicants

Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, New York 10601

Entergy Nuclear Indian Point 2, LLC, and Entergy Nuclear Indian Point 3, LLC, share the same address.

Indian Point Energy Center
450 Broadway
P.O. Box 249
Buchanan, New York 10511

1.1.3 Description of Business of Applicants

Entergy Nuclear Indian Point 2, LLC, and Entergy Nuclear Indian Point 3, LLC, are engaged principally in the business of owning all or part of a nuclear power facility and selling electric energy at wholesale in the United States. Entergy Nuclear Operations, Inc., is engaged principally in the business of operating nuclear power facilities. These entities are hereinafter referred to as “the applicants.”

1.1.4 Legal Status and Organization

Entergy Nuclear Indian Point 2, LLC, and Entergy Nuclear Indian Point 3, LLC, are indirect wholly owned subsidiaries of Entergy Corporation and indirect wholly owned subsidiaries of Entergy Nuclear Operations, Inc. The principal office for each company is located in Buchanan, New York.

Entergy Nuclear Operations, Inc., a Delaware corporation, is an indirect wholly owned subsidiary of Entergy Corporation, and a direct wholly owned subsidiary of Entergy Holding Company #2. The principal place of business is located in White Plains, New York.

Entergy Nuclear Indian Point 2, LLC, Entergy Nuclear Indian Point 3, LLC, and Entergy Nuclear Operations, Inc., are not owned, controlled, or dominated by any alien, foreign corporation, or foreign government. The applicants make this application on their own behalf and are not acting as an agent or representative of any other person.

Entergy Nuclear Indian Point 2, LLC, and Entergy Nuclear Indian Point 3, LLC, have no board of directors. They are governed by a management committee comprising Gary J. Taylor only.

The names and addresses of the principal officers of Entergy Nuclear Indian Point 2, LLC, and Entergy Nuclear Indian Point 3, LLC, are as follows.

Mike Kansler President and Chief Executive Officer - Entergy Nuclear Operations	Entergy Nuclear Operations, Inc. 440 Hamilton Avenue White Plains, New York 10601
Leo P. Denault Executive Vice President and Chief Financial Officer	Entergy Corporation 639 Loyola Avenue New Orleans, Louisiana 70113
Steven C. McNeal Vice President and Treasurer	Entergy Corporation 639 Loyola Avenue New Orleans, Louisiana 70113
Robert D. Sloan Executive Vice President, General Counsel and Secretary	Entergy Corporation 639 Loyola Avenue New Orleans, Louisiana 70113

John T. Herron Sr. Vice President - Entergy Nuclear Operations	Entergy Nuclear Operations, Inc. 440 Hamilton Avenue White Plains, New York 10601

The names and addresses of the Directors of Entergy Nuclear Operations, Inc., are as follows.

Mike Kansler President and Chief Executive Officer - Entergy Nuclear Operations, Inc.	Entergy Nuclear Operations, Inc. 440 Hamilton Avenue White Plains, New York 10601
Leo P. Denault Executive Vice President and Chief Financial Officer	Entergy Corporation 639 Loyola Avenue New Orleans, Louisiana 70113

The names and addresses of the principal Officers of Entergy Nuclear Operations, Inc., are as follows.

Mike Kansler President and Chief Executive Officer - Entergy Nuclear Operations	Entergy Nuclear Operations, Inc. 440 Hamilton Avenue White Plains, New York 10601
Leo P. Denault Executive Vice President and Chief Financial Officer	Entergy Corporation 639 Loyola Avenue New Orleans, Louisiana 70113
Steven C. McNeal Vice President and Treasurer	Entergy Corporation 639 Loyola Avenue New Orleans, Louisiana 70113
John T. Herron Sr. Vice President - Entergy Nuclear Operations	Entergy Nuclear Operations, Inc. 440 Hamilton Avenue White Plains, New York 10601
Michael A. Balduzzi Sr. Vice President - Regional Operations - Northeast	Entergy Nuclear Operations, Inc. 440 Hamilton Avenue White Plains, New York 10601
Oscar Limpias Vice President, Engineering – Northeast	Entergy Nuclear Operations, Inc. 440 Hamilton Avenue White Plains, New York 10601

C. Randy Hutchinson Sr. Vice President, Business Development	Entergy Nuclear, Inc. 1340 Echelon Parkway Jackson, Mississippi 39213
Robert D. Sloan Executive Vice President, General Counsel and Secretary	Entergy Corporation 639 Loyola Avenue New Orleans, Louisiana 70113
Kevin Bronsoni Vice President – Pilgrim Nuclear Power Station	Pilgrim Nuclear Power Station 600 Rocky Hill Road Plymouth, Massachusetts 02360
Fred R. Dacimo Vice President – Indian Point Energy Center	Indian Point Energy Center 450 Broadway P.O. Box 249 Buchanan, New York 10511
Stewart Minahan Vice President – Cooper Nuclear Station	Cooper Nuclear Power Station 1200 Prospect Road P.O. Box 98 Brownville, Nebraska 68321
Peter T. Dietrich Vice President – FitzPatrick Nuclear Power Station	FitzPatrick Nuclear Power Station 268 Lake Road East Lycoming, New York 13093
Theodore A. Sullivan Vice President – Vermont Yankee Nuclear Power Station	Entergy Nuclear Vermont Yankee 320 Governor Hunt Road Vernon, Vermont 05354

1.1.5 Class and Period of License Sought

The applicants request renewal of the facility operating licenses for Unit 2 and Unit 3 (DPR-26 and DPR-64, respectively) for a period of 20 years. The licenses were issued under Section 104b of the Atomic Energy Act of 1954 as amended. License renewal would extend the facility operating license for Unit 2 from midnight September 28, 2013, to midnight September 28, 2033, and the facility operating license for Unit 3 from midnight December 12, 2015, to midnight December 12, 2035.

This application also applies to renewal of those NRC source materials, special nuclear material, and by-product material licenses that are subsumed or combined with the facility operating licenses or provisional operating license.

1.1.6 Alteration Schedule

The applicants do not propose to construct or alter any production or utilization facility in connection with this renewal application.

1.1.7 Regulatory Agencies with Jurisdiction

Regulatory agencies with jurisdiction over the station are listed below.

Federal Energy Regulatory Commission
888 First St. N. E.
Washington, DC 20426

Securities and Exchange Commission
450 Fifth Street NW
Washington, DC 20549

The renewal of the IPEC licenses will be reviewed by the New York Public Service Commission. The address of this state commission is as follows.

New York Public Service Commission
Empire State Plaza
Agency Building 3
Albany, New York 12223

1.1.8 Local News Publications

The trade and news publications which circulate in the area surrounding IPEC, and which are considered appropriate to give reasonable notice of the renewal application to those municipalities, private utilities, public bodies, and cooperatives that might have a potential interest in the facility, include the following.

White Plains Times
31 Mamaroneck Avenue
White Plains, New York 10601

The Journal News
One Gannett Drive
White Plains, New York 10604

1.1.9 Conforming Changes to Standard Indemnity Agreement

10 CFR 54.19(b) requires that license renewal applications include, “conforming changes to the standard indemnity agreement, 10 CFR 140.92, Appendix B, to account for the expiration term of the proposed renewal license.” The current indemnity agreement (No. B-19) for IPEC states in Article VII that the agreement shall terminate at the time of expiration of the license specified in

Item 3 of the Attachment to the agreement, which is the last to expire. Item 3 of the Attachment to the indemnity agreement, as revised by Amendment No. 25, lists IPEC operating license numbers DPR-26 and DPR-64. The applicants request that conforming changes be made to Article VII of the indemnity agreement, and Item 3 of the Attachment to that agreement, specifying the extension of agreement until the expiration date of the renewed IPEC facility operating license sought in this application. In addition, should the license number be changed upon issuance of the renewal license, the applicants request that conforming changes be made to Item 3 of the Attachment, and other sections of the indemnity agreement as appropriate.

1.1.10 Restricted Data Agreement

This application does not contain restricted data or national security information, and the applicants do not expect that any activity under the renewed licenses for IPEC will involve such information. However, if such information were to become involved, the applicants agree that it will appropriately safeguard such information and not permit any individual to have access to, or any facility to possess, such information until the individual or facility has been approved under the provisions of Parts 10 CFR 25 or 10 CFR 95, respectively.

1.2 PLANT DESCRIPTION

Indian Point Energy Center Units 2 and 3 are located on approximately 239 acres of land on the east bank of the Hudson River at Indian Point, Village of Buchanan in upper Westchester County, New York. The site is about 24 miles north of the New York City boundary line. The nearest city is Peekskill, 2.5 miles northeast of Indian Point. Both units employ a pressurized water reactor (PWR) and nuclear steam supply system (NSSS) furnished by Westinghouse Electric Corporation. The facility operating license for Unit 2 (DPR-26) expires at midnight September 28, 2013. The facility operating license for Unit 3 (DPR-64) expires at midnight December 12, 2015.

Unit 2 is currently licensed to generate 3216 MWt (core power). This thermal power level corresponds to a turbine generator output of approximately 1078 MWe. The major structures are the reactor containment building, the primary auxiliary building, the control building, the fuel storage building, the turbine building, the maintenance and operations building, and the emergency diesel generator building.

Unit 3 is currently licensed to generate 3216 MWt (core power). This thermal power level corresponds to a turbine generator output of approximately 1080 MWe. The major structures are the reactor containment building, the primary auxiliary building, the control building, the fuel storage building, the turbine building, the administration building, outage support building, the training building, the condensate polisher building, and the emergency diesel generator building.

The designs of Unit 2 and Unit 3 are similar. All functional and safety systems for Unit 3 are independent of the other units on the site, except for the following:

- the common discharge canal, outfall structure and associated instrumentation and sampling systems,
- electrical supplies and interties,

- station air intertie,
- demineralized water, condensate makeup and hydrogen interties,
- city water and fire protection interties,
- diesel fuel oil supply (dedicated service of No. 2 fuel oil) system,
- sewage treatment facility,
- auxiliary steam system intertie,
- service boiler fuel oil supply system, and
- liquid steam generator blowdown (SGBD) radwaste processing and discharge (to Indian Point 1) facilities.

Indian Point Energy Center Unit 1 (Provisional Operating License No. DPR-5) shares the site and surrounding area with Units 2 and 3. Unit 1 was permanently shut down on October 31, 1974, and has been placed in a safe storage condition (SAFSTOR) until Unit 2 is ready for decommissioning.

Although the extension of the IP1 license is not a part of this license renewal application, IP1 systems and components interface with and in some cases support the operation of IP2 and IP3. Therefore, IP1 systems and components were considered in the scoping process (see Section 2.1.1). The aging effects of Unit 1 SSCs within the scope of license renewal for IP2 and IP3 will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis throughout the period of extended operation.

2.0 SCOPING AND SCREENING METHODOLOGY FOR IDENTIFYING STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW AND IMPLEMENTATION RESULTS

This chapter describes the process for identification of structures and components subject to aging management review in the IPEC integrated plant assessment (IPA). For those systems, structures, and components (SSCs) within the scope of license renewal, 10 CFR 54.21(a)(1) requires the license renewal applicant to identify and list structures and components subject to aging management review. Furthermore, 10 CFR 54.21(a)(2) requires that methods used to identify these structures and components be described and justified. Technical information in this section serves to satisfy these requirements.

The scoping and screening method is described in Section 2.1. This method is implemented in accordance with NEI 95-10, *Industry Guidelines for Implementing the Requirements of 10 CFR 54 - The License Renewal Rule*, Revision 6, June 2005. The results of the assessment to identify the systems and structures within the scope of license renewal (plant level scoping) are in Section 2.2. The results of the identification of the components and structural components subject to aging management review (screening) are in Section 2.3 for mechanical systems, Section 2.4 for structures, and Section 2.5 for electrical and instrumentation and controls systems.

Table 2.0-1 gives the expanded definitions of intended functions used in this application for structures and components. The tables in the application may refer to either the intended function name or to the abbreviation.

The term “piping” in component lists may include pipe, pipe fittings (such as elbows and reducers), flow elements, orifices, and thermowells. If such components have unique tag numbers or the specific component has a function other than pressure boundary, then flow elements, orifices and thermowells are identified as a separate component type.

The term “heat exchanger (shell)” may include the bonnet/channel head and tubesheet. In cases where the bonnet/channel head and tubesheet provide a unique material and environment combination, they will be uniquely identified as a separate component type.

Table 2.0-1
Intended Functions: Abbreviations and Definitions

Abbreviation	Intended Function	Definition
CE	Conducts electricity	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current or signals.
EN	Shelter or protection	Provide shelter or protection to safety-related equipment (including HELB, radiation shielding and pipe whip restraint).
FB	Fire barrier	Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant.
FC	Flow control	Provide the control of flow rate or establish a pattern of spray.
FD	Flow distribution	Provide a distribution of flow.
FLB	Flood barrier	Provide protective barrier for internal/external flood events.
FLT	Filtration	Provide the removal of unwanted material.
HS	Heat sink	Provide heat sink during station blackout or design basis accidents (includes source of cooling water for plant shutdown).
HT	Heat transfer	Provide the ability to transfer heat.
IN	Insulation (electrical)	Insulate and support an electrical conductor.
INS	Insulation	Provide insulating characteristics to reduce heat transfer
MB	Missile barrier	Provide missile (internal or external) barrier.
NA	Neutron absorption	Absorb neutrons.
PB	Pressure boundary	Provide pressure boundary integrity such that adequate flow and pressure can be delivered. This function includes maintaining structural integrity and preventing leakage or spray for 54.4(a)(2).
SH	Shielding	Provide gamma and neutron shielding for the reactor pressure vessel and internal components.
SNS	Support for Criterion (a)(2) equipment	Provide structural or functional support to nonsafety-related equipment whose failure could impact safety-related equipment (10 CFR 54.4(a)(2)).

Table 2.0-1
Intended Functions: Abbreviations and Definitions
(Continued)

Abbreviation	Intended Function	Definition
SRE	Support for Criterion (a)(3) equipment	Provide structural or functional support to equipment required to meet the Commission’s regulations for the five regulated events in 10 CFR 54.4(a)(3).
SSR	Support for Criterion (a)(1) equipment	Provide structural or functional support for safety-related equipment.
STR	Structural support	Provide structural or functional support for components.

2.1 SCOPING AND SCREENING METHODOLOGY

2.1.1 Scoping Methodology

The license renewal rule (10 CFR 54) defines the scope of license renewal. As stated in 10 CFR 54.4(a) (Reference 2.1-1), systems, structures, and components (SSCs) are required to be included in the license renewal process if they are—

(1) Safety-related systems, structures, and components, which are those relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49 (b)(1)) to ensure the following functions—

  (i) The integrity of the reactor coolant pressure boundary;
  (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
  (iii) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in § 50.34(a)(1), § 50.67(b)(2), or § 100.11 of this chapter, as applicable.

(2) All nonsafety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of the functions identified in paragraphs (1)(i), (ii), or (iii) of this section.

(3) All systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

NEI 95-10, *Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule* (Reference 2.1-6), provides industry guidance for determining what SSCs are in the scope of license renewal. The process used to determine the systems and structures in the scope of license renewal for Indian Point Unit 2 (IP2) and Indian Point Unit 3 (IP3) followed the recommendations of NEI 95-10.

Consistent with NEI 95-10, the scoping process developed a list of plant systems and structures and identified their intended functions. Intended functions are those functions that are the basis for including a system or structure within the scope of license renewal (as defined in 10 CFR 54.4(b)) and are identified by comparing the system or structure function with the criteria in 10 CFR 54.4(a).

The component database for IP2 and IP3 was used to develop a list of plant systems. The database provides component level information, including the system, component name and identification, quality assurance (QA) classification, location, and other relevant information. The database is in two parts, one for IP2, which includes listings for Indian Point Unit 1 (IP1) systems and components, and a second part for IP3. Although the extension of the IP1 license is not a part of this license renewal application, IP1 systems and components interface with and in some cases support the operation of IP2 and IP3. The systems and components needed to support the intended functions for IP2 and IP3 are included in the scope of this license renewal application, regardless of the unit designation of the system or component.

The IP2 and IP3 units were originally constructed, owned and operated by the Consolidated Edison Company of New York. IP2 began operation in 1973 and IP3 in 1975. With the exception of minor design differences due to new requirements for IP3, the units were essentially the same design. Shortly after the initial operating license for IP3 was issued, that unit was purchased by the Power Authority of the Sate of New York, which subsequently assumed responsibility for its operation. The two units were operated independently until Entergy purchased and assumed operations of IP2 and IP3 in 2001 and 2000 respectively. Because of the extended period of independent operations, differences developed in the design and operation of the two units. Different approaches were taken to resolve emergent licensing and design issues, resulting in further variations in the plants' designs. Some aspects of the unit operations were different, including methods for identification and documentation of systems and their boundaries. As a result, even though the plants remain largely the same, with about the same number of components per unit, there are marked differences in the number of IP2 and IP3 systems and in the boundaries for similarly named systems.

For mechanical system scoping, system boundaries were defined in part by the collection of components in the database assigned to the system code. The component database is primarily a maintenance tool used to support work request documentation. The database represents all systems and contains the vast majority of system components. The database was useful in preparing the list of plant systems, but could not be used alone to determine all system boundaries. Where necessary, flow diagrams were used with the component database to help define logical system boundaries. System functions are determined based on the functions performed by the components within those boundaries. Because of the differences in IP2 and IP3 system boundaries, the intended functions for the systems are often different, even for similarly named systems. (Structural commodities associated with mechanical systems, such as pipe hangers and insulation, are evaluated with the structural bulk commodities.)

As the starting point for structural scoping, a list of plant structures was developed from a review of plant layout drawings, maintenance rule documentation, design basis documents, and the UFSAR. The structures list includes all structures that potentially support plant operations or could adversely impact structures that support plant operations (i.e., seismic II/I). In addition to buildings and facilities, the list of structures includes other structures that support plant operation (e.g., foundations for freestanding tanks and electrical manholes).

Intended functions for structures and mechanical systems were identified based on reviews of applicable plant licensing and design documentation. Documents reviewed included maintenance rule basis documents, design basis documents, site system safety function sheets (SSFS) (see Section 2.1.1.1.1 for description of SSFS), the fire hazards analysis, the safe shutdown analysis, internal flooding analyses, Technical Specifications, applicable sections of the UFSAR, and various station drawings as necessary.

Each structure and mechanical system was evaluated against the criteria of 10 CFR 54.4 as described in the following sections. Section 2.1.1.1 discusses the evaluation against the safety-related criterion in 10 CFR 54.4(a)(1). Section 2.1.1.2 discusses the evaluation against the nonsafety-related SSCs affecting safety-related SSCs criterion, 10 CFR 54.4(a)(2). Section 2.1.1.3 discusses the evaluation against the regulated events criterion, 10 CFR 54.4(a)(3). The results of these evaluations for plant systems and structures are presented in Section 2.2.

Because the aging management review differed for mechanical and electrical equipment, the scoping of mechanical and electrical systems was treated differently. For the purposes of system level scoping, all plant electrical and instrumentation and control (I&C) systems are included in the scope of license renewal. Electrical and I&C components in mechanical systems were included in the evaluation of electrical systems. See Section 2.5 for additional information on electrical and I&C system scoping and screening.

2.1.1.1 Application of Safety-Related Scoping Criteria

Systems and structures that perform safety functions as defined by the functions listed in 10 CFR 54.4(a)(1) are within the scope of license renewal. Design basis events are defined in 10 CFR 50.49(b)(1) as conditions of normal operation, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed to ensure functions identified in 10 CFR 54.4(a)(1)(i) through (iii).

Component and structure quality classifications are controlled by corporate and site procedures. Together, the procedures define design basis events consistent with 10 CFR 50.49 (b)(1) and define safety-related, or quality assurance Class A (IP2) or Category I (IP3), to include safety-related SSCs that are necessary to ensure, during and following design basis events,

- the integrity of the reactor coolant pressure boundary, or
- the capability to shut down the reactor and maintain it in a safe shutdown condition, or
- the capability to prevent or mitigate the consequences of accidents that could result in potential off-site exposures comparable to the guidelines of 10 CFR 50.67 or 10 CFR 100 as applicable.

This is the same definition of safety-related SSC used in 10 CFR 54.4(a)(1). Although the IPEC definition does not mention the exposure guidelines of § 50.34(a)(1), for plants (including IPEC) with construction permits issued before January 10, 1997, § 50.34(a)(1) refers to the guidelines of 10 CFR 100, which are included in the IPEC definition. The definition used for Unit 3 does not refer to 10 CFR 50.67 regarding the alternate source term. See Section 2.1.1.1.2 for further discussion of the alternate source term for Unit 3.

Although the IP2 and IP3 definition of safety-related SSC is consistent with the definition used in 10 CFR 54.4(a)(1), the identification of safety functions for the two units was slightly different. Sections 2.1.1.1.1 and 2.1.1.1.2 describe the evaluation of the safety-related criterion in 10 CFR 54.4(a)(1) for IP2 and IP3, respectively.

2.1.1.1.1 Review of Safety-Related Scoping Criteria for IP2

Entergy corporate procedures and site engineering standards control component and structure quality classification. These procedures also control the development and maintenance of the System Safety Function Sheets (SSFS) which, for other Entergy plants, including IP3, list functions performed by each system with each function classified as safety-related, augmented quality, or nonsafety-related. For IP2, the SSFS for mechanical systems were developed in conjunction with the license renewal scoping effort. The system functions were identified through reviews of IP2 design and licensing documentation. The following sources were considered.

- UFSAR
- Technical Specifications and bases
- technical requirements manual
- design basis documents
- licensing commitment database
- maintenance rule bases documents
- fire hazards analysis
- Appendix R safe shutdown analysis
- station blackout analysis
- safety evaluation reports
- docketed correspondence
- plant drawings

The IP2 functions were classified using the definition of safety-related described in Section 2.1.1.1, which is consistent with the definition in 10 CFR 54.4(a)(1). Thus the functions classified as safety-related for each system comprise the set of intended functions for the system for criterion 10 CFR 54.4(a)(1).

Systems with mechanical components that perform a mechanical safety function are included in the scope of license renewal. Systems with safety-related electrical components but no safety-related mechanical components are not included in scope for this criterion; however, the electrical portions of the system are included in scope by default (see Section 2.5).

Structural safety functions include providing containment or isolation to mitigate post-accident off-site doses and providing support or protection to safety-related equipment. The structural safety functions are identified in the UFSAR, the maintenance rule structural monitoring program, the Fire Hazards Analysis, design basis documents, and structural drawings. Structures with a safety function or that support or protect a safety-related component are included in the scope of license renewal on the basis of criterion 10 CFR 54.4(a)(1). Structures and structural components that provide protection to safety-related equipment from design basis events, including external events and natural phenomena, are included in the scope of license renewal on the basis of criterion 10 CFR 54.4(a)(1).

2.1.1.1.2 Review of Safety-Related Scoping Criteria for IP3

Entergy corporate procedures and site engineering standards control component and structure quality classification. The component database maintains the controlled component level list of quality classifications. Procedures also control the development and maintenance of the SSFS, which list functions performed by each system with each function classified as safety-related, augmented quality, or nonsafety-related.

The definition of safety-related used to classify IP3 safety functions presented in the SSFS encompasses and is conservative to the definition of safety-related described in Section 2.1.1.1 with one exception: the IP3 definition does not refer to the exposure guidelines referred to in § 50.67(b)(2) addressing the alternate source term. Although the IP3 definition of safety-related does not refer to § 50.67(b)(2), IP3 has credited the alternate source term in the dose analyses. A review was performed of the systems and components that are credited in the analyses to ensure the applicable systems and components were included in the scope of the license renewal. No new SSC functional requirements, beyond those established to meet the guidelines of 10 CFR 100, were credited for the application of the alternate source term, so no additional SSCs were included in the scope of license renewal.

For license renewal scoping, mechanical system-level functions were obtained from the SSFS. Additional information on system functions was obtained from the UFSAR, the maintenance rule SSC basis documents for each system, piping flow diagrams and from design basis documents for those systems for which a DBD was written. Safety objectives are included in the UFSAR system descriptions, but these are not always safety functions as defined by 10 CFR 54.4(a)(1).

Systems with mechanical components that perform a mechanical safety function are included in the scope of license renewal. Systems with safety-related electrical components but no safety-related mechanical components are not included in scope for this criterion; however, the electrical portions of the system are included in scope by default (see Section 2.5).

Structural safety functions include providing containment or isolation to mitigate post-accident off-site doses and providing support or protection to safety-related equipment. The structural safety functions are identified in the UFSAR, the maintenance rule basis documents for structures, the Fire Hazards Analysis, design basis documents, and structural drawings. Structures with a safety function or that support or protect a safety-related component are included in the scope of license renewal on the basis of criterion 10 CFR 54.4(a)(1). Structures and structural components that provide protection to safety-related equipment from design basis events, including external events and natural phenomena, are included in the scope of license renewal on the basis of criterion 10 CFR 54.4(a)(1).

2.1.1.2 Application of Criterion for Nonsafety-Related SSCs Whose Failure Could Prevent the Accomplishment of Safety Functions

This review identified nonsafety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of a safety function. The method used was based on guidance provided in Appendix F of NEI 95-10 (Reference 2.1-6). Consideration of hypothetical failures that could result from system interdependencies that are not part of the current licensing basis and that have not been previously experienced is not required.

The impacts of nonsafety-related SSC failures were considered as either functional or physical. A functional failure is one where the failure of a nonsafety-related SSC to perform its normal function impacts a safety function. A physical failure is one where a safety function is impacted by the loss of structural or mechanical integrity of an SSC in physical proximity to a component that supports a safety function.

2.1.1.2.1 Functional Failures of Nonsafety-Related SSCs

At IPEC, SSCs required to perform a function in support of safety-related components are generally classified as safety-related and included in the scope of license renewal per Section 2.1.1.1. For the few exceptions where nonsafety-related components are required to remain functional to support a safety function, this system intended function is identified in Section 2.3 and the components are included in the appropriate aging management review. [1]

2.1.1.2.2 Physical Failures of Nonsafety-Related SSCs

Based on the license renewal rule and the guidance in NEI 95-10 (Reference 2.1-6), physical failures of nonsafety-related SSCs in scope based on 10 CFR 54.4(a)(2) fit into the following categories:

- nonsafety-related SSCs directly connected to safety-related SSCs (typically piping and HVAC ductwork); or

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[1] These systems include component cooling water, city water and gas turbine fuel oil supply for IP2 (all three support engineered safety features); city water and fire protection for IP2 (support spent fuel pool makeup); and city water makeup and fire water for IP3 (support spent fuel pool make-up).

- nonsafety-related SSCs with the potential for spatial interaction with safety-related components that could prevent accomplishment of a safety function.

(1) Nonsafety-Related SSCs Directly Connected to Safety-Related SSCs

Certain components and piping outside the safety class pressure boundary must be structurally sound in order to maintain the pressure boundary integrity of safety class piping. In this case, the scope of license renewal includes the nonsafety-related piping and supports up to and including the first seismic anchor beyond the safety/nonsafety interface such that the safety-related portion of the piping will be able to perform its intended function. For piping in this structural boundary, pressure integrity is not required; however, piping within the safety class pressure boundary depends on the structural boundary piping and supports in order for the system to fulfill its safety function. For IPEC, “structural boundary” is defined as the portion of a piping system outside the safety class pressure boundary yet relied upon to provide structural support for the pressure boundary.

(2) Nonsafety-Related Systems or Components with the Potential for Spatial Interaction with Safety-Related Components that Could Prevent Accomplishment of a Safety Function

The following sections address the different modes of spatial interaction that were considered. Interactions can occur in the following forms:

- physical impact (e.g., seismic Class II/I) or flooding,
- pipe whip, jet impingement, or harsh environment resulting from a piping rupture, or
- damage due to leakage or spray from nonsafety-related SSCs.

The approach employed for IPEC is consistent with NEI 95-10, Appendix F (Reference 2.1-6). Protective features (whip restraints, spray shields, supports, missile or flood barriers, etc.) are installed to protect safety-related SSCs against spatial interaction with nonsafety-related SSCs. Such protective features credited in the plant design are included within the scope of license renewal and are subject to aging management review. Protective features are typically associated with a structure and are addressed in the civil/structural section of this application.

Physical Impact (Seismic II/I, Missiles, or Flooding)

Consistent with NEI 95-10, Appendix F, nonsafety-related supports for non-seismic or Seismic II/I piping systems and electrical conduit and cable trays with a potential for spatial interaction with safety-related SSCs are subject to aging management review based on the criterion of 10 CFR 54.4(a)(2). These supports and components are addressed in a commodity fashion within the civil/structural section.

Missiles can be generated from internal or external events such as failure of rotating equipment. Inherent nonsafety-related features that protect safety-related equipment from missiles require aging management review based on the criterion of 10 CFR 54.4(a)(2).

Overhead-handling systems whose structural failure could result in damage to any system that could prevent the accomplishment of a safety function meet the criteria of 10 CFR 54.4(a)(2) and are within the scope of license renewal.

Walls, curbs, dikes, doors, etc., that provide flood barriers to safety-related SSCs are within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2).

Pipe Whip, Jet Impingement, or Harsh Environments

Nonsafety-related portions of high-energy lines were evaluated against the criterion of 10 CFR 54.4(a)(2). Documents reviewed included the UFSAR and other relevant site documentation, including the design basis documents. IPEC high-energy systems were evaluated to ensure identification of components that are part of nonsafety-related high-energy lines that can affect safety-related equipment.

If a high-energy line break (HELB) analysis assumes that a nonsafety-related piping system does not fail or assumes failure only at specific locations, then that piping system is within the scope of license renewal per 10 CFR 54.4(a)(2) and subject to aging management review in order to provide reasonable assurance that those assumptions remain valid through the period of extended operation.

Spray or Leakage

Moderate and low energy systems have the potential for spatial interactions of spray and leakage. Nonsafety-related systems and nonsafety-related portions of safety-related systems with the potential for spray or leakage that could prevent satisfactory accomplishment of a safety function are in the scope of license renewal and subject to aging management review.

Components that do not contain liquids cannot adversely affect safety-related SSCs due to leakage or spray. Operating experience indicates that nonsafety-related components containing only air or gas have experienced no failures due to aging that could impact the ability of safety-related equipment to perform required safety functions. There are no aging effects for these components when the environment is a dry gas. A system containing only air or gas is not in the scope of license renewal based on the potential for spray or leakage.

The review utilized a spaces approach for scoping of nonsafety-related systems with potential for spatial interaction that could affect a safety function. The spaces approach focuses on the interaction between components with nonsafety functions and components with safety functions that are located in the same space. A "space" is defined as a room or cubicle that is separated from other spaces by substantial objects (such as wall, floors, and ceilings). The space is defined such that any potential interaction is limited to the space.

Nonsafety-related systems that contain water, oil, or steam with components located inside structures containing equipment with a safety function are potentially in scope for possible spatial interaction under criterion 10 CFR 54.4(a)(2). These systems were evaluated further to determine if system components were located in a space such that equipment with a safety function could be affected by a component failure.

2.1.1.3 Application of Criterion for Regulated Events

The scope of license renewal includes those systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63). This section discusses the approach used to identify the systems and structures in the scope of license renewal based on this criterion. The systems and structures that perform intended functions in support of these regulated events are identified in the descriptions in Sections 2.3, 2.4, and 2.5.

2.1.1.3.1 Commission's Regulations for Fire Protection (10 CFR 50.48)

Systems and structures in the scope of license renewal for fire protection include equipment based on functional requirements defined in 10 CFR 50.48. SSCs credited with fire prevention, detection and mitigation in areas containing equipment important to safe operation of the plant are in scope as is equipment credited to achieve safe shutdown in the event of a fire. To identify this equipment, a detailed review of the IPEC current licensing basis for fire protection was performed and the systems and structures relied upon for compliance with the Commission’s regulations were identified.

2.1.1.3.2 Commission's Regulations for Environmental Qualification (10 CFR 50.49)

10 CFR 50.49 defines electric equipment important to safety that is required to be environmentally qualified to mitigate certain accidents that result in harsh environmental conditions in the plant. 10 CFR 50.49 codified requirements for the environmental qualification of electrical equipment that had been presented in other regulatory documents such as Bulletin 79-01B. The IPEC equipment qualification program satisfies these requirements.

As described in Section 2.1.1 of this application, a bounding scoping approach is used for electrical equipment. Electrical systems and electrical equipment in mechanical systems are by default included in scope for license renewal. Consequently, the environmentally qualified equipment is in scope for license renewal.

2.1.1.3.3 Commission's Regulations for Pressurized Thermal Shock (10 CFR 50.61)

The PTS rule, 10 CFR 50.61, “Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events,” requires that licensees of pressurized water reactors evaluate the reactor vessel beltline materials against specific criteria to ensure protection from brittle fracture. The PTS rule specifies the calculational method to determine an analytical value, RT_{PTS}, which is compared to PTS screening criteria specified in the rule.

For IP2, the limiting reference temperature after 60 years of operation is below the screening criteria. As a result, no flux reduction programs or modifications to equipment, systems or operation are necessary to prevent potential failure of the reactor vessel.

For IP3, projected reference temperature values after 60 years of operation are below the screening criteria with the exception of one plate. At present, it is estimated that plate B2803-3 will reach the screening criterion approximately nine years after entering the period of extended operation. IP3 has already implemented flux reduction measures for this region of the beltline, and a plant-specific safety analysis for plate B2803-3 will be submitted to the NRC three years prior to reaching the RT_{PTS} screening criterion. Modifications to equipment, systems or operation are not currently necessary and none have been implemented. (See Section 4.2.2 for further discussion.)

For both IP2 and IP3, the only systems currently relied upon to meet the PTS regulation is the reactor coolant system, which contains the reactor vessel. There are no structures relied upon to meet the PTS regulation.

2.1.1.3.4 Commission's Regulations for Anticipated Transients without Scram (10 CFR 50.62)

An anticipated transient without scram (ATWS) is an anticipated operational occurrence that is accompanied by a failure of the reactor trip system to shut down the reactor. The ATWS rule, 10 CFR 50.62, requires specific improvements in the design and operation of commercial nuclear power facilities to reduce the probability of failure to shut down the reactor following anticipated transients and to mitigate the consequences of an ATWS event.

Based on the current licensing bases for ATWS for Unit 2 and Unit 3, mechanical system intended functions supporting ATWS requirements were determined. As described in Section 2.1.1, a bounding scoping approach is used for electrical equipment. Electrical and instrumentation and control (EIC) systems and electrical equipment in mechanical systems are by default included in scope for license renewal. Consequently, EIC equipment that supports compliance with the ATWS rule is in scope for license renewal.

2.1.1.3.5 Commission's Regulations for Station Blackout (10 CFR 50.63)

10 CFR 50.63, "Loss of All Alternating Current Power," requires that each light-water-cooled nuclear power plant be able to withstand and recover from a station blackout (SBO). As defined by 10 CFR 50.2, a station blackout is the loss of offsite and onsite emergency AC electric power to the essential and non-essential switchgear buses in a nuclear power plant. It does not include the loss of AC power fed from inverters powered by station batteries or by alternate AC sources, nor does it assume a concurrent single failure or design basis accident. The objective of this requirement is to assure that nuclear power plants are capable of withstanding an SBO and maintaining adequate reactor core cooling and appropriate containment integrity for a required duration.

Both IP2 and IP3 have alternate AC power sources that can be available within one hour. Coping analyses have demonstrated sufficient capacity and capability to ensure that the core is cooled and appropriate containment integrity is maintained for the coping duration of eight hours. Based on the current licensing bases for SBO, Entergy determined the system intended functions performed in support of 10 CFR 50.63 requirements.

Upon completion of its installation and testing, a new diesel generator, the SBO/Appendix R diesel generator (SBO/ARDG), will be the source of alternate AC power credited for IP2 compliance with 10 CFR 50.63. The SBO/ARDG will be the source of alternate AC power continuing through the period of extended operation. The SBO/ARDG will be installed and operational prior to completion of NRC review of this application. The SBO/ARDG will replace the gas turbines to provide power for Appendix R and station blackout events. The integrated plant assessment for license renewal includes review of the SBO/ARDG. Specifically, the results of that review are included in Section 2.3.3.16 for scoping and screening, and in Table 3.3.2-16-IP2 for the aging management review.

Based on NRC guidance in NUREG-1800 Section 2.5.2.1.1, certain switchyard components required to restore offsite power are conservatively included within the scope of license renewal even though those components are not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission’s regulations for station blackout (10 CFR 50.63).

As described in Section 2.1.1, a bounding approach to scoping is used for electrical equipment. On-site electrical systems and electrical equipment in mechanical systems are by default included in scope for license renewal. Consequently, electrical equipment that supports the requirements of 10 CFR 50.63 is included in the scope of license renewal.

2.1.2 Screening Methodology

Screening is the process for determining which components and structural elements require aging management review. Screening is governed by 10 CFR 54.21(a), which reads as follows.

> (1) For those systems, structures, and components within the scope of this part, as delineated in § 54.4, identify and list those structures and components subject to an aging management review. Structures and components subject to an aging management review shall encompass those structures and components—
>
> (i) That perform an intended function, as described in § 54.4, without moving parts or without a change in configuration or properties. These structures and components include, but are not limited to, the reactor vessel, the reactor coolant system pressure boundary, steam generators, the pressurizer, piping, pump casings, valve bodies, the core shroud, component supports, pressure retaining boundaries, heat exchangers, ventilation ducts, the containment, the containment liner, electrical and mechanical penetrations, equipment hatches, seismic Category I structures, electrical cables and connections, cable trays, and electrical cabinets, excluding, but not limited to, pumps (except casing), valves (except body), motors, diesel generators, air compressors, snubbers, the control rod drive, ventilation dampers, pressure transmitters, pressure indicators, water level indicators, switchgears, cooling fans, transistors, batteries, breakers, relays, switches, power inverters, circuit boards, battery chargers, and power supplies; and
>
> (ii) That are not subject to replacement based on a qualified life or specified time period.
>
> (2) Describe and justify the methods used in paragraph (a)(1) of this section [10 CFR 54.21].
>
> (3) For each structure and component identified in paragraph (a)(1) of this section [10 CFR 54.21], demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB [current licensing basis] for the period of extended operation.

NEI 95-10 (Reference 2.1-6) provides industry guidance for screening structures and components to identify the passive, long-lived structures and components that support an intended function. The screening process for IPEC followed the recommendations of NEI 95-10.

Within the group of systems and structures that are in scope, passive long-lived components or structural elements that perform intended functions require aging management review. Components or structural elements that are either active or subject to replacement based on a qualified life do not require aging management review.

Although the requirements for the integrated plant assessment are the same for each system and structure, in practice the screening process differed for mechanical systems, electrical systems, and structures. The three separate screening processes are described below.

2.1.2.1 Screening of Mechanical Systems

For each mechanical system within the scope of license renewal, the screening process identified those components that are subject to aging management review. Section 2.3 presents the results for mechanical systems.

2.1.2.1.1 Identifying Components Subject to Aging Management Review

Within the system, long-lived components that perform or support an intended function without moving parts or a change in configuration or properties (passive) are subject to aging management review.

In making the determination that a component is passive, it is not necessary to consider the piece parts of the component. However, in the case of valves, pumps, and housings for fans and dampers, an intended function of maintaining the pressure boundary is performed by the valve bodies, pump casings, and housings, and therefore these are subject to aging management review.

If the component is not subject to replacement based on qualified life or specified time period, then it is considered long-lived. Replacement programs are based on vendor recommendations, plant experience, or any means that establishes a specific service life, qualified life, or replacement frequency under a controlled program. Components that are subject to replacement based on qualified life or specified time period (i.e., not long-lived) are not subject to aging management review. Where flexible elastomer hoses/expansion joints are periodically replaced, these components are not long-lived and therefore not subject to aging management review.

Certain safety-related instrument air solenoid valves open to relieve pressure and fail to a safe position upon loss of pressure boundary. Aging management review is not required for these valves because maintaining a pressure boundary is not a component intended function.

2.1.2.1.2 Identifying Components Subject to Aging Management Review Based on Support of an Intended Function for 10 CFR 54.4(a)(2)

As discussed in Section 2.1.1.2, systems within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2) interact with safety-related systems in one of two ways: functional or physical. A functional failure is one where the failure of a nonsafety-related SSC to perform its function impacts a safety function. A physical failure is one where a safety function is impacted by the loss of structural or mechanical integrity of an SSC in physical proximity to components supporting the safety function.

As discussed in Section 2.1.1.2, physical failures of nonsafety-related systems in scope based on 10 CFR 54.4(a)(2) fit into the following two categories:

- nonsafety-related systems or components directly connected to safety-related systems (typically piping systems); or

- nonsafety-related SSCs with the potential for spatial interaction with safety-related components that could prevent accomplishment of a safety function.

For systems that were identified as not being in scope for spatial effects, LRA drawings were reviewed to identify any nonsafety-related directly connected to safety-related interfaces. In most cases, piping substantial enough that it could provide structural support was traced back to the nearest point that could conservatively be considered an end point, such as a base-mounted component, flexible connection, or end of a piping run (such as a drain line). The use of this bounding approach is acceptable using the bases provided in Appendix F of NEI 95-10 (Reference 2.1-6). All components required or conservatively considered to provide structural support for safety-related portions of systems are subject to aging management review.

The following modes of spatial interaction are described in Section 2.1.1.2.

Physical Impact or Flooding

The evaluation of physical interactions due to physical impact (Seismic II/I, missiles, or flooding) affects only structures and structural components. This includes overhead-handling systems whose failure could result in damage to a system that could prevent the accomplishment of a safety function as well as walls, curbs, dikes, doors, etc., that provide flood barriers to safety-related equipment. Structures and structural components are reviewed in Section 2.4.

Pipe Whip, Jet Impingement, or Harsh Environments

In order to ensure the nonsafety-related portions of high-energy lines were included in this 54.4(a)(2) review, the IPEC UFSAR and associated site documentation was reviewed.

Many of the IP2 and IP3 high energy lines meet the 10 CFR 54.4(a)(1) or 10 CFR 54.4(a)(3) scoping criteria and are therefore evaluated in the individual system mechanical aging management reviews. The conservative scoping criteria for 10 CFR 54.4(a)(2) includes all fluid-filled high-energy lines that are not included in other AMRs with the potential to affect components that have a safety function. Components in such high-energy lines are subject to aging management review and are included in the appropriate system table in Section 2.3.3.19.

Leakage or Spray

For nonsafety-related systems with the potential for spatial interaction that could affect a safety function, a spaces approach was used to identify components subject to aging management review. Components containing oil, steam or liquid and located in spaces containing equipment with a safety function are subject to aging management review.

2.1.2.1.3 Mechanical System Drawings

License renewal drawings were prepared to indicate portions of systems that support system intended functions (with the exception of those systems in scope for 10 CFR 54.4(a)(2) for physical interactions). In addition, the drawings identify components that are subject to aging management review. Boundary flags are used in conjunction with safety-to-nonsafety class breaks to identify the system intended function boundaries. Boundary flags are noted on the drawings as system intended function boundaries. Components within these boundary flags and class breaks support the system intended functions (those functions that required the system to be in scope). Components subject to aging management review (i.e., passive, long-lived components that support system intended functions) are highlighted using color coding to indicate which system aging management review evaluated the components. Drawings that contain only highlighting (no boundary flags) indicate that all components on the drawing support system intended functions unless excluded by safety-to-nonsafety class breaks.

Flexible elastomer hoses/expansion joints that are periodically replaced (not long-lived) and therefore not subject to aging management review are indicated as such on the drawings. Safety-related instrument air solenoid valves that open to relieve pressure and fail to a safe position upon loss of pressure boundary do not require aging management review but do support a system intended function. To maintain the legibility of the drawings, these components are not marked individually on the drawing using boundary flags.

Components that are subject to aging management review based only on the criterion of 10 CFR 54.4(a)(2) for physical interactions are not indicated on license renewal drawings. The determination of whether a component meets the 10 CFR 54.4(a)(2) scoping criterion is based on the location of the component in relation to structural/seismic boundaries and in relation to equipment that performs a safety function (function identified in 10 CFR 54.4 (a)(1)). Providing drawings highlighting in-scope (a)(2) components would not provide significant additional information since the drawings do not indicate proximity of components to equipment performing safety functions and do not identify structural/seismic boundaries. For further information on scoping based on 10 CFR 54.4(a)(2), see Section 2.1.1.2.

2.1.2.2 Screening of Structures

For each structure within the scope of license renewal, the structural components and commodities were evaluated to determine those subject to aging management review. This evaluation (screening process) for structural components and commodities involved a review of design basis documents, design drawings, general arrangement drawings, penetration drawings, the UFSAR, plant modifications, system descriptions, and plant walkdowns to identify specific structural components and commodities that make up the structure. Structural components and commodities subject to aging management review are those that perform an intended function without moving parts or a change in configuration or properties (i.e., passive), and are not subject to replacement based on qualified life or specified time period (i.e., long-lived). Since structures are inherently passive, and with few exceptions are long-lived, the screening of structural components and commodities was based primarily on whether they perform an intended function.

2.1.2.2.1 Structural Component and Commodity Groups

Structural components and commodities often have no unique identifiers such as those given to mechanical components. Therefore, grouping structural components and commodities based on materials of construction provided a practical means of categorizing them for aging management reviews. Structural components and commodities were categorized by the following groups based on materials of construction.

- steel
- bolted connections
- concrete
- other materials

2.1.2.2.2 Evaluation Boundaries

Structural components and commodities that are attached to a structure or reside within a structure are generally categorized as either component supports or other structural members.

ASME and Non-ASME Component Supports – Mechanical Components

The evaluation boundaries for mechanical component supports were established in accordance with rules governing inspection of component supports (i.e., ASME Section XI, Subsection IWF). Component support examination boundaries for integral and non-integral (i.e., mechanically attached) supports are defined in article IWF-1300, Figure IWF-1300-1. In general, the support boundary extends to the surface of the building structure, but does not include the building structure. Furthermore, the support boundary extends to include non-integral attachments to piping and equipment, but does not include integral attachments to the same.

Component Supports – Electrical Components

Supports for electrical components include cable trays and conduit supports, electrical panels, racks, cabinets and other enclosures. The evaluation boundary for these items includes supporting elements, including integral attachments to the building structure.

Other Structural Members

Evaluation boundaries for other structural members whose function is to carry dynamic loads caused by postulated design basis events are consistent with the method for establishing boundaries for supports specified above. That is, the boundary includes the structural component and the associated attachment to the building structure. The portion of the attachment embedded in the building structure is considered part of the structure.

2.1.2.2.3 Intended Functions

Structural components and commodities were evaluated to determine intended functions as they relate to license renewal. Structural component and commodity intended functions include providing shelter or protection; providing structural or functional support; and serving as barriers for fire, flood, or HELB. NEI 95-10 (Reference 2.1-6) provides guidelines for determining the intended functions of structures, structural components and commodities. These intended functions are included in Table 2.0-1.

2.1.2.3 Electrical and Instrumentation and Control Systems

2.1.2.3.1 Passive Screening

NEI 95-10, Appendix B, “Typical Structure, Component and Commodity Groupings and Active/Passive Determinations for the Integrated Plant Assessment,” identifies electrical commodities considered to be passive. The IPEC electrical commodity groups were identified and cross-referenced to the appropriate NEI 95-10 commodity, which identified the passive commodity groups.

Two passive electrical and I&C commodity groups were identified that meet the 10 CFR 54.21(a)(1)(i) criterion (i.e., components that perform an intended function without moving parts or without a change in configuration):

- high voltage insulators, and

- cables and connections, bus, electrical portions of electrical and I&C penetration assemblies.

Other electrical and I&C commodity groups are active and do not require aging management review.

The pressure boundary function that may be associated with some electrical and I&C components identified in NEI 95-10 Appendix B (e.g., flow elements, vibration probes) was considered in the mechanical aging management reviews, as applicable. Structural commodities that support electrical components (e.g., cable trays, conduit and cable trenches) are included in the structural aging management reviews.

2.1.2.3.2 Long-Lived Screening

Electrical components included in the environmental qualification (EQ) program per 10 CFR 50.49 are replaced based on qualified life and, therefore, per 10 CFR 54.21(a)(1)(ii) are not subject to aging management review. The result is that the aging management reviews involve only non-EQ electrical and I&C components.

EQ evaluations are time-limited aging analyses and are addressed in Section 4.4.

2.1.2.4 Consumables

Consumables include such short-lived items as packing, gaskets, component seals, O-rings, structural sealants, oil, grease, component filters, system filters, fire extinguishers, fire hoses, and air packs. Consumables have been evaluated consistently with the information presented in Table 2.1-3 of NUREG-1800. Consumables have been divided into the following four categories for the purpose of license renewal: (a) packing, gaskets, component seals, and O-rings; (b) structural sealants; (c) oil, grease, and component filters; and (d) system filters, fire extinguishers, fire hoses, and air packs.

2.1.2.4.1 Packing, Gaskets, Component Seals, and O-Rings

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

2.1.2.4.2 Structural Sealants

Elastomers and other materials used as structural sealants are subject to aging management review if they are not periodically replaced and they perform an intended function, typically supporting a pressure boundary, flood barrier, or rated fire barrier.

Seals and sealants, including pressure boundary sealants, compressible joints and seals, seismic joint filler, and waterproofing membranes are included in the aging management review of bulk commodities (Section 2.4.4). Certain sealants with a pressure boundary function are included in the aging management review of the containment buildings (Section 2.4.1).

2.1.2.4.3 Oil, Grease, and Filters

Oil, grease, and component filters have been treated as consumables because either (1) they are periodically replaced or (2) they are monitored and replaced based on condition.

2.1.2.4.4 System Filters, Fire Extinguishers, Fire Hoses, and Air Packs

Components such as system filters, fire hoses, fire extinguishers, self-contained breathing apparatus (SCBA), and SCBA cylinders are considered consumables and are routinely tested, inspected, and replaced when necessary. Fire protection at IPEC complies with the applicable safety standards (e.g., Branch Technical Position BTP-APCSB 9.5.1, NFPA-10 for fire extinguishers, NFPA-1962 for fire hoses, 29 CFR 1910.134 for air packs), which specify performance and condition monitoring programs for these specific components. Fire hoses and fire extinguishers are inspected and hydrostatically tested periodically and must be replaced if they do not pass the test or inspection. SCBA and SCBA cylinders are inspected and periodically tested and must be replaced if they do not pass the test or inspection. Periodic inspection procedures specify the replacement criterion of these components that are routinely checked by tests or inspections. Therefore, while these consumables are in the scope of license renewal, they are not subject to aging management review.

2.1.3 Interim Staff Guidance Discussion

As discussed in NEI 95-10 (Reference 2.1-6), the NRC has encouraged applicants for license renewal to address proposed ISGs in the LRA. Most past ISGs were resolved (Reference 2.1-7, Reference 2.1-8) with the issuance of Revision 1 of the license renewal guidance documents NUREG-1800 (Reference 2.1-2), NUREG-1801 (Reference 2.1-3), and RG 1.188 (Reference 2.1-4) and Revision 6 of NEI 95-10. Only the following ISGs address issues for which additional staff and industry guidance clarification may be necessary.

ISG-19B	Proposed Aging Management Program XI.M11-B, "Nickel-Alloy Base-Metal Components and Welds in the Reactor Coolant Pressure Boundary," for License Renewal

ISG-23 Replacement Parts Necessary to Meet 10 CFR 50.48 (Fire Protection)

ISG-2006-01 Corrosion of the Mark I Steel Containment Drywell Shell

ISG-2006-02 Proposed Staff Guidance on Acceptance Review for Environmental Requirements

ISG-2006-03 Staff Guidance for Preparing Severe Accident Mitigation Alternatives (SAMA) Analysis

ISG-23 was closed by the NRC staff as documented in “Summary of the License Renewal Telephone Conference Call and Meeting Held between the U.S. Nuclear Regulatory Commission Staff and the Nuclear Energy Institute License Renewal Task Force,” memo dated November 22, 2006. At IPEC, a review for replacement parts necessary to meet 10 CFR 50.48 identified portable smoke ejectors and ventilation equipment credited to achieve safe shutdown during various fire scenarios for IP2 and IP3. This equipment is stored in the plant and is subject to aging management review. This equipment was included in the review of heating, ventilation and air conditioning systems in Section 2.3.3.8.

ISG 2006-01 concerns corrosion of the Mark I steel containment drywell shell. As both Unit 2 and Unit 3 are Westinghouse PWRs and therefore do not have a drywell, this ISG is not applicable.

The remaining ISGs are discussed below.

ISG-19B *Proposed Aging Management Program XI.M11-B, “Nickel-Alloy Base-Metal Components and Welds in the Reactor Coolant Pressure Boundary,” for License Renewal*

The Reactor Vessel Head Penetration Inspection Program is discussed in Appendix B, Section B.1.31. The Nickel Alloy Inspection Program, as discussed in Appendix B, Section B.1.21, manages aging effects on the balance of reactor coolant pressure boundary nickel alloy components and weld materials. As this issue evolves under the existing regulatory process, the Nickel Alloy Inspection Program will be modified as appropriate in response to industry initiatives and NRC guidance and requirements.

ISG-2006-02 *Proposed Staff Guidance on Acceptance Review for Environmental Requirements*

LR-ISG-2006-02 was issued in draft form by the NRC on February 8, 2007. Entergy has reviewed the draft ISG and determined that the ER has met the guidance of LR-ISG-2006-02. Environmental report preparation was in accordance with guidance of Supplement 1 to Regulatory Guide 4.2, “Preparation of Supplemental Environmental Reports for Applications to Renew Nuclear Power Plant Operating Licenses.”

ISG-2006-03 *Staff Guidance for Preparing Severe Accident Mitigation Alternatives (SAMA) Analysis*

This ISG, issued for comment by the NRC, recommends that applicants for license renewal use guidance document NEI 05-01, Rev. A when preparing SAMA analyses. The IPEC SAMA analysis provided as a part of Appendix E is consistent with the guidance of NEI 05-01 as discussed in this ISG.

2.1.4 Generic Safety Issues

In accordance with the guidance in NEI 95-10, review of NRC generic safety issues (GSIs) as a part of the license renewal process is required to satisfy the finding required by 10 CFR 54.29. GSIs that involve an issue related to the license renewal aging management review or time-limited aging analysis evaluations are to be addressed in the LRA. Based on NUREG-0933 (Reference 2.1-5), the following GSIs are addressed in this application.

GSI 168 *Environmental Qualification of Electrical Equipment*

This GSI was resolved with no new requirements for licensees (Reference 2.1-9). The staff concluded the existing equipment qualification process was adequate to ensure that I&C cables would perform their intended function. Environmental qualification evaluations of electrical equipment are identified as time-limited aging analyses for IPEC and addressed in Section 4.4.

GSI 190 *Fatigue Evaluation of Metal Components for 60-Year Plant Life*

This GSI addresses fatigue life of metal components and was closed by the NRC (Reference 2.1-10). In the closure letter, however, the NRC concluded that licensees should address the effects of reactor coolant environment on component fatigue life as aging management programs are formulated in support of license renewal. Accordingly, the issue of environmental effects on component fatigue life is addressed in Section 4.3.3.

2.1.5 Conclusion

The methods described in Sections 2.1.1 and 2.1.2 were used at IPEC to identify the systems, structures, and components that are within the scope of license renewal and to identify those structures and components requiring aging management review. The methods are consistent with and satisfy the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.1.6 References

2.1-1 10 CFR 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."

2.1-2 U.S. Nuclear Regulatory Commission, NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants*, September 2005.

2.1-3 U.S. Nuclear Regulatory Commission, NUREG-1801, *Generic Aging Lessons Learned (GALL) Report*, Volume 1 and Volume 2, September 2005.

2.1-4 U.S. Nuclear Regulatory Commission, Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," Revision 1, September 2005.

2.1-5 U.S. Nuclear Regulatory Commission, NUREG-0933, *A Prioritization of Generic Safety Issues*, Supplement 29, November 2005.

2.1-6 Nuclear Energy Institute, NEI 95-10, *Industry Guideline on Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule*, Revision 6, June 2005.

2.1-7 Kuo, P. T. (NRC) to A. Marion (NEI) and D. Lochbaum (Union of Concerned Scientists), “Status of Interim Staff Guidance Associated with License Renewal,” letter dated May 19, 2005.

2.1-8 Kuo, P. T. (NRC) to A. Marion (NEI) and D. Lochbaum (Union of Concerned Scientists), “Staff Resolution Associated with Interim Staff Guidance ISG-07 Proposed Staff Guidance on the Scoping of Fire Protection Equipment for License Renewal,” letter dated June 7, 2005.

2.1-9 Borchardt, R., to W. Travers, “Closeout of Generic Safety Issue (GSI) 168, ‘Environmental Qualification of Low-Voltage Instrumentation and Control Cables,’” memorandum dated August 14, 2003.

2.1-10 Thadani, A., Director, Office of Nuclear Regulatory Research, to W. Travers, Executive Director of Operations, “Closeout of Generic Safety Issue 190, ‘Fatigue Evaluation of Metal Components for 60 Year Plant Life,’” NRC memorandum dated December 26, 1999.

2.1-11 U.S. Nuclear Regulatory Commission, Regulatory Guide 1.155, “Station Blackout,” August 1988.

2.2 PLANT LEVEL SCOPING RESULTS

Table 2.2-1a-IP2 and Table 2.2-1a-IP3 list the mechanical systems within the scope of license renewal for IPEC Unit 2 and Unit 3, respectively. Table 2.2-1b-IP2 and Table 2.2-1b-IP3 list the electrical and instrumentation and controls systems within the scope of license renewal for IPEC Unit 2 and Unit 3. Table 2.2-3 lists the structures that are within the scope of license renewal for IPEC. For mechanical systems, a reference is given to the section which describes the system. For electrical systems, no description is necessary since electrical systems are in scope by default (see Section 2.5). For structures, a reference is given to the section that includes the structure in the evaluation.

Table 2.2-2-IP2, Table 2.2-2-IP3 and Table 2.2-4 list the systems and structures that do not meet the criteria specified in 10 CFR 54.4(a) and are therefore excluded from the scope of license renewal. For each item on these lists, the table also provides a reference (if applicable) to the section of the Updated Final Safety Analysis Report (UFSAR) that describes the system or structure. For structures with no description in the UFSAR, a brief description of the building function is given. None of these structures house safety-related equipment.

The IP2 and IP3 units were originally constructed, owned and operated by the Consolidated Edison Company of New York. IP2 began operation in 1973 and IP3 in 1975. With the exception of minor design differences due to new requirements for IP3, the units were essentially the same design. Shortly after the initial operating license for IP3 was issued, that unit was purchased by the Power Authority of the Sate of New York, which subsequently assumed responsibility for its operation. The two units were operated independently until Entergy purchased and assumed operations of IP2 and IP3 in 2001 and 2000 respectively. Because of the extended period of independent operations, differences developed in the design and operation of the two units. Different approaches were taken to resolve emergent licensing and design issues, resulting in further variations in the plants' designs. Some aspects of the unit operations were different, including methods for identification and documentation of systems and their boundaries. As a result, even though the plants remain largely the same, with about the same number of components per unit, there are marked differences in the number of IP2 and IP3 systems and in the boundaries for similarly named systems.

The list of systems used in these tables and determination of system boundaries is based on the IPEC component database and flow diagrams (see Section 2.1.1). System intended functions are identified in the section referenced in Tables 2.2-1a-IP2 and 2.2-1a-IP3. Component types subject to aging management review and their intended functions are provided in tables for each system.

As needed, components are grouped functionally for the aging management review. For example, ASME Class 1 components in various systems (e.g., the residual heat removal and containment spray systems) are evaluated with the ASME Class 1 reactor coolant system in Section 3.1.2.1.3, and containment penetrations from various systems are grouped into one containment penetrations review in Section 3.2.2.1.5. For each system, see the discussion in Section 2 under "Components Subject to Aging Management Review" for further information concerning which aging management review includes components from that system.

Nonsafety-related components whose failure could prevent satisfactory accomplishment of safety functions (10 CFR 54.4(a)(2)) due to the potential for a physical interaction (see Section 2.1.1.2) are evaluated together in an (a)(2) aging management review (AMR). The (a)(2) AMR includes nonsafety-related components with the potential for a spatial interaction with a safety-related system as well as components in safety-related systems outside the safety class pressure boundary, such as piping, valves, pumps, and support elements, that are required to be structurally sound in order to maintain the integrity of safety class piping. Section 2.3.3.19 discusses systems within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2) due to the potential for a physical interaction.

Components subject to aging management review are highlighted on license renewal drawings, with the exception of components in scope for 10 CFR 54.4(a)(2) for a physical interaction with other equipment that could prevent accomplishment of a safety function. Drawings are flagged as needed to indicate system intended function boundaries. For further discussion of license renewal drawings, see Section 2.1.2.1.3.

The list of plant structures was developed from a review of plant layout drawings, maintenance rule documentation, design basis documents, and the UFSAR. Structure intended functions are identified in the section referenced in Table 2.2-3. Structural commodities associated with mechanical systems, such as pipe supports and insulation, are evaluated with the structural bulk commodities.

Table 2.2-1a-IP2
Mechanical Systems within the Scope of License Renewal

System Code	Unit 2 System Name	LRA Section Describing System
AFW	Auxiliary Feedwater	Section 2.3.4.3, Auxiliary Feedwater
ARDG	SBO/Appendix R Diesel Generator	Section 2.3.3.16, Appendix R Diesel Generators
AS	Auxiliary Steam	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
CCC	Conventional Closed Cooling	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
CCF	Containment Cooling and Filtration	Section 2.3.3.9, Containment Cooling and Filtration
CCW	Component Cooling Water	Section 2.3.3.3, Component Cooling Water
CF	Chemical Feed	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
COND	Condensate	Section 2.3.4.6, Condensate
CRD	Control Rod Drive	Section 2.3.1, Reactor Coolant System
CSS	Containment Spray System	Section 2.3.2.2, Containment Spray System
CVCS	Chemical and Volume Control	Section 2.3.3.6, Chemical and Volume Control
CW	Circulating Water	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
CYW	City Water	Section 2.3.3.17, City Water
DOCK	Intake Structure	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
EDG	Emergency Diesel Generator	Section 2.3.3.14, Emergency Diesel Generators
EP	Electrical Penetrations	Section 2.3.2.5, Containment Penetrations
FCCH	Fuel and Core Component Handling	Section 2.3.2.5, Containment Penetrations
FO	Fuel Oil	Section 2.3.3.13, Fuel Oil

Table 2.2-1a-IP2
Mechanical Systems within the Scope of License Renewal (Continued)

System Code	Unit 2 System Name	LRA Section Describing System
FP	Fire Protection	Section 2.3.3.11, Fire Protection – Water Section 2.3.3.12, Fire Protection – CO2, Halon, and RCP Oil Collection Systems
FW	Feedwater	Section 2.3.4.2, Main Feedwater
FWC	Fresh Water Cooling	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
GAS	Gas	Section 2.3.3.5, Nitrogen Systems
GEN	Main Generator	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
GT	Gas Turbine	Section 2.3.3.13, Fuel Oil
HR	Hydrogen Recombiners	Section 2.3.2.5, Containment Penetrations
HSB	House Service Boiler	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
HVAC	Heating, Ventilation and Air Conditioning	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
IA	Instrument Air	Section 2.3.3.4, Compressed Air
IACC	Instrument Air Closed Cooling	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
ICI	In-Core Instrumentation	Section 2.3.1, Reactor Coolant System
IGO	Ignition Oil	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
ILWH	Integrated Liquid Waste Handling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
IVSW	Isolation Valve Seal Water	Section 2.3.2.3, Containment Isolation Support Systems
LO	Lube Oil	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
MS	Main Steam	Section 2.3.4.1, Main Steam

Table 2.2-1a-IP2
Mechanical Systems within the Scope of License Renewal (Continued)

System Code	Unit 2 System Name	LRA Section Describing System
MSCL	Miscellaneous	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
NSG	Nuclear Service Grade Makeup	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PACS	Post-Accident Containment Air Sample	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PACV	Post-Accident Containment Vent	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PSS	Primary Sampling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PW	Primary Water Makeup	Section 2.3.3.7, Primary Water Makeup
RCS	Reactor Coolant System	Section 2.3.1, Reactor Coolant System
RHR	Residual Heat Removal	Section 2.3.2.1, Residual Heat Removal
RMS	Radiation Monitoring	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
RW	River Water Service System	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
SA	Station Air	Section 2.3.3.4, Compressed Air
SD	Boiler Blowdown	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SEC	Security	Section 2.3.3.15, Security Generators
SFPC	Spent Fuel Pool Cooling	Section 2.3.3.1, Spent Fuel Pit Cooling
SGBD	Steam Generator Blowdown	Section 2.3.4.4, Steam Generator Blowdown
SIS	Safety Injection System	Section 2.3.2.4, Safety Injection Systems
SSS	Secondary Sampling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SW	Service Water	Section 2.3.3.2, Service Water

Table 2.2-1a-IP2
Mechanical Systems within the Scope of License Renewal (Continued)

System Code	Unit 2 System Name	LRA Section Describing System
TSCD	Technical Support Center Diesel	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
TURB	Main Turbine	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
WCPS	Weld Channel Pressurization	Section 2.3.2.3, Containment Isolation Support Systems
WDS	Waste Disposal System	Section 2.3.3.18, Plant Drains
WTP	Water Treatment Plant	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
WW	Wash Water	Section 2.3.4.5, IP2 AFW Pump Room Fire Event

Table 2.2-1a-IP3
Mechanical Systems within the Scope of License Renewal

System Code	Unit 3 System Name	LRA Section Describing System
AFW	Auxiliary Feedwater	Section 2.3.4.3, Auxiliary Feedwater
AMA	Ammonia / Morpholine Addition	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
ARDG	Appendix R Diesel Generator	Section 2.3.3.16, Appendix R Diesel Generators
ASC	Auxiliary Steam and Condensate Return	Section 2.3.4.1, Main Steam
BLCA	Boron and Layup Chemical Addition	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
BVS	Building Vent Sampling	Section 2.3.2.5, Containment Penetrations
CAR	Condenser Air Removal	Section 2.3.4.1, Main Steam
CBHV	Control Building HVAC	Section 2.3.3.8, Heating, Ventilation and Air Conditioning

Table 2.2-1a-IP3
Mechanical Systems within the Scope of License Renewal (Continued)

System Code	Unit 3 System Name	LRA Section Describing System
CCW	Component Cooling Water	Section 2.3.3.3, Component Cooling Water
CL	Chlorination	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
CO2	Carbon Dioxide	Section 2.3.3.12, Fire Protection – CO2, Halon, and RCP Oil Collection Systems
COND	Condensate	Section 2.3.4.6, Condensate
CP	Condensate Polisher	Section 2.3.4.6, Condensate
CPD	Condensate Pump Discharge	Section 2.3.4.6, Condensate
CPS	Condensate Pump Suction	Section 2.3.4.6, Condensate
CRD	Control Rod Drive	Section 2.3.1, Reactor Coolant System
CRHV	Control Room HVAC	Section 2.3.3.10, Control Room Heating, Ventilation and Cooling
CS	Containment Spray	Section 2.3.2.2, Containment Spray System
CVCS	Chemical and Volume Control	Section 2.3.3.6, Chemical and Volume Control
CW	Circulating Water	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
CWM	City Water Makeup	Section 2.3.3.17, City Water
CXFR	Condensate Transfer	Section 2.3.4.6, Condensate
DW	Demineralized Water	Section 2.3.3.7, Primary Water Makeup
EDG	Emergency Diesel Generator	Section 2.3.3.14, Emergency Diesel Generators
EG	Emergency Generators	Section 2.3.3.14, Emergency Diesel Generators
ESS	Engineered Safeguards Initiation Logic	Section 2.3.2.4, Safety Injection Systems
EX	Extraction Steam	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
FBAR	Fire Barriers	Section 2.3.3.8, Heating, Ventilation and Air Conditioning

Table 2.2-1a-IP3
Mechanical Systems within the Scope of License Renewal (Continued)

System Code	Unit 3 System Name	LRA Section Describing System
FD	Floor Drains	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
FDA	Fire Detection and Alarms	Section 2.3.3.11, Fire Protection – Water
FHS	Fuel Handling System	Section 2.3.2.5, Containment Penetrations
FRW	Fire Water	Section 2.3.3.11, Fire Protection – Water
FSBHV	Fuel Storage Building HVAC	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
FW	Feedwater	Section 2.3.4.2, Main Feedwater
FWP	Main Feedwater Pump & Services	Section 2.3.4.2, Main Feedwater
GSS	Gland Seal Steam	Section 2.3.4.1, Main Steam
GWD	Gaseous Waste Disposal	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
HA	Hydrazine Addition	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
HD	Heater Drain / Moisture Separator Drains/Vents	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
HPSD	High Pressure Steam Dump	Section 2.3.4.1, Main Steam
HVAC	Heating, Ventilation and Air Conditioning	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
IA	Instrument Air	Section 2.3.3.4, Compressed Air
IACC	Instrument Air Closed Cooling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
ILRT	Integrated Leak Rate Testing	Section 2.3.2.5, Containment Penetrations
INCOR	Incore Nuclear Instrumentation	Section 2.3.1, Reactor Coolant System
IVSW	Isolation Valve Seal Water	Section 2.3.2.3, Containment Isolation Support Systems
LO	Lube Oil	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)

Table 2.2-1a-IP3
Mechanical Systems within the Scope of License Renewal (Continued)

System Code	Unit 3 System Name	LRA Section Describing System
LPSD	Low Pressure Steam Dump	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
LWD	Liquid Waste Disposal	Section 2.3.3.18, Plant Drains
MFW	Main Feedwater	Section 2.3.4.2, Main Feedwater
MS	Main Steam	Section 2.3.4.1, Main Steam
MTG	Main Turbine Generator	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
N2	Nitrogen	Section 2.3.3.5, Nitrogen Systems
NED	Nuclear Equipment Drains	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PAB	Primary Auxiliary Building	Section 2.3.2.3, Containment Isolation Support Systems
PABHV	Primary Auxiliary Building HVAC	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
PRM	Process Radiation Monitoring	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PS	Primary Plant Sampling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PV	Plant Vent	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
PW	Primary Water Makeup	Section 2.3.3.7, Primary Water Makeup
PZR	Pressurizer	Section 2.3.1, Reactor Coolant System
RCS	Reactor Coolant System	Section 2.3.1, Reactor Coolant System
RHR	Residual Heat Removal	Section 2.3.2.1, Residual Heat Removal
RPC	Reactor Protection and Control	Section 2.3.4.1, Main Steam
RS	Reheat Steam	Section 2.3.4.1, Main Steam
RVLIS	Reactor Vessel Level Indication	Section 2.3.1, Reactor Coolant System

Table 2.2-1a-IP3
Mechanical Systems within the Scope of License Renewal (Continued)

System Code	Unit 3 System Name	LRA Section Describing System
RW	River Water Service	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SA	Station Air	Section 2.3.3.4, Compressed Air
SECHV	Security Building HVAC	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
SFPC	Spent Fuel Pit and Cooling	Section 2.3.3.1, Spent Fuel Pit Cooling
SG	Steam Generator Secondary Side Instrumentation	Section 2.3.1, Reactor Coolant System
SGBD	Steam Generator Blowdown	Section 2.3.4.4, Steam Generator Blowdown
SGBDR	Steam Generator Blowdown Recovery	Section 2.3.4.4, Steam Generator Blowdown
SGLC	Steam Generator Level Control	Section 2.3.1, Reactor Coolant System
SGS	Steam Generator Sampling	Section 2.3.4.4, Steam Generator Blowdown
SI	Safety Injection / Recirculation	Section 2.3.2.4, Safety Injection Systems
SO	Main Generator Seal Oil	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SPG	Security Propane Generator	Section 2.3.3.15, Security Generators
SS	Secondary Plant Sampling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SWS	Service Water	Section 2.3.3.2, Service Water
TGHC	Turbine Generator Hydraulic Control	Section 2.3.4.1, Main Steam
THCC	Turbine Hall Closed Cooling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
VCHA	Vapor Containment Hydrogen Analyzer	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
VCHVP	Vapor Containment Purge and Supply	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
VCPR	Vapor Containment Pressure Relief	Section 2.3.3.8, Heating, Ventilation and Air Conditioning

Table 2.2-1a-IP3
Mechanical Systems within the Scope of License Renewal (Continued)

System Code	Unit 3 System Name	LRA Section Describing System
VCV	Vapor Containment Bldg. Ventilation	Section 2.3.3.9, Containment Cooling and Filtration
WCCPP	Weld Channel and Containment Penetration Pressurization	Section 2.3.2.3, Containment Isolation Support Systems

Because of the bounding approach used for scoping electrical and I&C equipment, all electrical and I&C commodities contained in electrical and mechanical systems are in scope by default. Table 2.2-1b provides the list of electrical and I&C systems for Unit 2 and Unit 3 that do not include mechanical components that meet the scoping criteria of 10 CFR 54.4. Systems with mechanical components that meet the scoping criteria of 10 CFR 54.4 are listed in Table 2.2-1a-IP2 and Table 2.2-1a-IP3. Descriptions of each electrical system are not provided. For further information, see Section 2.5, Scoping and Screening Results: Electrical and Instrumentation and Controls Systems.

Table 2.2-1b-IP2
Electrical and I&C Systems within the Scope of License Renewal
(Bounding Approach)

System Code	Unit 2 System Name	UFSAR Section
118V	118 VAC Electrical	UFSAR 8.2.2.5
120V	120 VAC Electrical	UFSAR 8.2
13.8	13.8 KVAC Electrical	UFSAR 8.2.1
138K	138 KVAC Electrical	UFSAR 8.2.1
220V	220 VAC Electrical	None
22KV	22 KVAC Electrical	None
345K	345 KVAC Electrical	UFSAR 8.2.1
440V	440 VAC Electrical	UFSAR 8.3
480V	480 VAC Electrical	UFSAR 8.2.2.3
6.9K	6.9 KVAC Electrical	UFSAR 8.2.2.2
COM	Communications	UFSAR 7.7.4
COMP	Computer	UFSAR 3.2.5
DC	Batteries and 125V DC	UFSAR 8.2.2.4, 8.2.3.5
EANS	Emergency Alert Notification	None
EGND	Earth Grounds	None
EHT	Electrical Heat Tracing	UFSAR 9.2.2.4.23, 9.2.2.5.13
EML	Emergency Lighting	UFSAR 7.7.3.3.6
EOFE	EOF Electrical Distribution	None

Table 2.2-1b-IP2
Electrical and I&C Systems within the Scope of License Renewal (Bounding Approach) (Continued)

System Code	Unit 2 System Name	UFSAR Section
EP	Electrical Penetrations	UFSAR 5.1.4.2.1, 7.2.4.1.5
ESFA	Engineered Safeguards Features Actuation	UFSAR 7.2.3.2
ICI	In-Core Instrumentation	UFSAR 7.6
LGHT	Lighting & 110 Volt	None
MET	Meteorological System	IP3 UFSAR 2.6.5
NIS	Nuclear Instrumentation	UFSAR 7.4
OPS	Overpressurization Protection	UFSAR 7.3.3.5
RMS	Radiation Monitoring	UFSAR 11.2.3
RPI	Rod Position Indication	UFSAR 3B.3
RPS	Reactor Protection System	UFSAR 7.2.3.1
SEC	Security	None
SISA	Safety Injection System Actuation	UFSAR 7.2.5.1.13

Table 2.2-1b-IP3
Electrical and I&C Systems within the Scope of License Renewal (Bounding Approach)

System Code	Unit 3 System Name	UFSAR Section
120V	120 VAC Electrical	UFSAR 8.2.2
13.8KV	13.8 KVAC Electrical	UFSAR 8.2.1
138KV	138 KVAC Electrical	UFSAR 8.2.1
220V	220 VAC Electrical	None
22KV	22 KVAC Electrical	None
345KV	345 KVAC Electrical	UFSAR 8.2.1
480V	480 VAC Electrical	UFSAR 8.2.2

Table 2.2-1b-IP3
Electrical and I&C Systems within the Scope of License Renewal (Bounding Approach) (Continued)

System Code	Unit 3 System Name	UFSAR Section
6.9KV	6.9 KVAC Electrical	UFSAR 8.2.2
AIR	Air (General)	None
AMSAC	ATWS Mitigating System Actuation Circuitry	UFSAR 7.2.2
ARM	Area Radiation Monitoring	UFSAR 11.2.3.2
CAM	Cameras	None
CET	Core Exit Thermocouples	UFSAR 7.6.2
CFM	Critical Functions Monitoring	UFSAR 7.5.2
COMM	Communications	UFSAR 9.6.5
COMP	Computer	None
CPFHT	Condensate Polisher Facility Heat Trace	None
DCPWR	DC Power	UFSAR 8.2
ED	Electrical Distribution	UFSAR 8.2
EHT	Electrical Heat Tracing	None
EHT 31	Intake Structure Heat Trace	None
EHT 32	Yard Area Heat Trace	None
EHT 33	Boric Acid Heat Trace	UFSAR 9.2.2
EHT 34	Nuclear Tank Heat Trace	UFSAR 9.2.2
EHT 35	Diesel Generator Heat Trace	None
EM	Environmental Monitoring	UFSAR 2.9
EML	Emergency Lighting	UFSAR 9.6.2.6
ESS	Engineered Safeguards Initiate Logic	UFSAR 7.2.2
EXCOR	Excore Nuclear Instrumentation	UFSAR 7.4
FDA	Fire Detection and Alarms	UFSAR 9.6.2.4
FENCE	Fence Protection	None

Table 2.2-1b-IP3
Electrical and I&C Systems within the Scope of License Renewal (Bounding Approach) (Continued)

System Code	Unit 3 System Name	UFSAR Section
FP	Fire Protection (General)	None
FPHHT	Fire Pump House Heat Trace	None
HR	Hydrogen Recombiners	UFSAR 6.8.2
HSBAHT	House Service Boiler Annex Heat Trace	None
IB	Instrument Bus AC Power	UFSAR 7.2.2
INCOR	Incore Nuclear Instrumentation	UFSAR 7.6.2
LIGHT	Lighting	None
MET	Meteorological System	UFSAR 2.6.5
METHT	Meteorological Tower Heat Trace	None
MIMS	Metal Impact Monitoring	UFSAR 4.3.6
NIS	Nuclear Instrumentation	UFSAR 7.4.2
OPS	Overpressurization Protection	UFSAR 4.3.4
PAGE	Paging	UFSAR 9.6.5
PMON	Personnel Monitoring	None
PRM	Process Radiation Monitoring	UFSAR 11.2.3.1
PVMHT	Plant Vent Monitor Heat Trace	UFSAR 11.2.3.1
PZRC	Pressurizer Control	UFSAR 7.2.3
QSPDS	Qualified Safety Parameter Display	UFSAR 7.5.2
RDC	Rod Control	UFSAR 7.3.2
RDO	Radio	UFSAR 9.6.5
RM	Radiation Monitoring	UFSAR 11.2.3
RPC	Reactor Protection Control	UFSAR 7.2.2
RPI	Rod Position Indication	UFSAR 7.3.2
RTR	Reactor Trip Relays	UFSAR 7.2.2

Table 2.2-1b-IP3
Electrical and I&C Systems within the Scope of License Renewal (Bounding Approach) (Continued)

System Code	Unit 3 System Name	UFSAR Section
RVLIS	Reactor Vessel Level Indication	UFSAR 7.5.2
SCC	Security Computer & Concentrators	None
SE	Seismic Monitoring	UFSAR 16.1.6
SEC	Security (General)	None
SECL	Security Lighting	UFSAR 9.6.2.6
SGLC	Steam Generator Level Control	UFSAR 7.2.2
SPP	Sound Powered Phones	UFSAR 9.6.5
SSHT	Sampling System Heat Trace	None
TEL	Telephones	UFSAR 9.6.5
TGEC	Turbine Generator Excitation	UFSAR 10.2.2
TM	Toxic Monitoring	None
TSI	Turbine Supervisory Instrumentation	None
VCHA	Vapor Containment Hydrogen Analyzer	UFSAR 6.8.2
WGA	Waste Gas Analyzer	UFSAR 11.1.2.1

Table 2.2-2-IP2
Mechanical Systems Not within the Scope of License Renewal

System Code	Unit 2 System	UFSAR Reference
BG	Buildings and Structures[1]	None
CL	Chlorination	Sections 9.6.1.2 and 10.2.4
HPC	Hot Penetration Cooling	Section 5.1.4.2.2
SF	Unit 1 Spent Fuel Cooling and Transfer	Unit 1 UFSAR Section 3.7.1, Supplemental Environmental Report Section 3.1.1

1. Besides structural components, the BG code includes a small number of mechanical components, specifically drain piping in the switchgear rooms, that do not perform an intended function.

Table 2.2-2-IP3
Mechanical Systems Not within the Scope of License Renewal

System Code	Unit 3 System	UFSAR Reference
ABA	Administration Building Air	None
ABHV	Administration Building HVAC	None
ABW	Administration Building Waste	None
BAIR	Breathable Air	Section 9.10
BUSFPC	Backup Spent Fuel Pool Cooling	Section 9.5.2
CPA	Condensate Polisher Air	None
CPF	Condensate Polisher Facility	None
CPFHV	Condensate Polisher Facility HVAC	None
CPRTR	Condensate Polisher Resin Transfer Regen	Section 10.2.6
CPWF	Condensate Polisher Water Factory	Section 10.2.6
DI	De-Icing	None
H2	Hydrogen	Sections 10.2.2 and 11.1

Table 2.2-2-IP3
Mechanical Systems Not within the Scope of License Renewal (Continued)

System Code	Unit 3 System	UFSAR Reference
HAL	Halon	Section 9.6.2
HPC	Hot Penetration Cooling	Section 5.1.4.2
HR	Hydrogen Recombiners	Section 6.8
HSB	House Service Boiler	None
MTDG	Met. Tower Diesel Generator	Section 2.6.5
NWD	Nonradioactive Waste Disposal	None
OSBHV	Outage Support Building HVAC	None
PACV	Post-Accident Containment Vent (retired in place)	Section 5.4
PCEHV	Power Conversion Equipment Building HVAC	None
RAMHV	RAMS Building HVAC	None
SDG	Sewage Diesel Generator	None
SWG	Site Sewage	None
TBHV	Turbine Building HVAC	None
TGEC	Generator Excitation, Control and Instrumentation	None
TS	Traveling Screen[1]	None
TSCDG	Technical Support Center Diesel Generator	None
TSCHV	Technical Support Center HVAC	None
UF	Ultrafiltration	None
WF	Water Factory	None
WGA	Waste Gas Analyzer	None

1. Mechanical components of the TS system are pumps, piping, strainers, valves, instruments and controls for the screen wash function. The screen wash components are not required to support the operation of the service water system and have no mechanical system intended function for license renewal. The system also includes the traveling screens; however, these are structural components for license renewal and are evaluated with the intake structure (Section 2.4.2, Water Control Structures).

Table 2.2-3
Structures within the Scope of License Renewal

Structure Name	LRA Section
Appendix R Diesel Generator Foundation, Switchgear and Enclosures (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Auxiliary Feedwater Pump Building and Shield Wall area Enclosure (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Auxiliary Feedwater Building and Shield Wall Area Enclosure (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Boric Acid Evaporator Building (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
City Water Storage Tank Foundation and Meter House	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Condensate Storage Tanks Foundation (IP2/3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Containment Access Facility and Annex (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Containment Building (IP2)	Section 2.4.1, Containment Buildings
Containment Building (IP3) (Vapor Containment)	Section 2.4.1, Containment Buildings
Control Building (IP1/2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Control Building (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Diesel Generator Building (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Diesel Generator Building (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Discharge Canal and Outfall Structure	Section 2.4.2, Water Control Structures
Electrical Tunnel (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Electrical Tunnel (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures

Table 2.2-3
Structures within the Scope of License Renewal (Continued)

Structure Name	LRA Section
Fan House (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Fan House (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Fire Protection Pump House (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Fire Pump House (IP2) (Diesel Fire Pump House)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Fire Water Storage Tank Foundation (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Fire Water Storage Tank Foundation (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Fuel Storage Building (IP2) (Fuel Handling Building)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Fuel Storage Building (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Gas Turbine Generator, No. 1, Enclosure and Fuel Tank Foundation	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Gas Turbine Generators, No. 2 and 3, Enclosure and Fuel Tank Foundation	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Gas Turbine Substation Switchgear Structures and Foundation (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Intake Structure (Screenwell House) (IP1)	Section 2.4.2, Water Control Structures
Intake Structure (IP2)	Section 2.4.2, Water Control Structures
Intake Structure (IP3)	Section 2.4.2, Water Control Structures
Intake Structure Enclosure Building (Screenwell House) (IP3)	Section 2.4.2, Water Control Structures
Maintenance and Outage Building and Elevated Passageway (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Manholes and Duct Banks	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures

Table 2.2-3
Structures within the Scope of License Renewal (Continued)

Structure Name	LRA Section
New Station Security Building (Command Post and Extension)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Nuclear Service Building (IP1)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Power Conversion Equipment Building (LCI Building) (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Primary Auxiliary Building (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Primary Auxiliary Building (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Primary Water Storage Tank Foundation (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Primary Water Storage Tank Foundation (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Radiation Monitoring Enclosure (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Refueling Water Storage Tank Foundation (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Refueling Water Storage Tank Foundation (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Security Access and Office Building (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Service Water Pipe Chase (IP3)	Section 2.4.2, Water Control Structures
Service Water Valve Pit (IP2/3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Superheater Building (IP1)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Superheater Stack (IP1)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Transformer/Switchyard Support Structures	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures

Table 2.2-3
Structures within the Scope of License Renewal (Continued)

Structure Name	LRA Section
Transmission Towers (SBO Recovery Path) and Foundation	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Turbine Building (IP1)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Turbine Building and Heater Bay (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Turbine Building and Heater Bay (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Utility Tunnel (IP1)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Waste Holdup Tank Pit (IP2)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures
Waste Holdup Tank Pit (IP3)	Section 2.4.3, Turbine Buildings, Auxiliary Buildings, and Other Structures

Table 2.2-4
Structures Not within the Scope of License Renewal

Structure Name	UFSAR Reference or Function
Administration Building (IP3) (Service Admin Complex)	Provides space for administrative and support personnel
Air Monitoring House (IP1)	Located at the entrance to the Unit 1 utility tunnel; provides access and radiological protection to personnel.
Auxiliary Boiler Annex and House Service Boiler Building (IP3)	Provides shelter for the auxiliary boiler, service boiler and other miscellaneous equipment.
Buchanan Service Center	Houses the emergency operation facility and provides a training area for site personnel.
Business Services Building	Provides space and miscellaneous facilities for site personnel.
Cafeteria	Provides space and facilities for site personnel.
Chemical System Building Addition (Evaporator Building)	Provides facilities for site chemistry personnel.
Condensate Polisher Building (IP3)	Provides protection of the condensate polishing system from the external environmental conditions and provides a means of support for system components.
Condensate Storage Tanks Foundation (IP1)	Provides support for the IP1 condensate storage tanks.
Construction Office Building (Material Service Building, Security and Admin Building)	Provides work space for station personnel.
Containment Building (IP1)	Structure has been decommissioned and is no longer in service.
Contractor/Outage Entry Trailer	Provides access to the secured area for contractor personnel.
De-Icing Pit (IP2/3)	Contains the de-icing equipment pumps.
Environmental/Meteorological Building	Provides office space for personnel and environmental activities
Fab Shop	Provides office space for site fabrication activities.

Table 2.2-4
Structures Not within the Scope of License Renewal (Continued)

Structure Name	UFSAR Reference or Function
Fuel Handling and Chemical System Building (IP1)	Provides storage for spent fuel from the Unit 1 reactor. It also provides support for the spent fuel crane and other fuel handling equipment. The fuel pool and other components have no specific interactions with Unit 2 or 3 and loss of coolant in the pool will not result in any potential impact on operations.
Fuel Oil Storage Tanks Foundation and Pumphouse (IP1)	One tank is retired in place. The second tank holds diesel fuel for site use. A reinforced concrete slab supports the tanks. Fuel oil pumps and heating system are located inside the pumphouse. The tanks and pump house are not credited for any safety functions.
Gatehouses 1, 2, 3 and 4	Provide office space for security personnel and control of access to plant site.
Generation Support Building	Provide office space for management, engineering, and administrative personnel.
Interim Radwaste Storage Facility (IP3)	Section 11.1
Meteorological Tower and Foundation (IP2/3)	Three different meteorological towers at three different locations. The primary tower is a 400-foot tower located south of the plant and is equipped with a trailer that houses equipment associated with the tower. The IP2 tower is used as a secondary backup and is located approximately 2700 feet north of the primary tower. The third tower is a standby tower located on the roof of the Buchanan Service Center.
Mock-up Facility (IP3)	Provides a work area for site personnel.
Oil Pump House	Contains components originally used to supply fuel oil to the Unit 1 fuel oil storage tanks. Function is no longer used.
Outage Support Building (IP3) (Controlled Area Entrance Building)	Provides office space, training and change areas for personnel.
Radio Equipment Building	Provides space for site communication equipment.
Radioactive Machine Shop (RAMS) (IP3)	Provides work area facilities for site personnel.
Receiving Warehouse (IP3)	Provides temporary office space and a central storage point for plant materials and replacement parts.

Table 2.2-4
Structures Not within the Scope of License Renewal (Continued)

Structure Name	UFSAR Reference or Function
Replaced Steam Generator Storage Facility (IP3) (Original Steam Generator Storage Building)	Section 11.1
Service Boiler Building (IP2)	Provides shelter for the house service boilers and the TSC diesel.
Service Building (Administration Office Building)(IP1/2)	Provides an office area for personnel.
Sewage Treatment Plant	Functions as a holding tank for sewage; no longer used for sewage treatment.
Simulator Building	Used for training site personnel.
Steam Generator Storage Building (IP2)	Provides storage for the old steam generators originally installed in the plant.
Telecommunication Building	Provides space for communication equipment.
TLM Building	Provides miscellaneous warehouse space.
Total Dissolved Solids Tank Foundations (IP3)	Support the high and low total dissolved solids tanks, which collect wastewater generated by the condensate polisher facility.
Training Center (IP3)	Provides space and facilities for the training of plant and contractor personnel.
Visitor’s Center (Entergy Education Center)	Provides space for gym facilities and training of plant and contractor personnel.
Warehouses No.1 and 2	Serve as the central point for the storage of the plant's materials and replacement parts.
Wharf Structure	No longer in service.

2.3 SCOPING AND SCREENING RESULTS: MECHANICAL SYSTEMS

This section presents the results of the mechanical scoping and screening process. The systems with mechanical components that are included in the scope of license renewal are described along with the mechanical intended functions that are the basis for including the systems in scope. Electrical and structural intended functions for these systems, as applicable, are not presented in this section.

As described in Section 2.1.1, there are marked differences in the number of IP2 and IP3 systems and in the boundaries for similarly named systems. Because of these differences, the mechanical intended system functions as presented in this section are often different for IP2 and IP3, even for similarly named systems.

2.3.1 Reactor Coolant System

System Description

The reactor coolant system (RCS) includes mechanical components in the following subsystems.

- reactor vessel
- reactor vessel internals
- pressurizer
- steam generators
- reactor coolant pumps
- control rod drives
- in-core instrumentation

Unit 2

Unit 2 system code RCS includes the reactor vessel and internals, reactor coolant pumps, the pressurizer and pressurizer relief tank, and all connecting piping. The steam generators are in the feedwater (FW) system code but are included in the reactor coolant system aging management review. The reactor coolant system evaluation also includes the control rod drive (CRD) system and the in-core instrumentation (ICI) system.

Reactor Coolant System

The reactor coolant system consists of four similar heat transfer loops connected in parallel to the reactor vessel. Each loop contains a reactor coolant pump and a steam generator. The system also includes a pressurizer, pressurizer relief tank, connecting piping, and instrumentation necessary for operational control. The reactor coolant system transfers the heat generated in the core to the steam generators, where steam is produced to drive the turbine generator. Cooling water is circulated at the flow rate and temperature consistent with achieving the reactor core thermal-hydraulic performance. The water also acts as a neutron moderator and reflector and as a solvent for the neutron absorber used in chemical shim control.

The reactor coolant system provides a boundary for containing the coolant under operating temperature and pressure conditions. It serves to confine radioactive material and limits, to acceptable values, its uncontrolled release to the secondary system and to other parts of the plant under conditions of either normal or abnormal reactor behavior. The inertia of the reactor coolant pumps provides the necessary flow during a pump coast-down. The layout of the system assures natural circulation capability following a loss of forced flow to permit decay heat removal without overheating the core. Part of the RCS piping is used by the safety injection system to deliver cooling water to the core during a loss-of-coolant accident.

Reactor Vessel

The reactor vessel is cylindrical in shape with a hemispherical bottom and a flanged and gasketed removable upper head. The upper reactor closure head and the reactor vessel flange are joined by studs. Two metallic O-rings seal the reactor vessel when the reactor closure head is bolted in place. A leak-off connection is provided between the two O-rings to monitor leakage across the inner O-ring. The vessel was designed in accordance with Section III (Nuclear Vessels) of ASME Boiler and Pressure Vessel Code. Coolant enters the reactor vessel through inlet nozzles in a plane just below the vessel flange and above the core. The coolant flows downward through the annular space between the vessel wall and the core barrel into a plenum at the bottom of the vessel, where it reverses direction and flows up through the core. All the coolant is mixed in the upper plenum, and the mixed coolant stream then flows out of the vessel through exit nozzles located on the same plane as the inlet nozzles. The core instrumentation nozzles are located on the lower head and the control rod nozzle penetrations are located on the upper head.

Reactor Vessel Internals

The reactor vessel internals are designed to direct the coolant flow, support the reactor core, and guide the control rods. The reactor vessel contains the core support assembly, upper plenum assembly, fuel assemblies, control cluster assemblies, surveillance specimens, and in-core instrumentation. The lower core support structure, the upper core support structure, and the incore instrumentation support structure are the three major parts of the reactor vessel internals. A one-piece thermal shield, concentric with the reactor core, is located between the core barrel and the reactor vessel. The shield, which is cooled by the coolant on its downward pass, protects the vessel by attenuating much of the gamma radiation and some of the fast neutrons which escape from the core.

Pressurizer

Pressure in the system is controlled by the pressurizer, where water and steam pressure is maintained through the use of electrical heaters and sprays. Steam can either be formed by the heaters or condensed by a pressurizer spray to minimize pressure variations due to contraction and expansion of the coolant. The reactor coolant system is protected against overpressure by control and protective circuits such as the high pressure trip and by code relief valves connected to the top head of the pressurizer. The relief valves discharge into the pressurizer relief tank, which condenses and collects the valve effluent. Two power-operated relief valves and three code safety valves are provided to protect against pressure surges that are beyond the pressure limiting capacity of the pressurizer spray. The power operated relief valves also operate from the overpressure protection system to prevent RCS pressure from exceeding the limits of Appendix G of Section III of the ASME Pressure Vessel Code during low temperature operation.

Steam and water discharge from the power relief and safety valves passes to the pressurizer relief tank, which is partially filled with water at or near ambient containment conditions. The tank normally contains water in a predominantly nitrogen atmosphere. Steam is discharged under the water level to condense and cool by mixing with the water. The tank is protected against a discharge exceeding the design value by rupture discs that discharge into the reactor containment.

Steam Generators

Each loop contains a vertical shell and U-tube steam generator. Reactor coolant enters the inlet side of the channel head at the bottom of the steam generator through the inlet nozzle, flows through the U-tubes to an outlet channel, and leaves the generator through another bottom nozzle. The inlet and outlet channels are separated by a partition. Feedwater to the steam generator enters just above the top of the U-tubes through a feedwater ring. The water flows downward through an annulus between the tube wrapper and the shell and then upward through the tube bundle where it is converted to a steam-water mixture. The steam-water mixture from the tube bundle passes through a primary separator assembly that reduces the water content in the mixture. The separated water combines with the feedwater for another pass through the tube bundle. The remaining higher quality steam-water mixture rises through additional secondary separators which further reduce the moisture content of the steam.

Reactor Coolant Pumps

Each reactor coolant loop contains a vertical single-stage centrifugal pump that employs a controlled leakage seal assembly. Reactor coolant is pumped by the impeller attached to the bottom of the rotor shaft. The coolant is drawn up through the impeller, discharged through passages in the diffuser and out through a discharge nozzle in the side of the casing. A flywheel at the top of the rotor shaft extends the pump coastdown flow in the event of a loss of power to the pump motor. A portion of the flow from the chemical and volume control system (CVCS) charging pumps is injected into the reactor coolant pump between the impeller and the controlled leakage seal. Component cooling water is supplied to the motor bearing oil coolers and the thermal barrier cooling coil.

The RCS system has the following intended functions for 10 CFR 54.4(a)(1).

- Remove sensible and decay heat from the reactor core via natural circulation or forced circulation following design basis accidents.

- Provide a pressure boundary capable of withstanding anticipated temperatures, pressures and seismic accelerations.
- Provide containment isolation capability for lines penetrating containment.
- Provide the capability to vent non-condensable gases from the RCS that may impair emergency core cooling or natural circulation following design basis accidents.
- Provide hot and cold overpressure protection for the reactor vessel and other RCS components.
- Provide a path for coolant to the core following a LOCA.

The RCS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The RCS system has the following intended functions for 10 CFR 54.4(a)(3).[1]

- Support the evaluation for pressurized thermal shock (10 CFR 50.61).
- The RCS is credited with maintaining its pressure boundary and providing core cooling and removal of sensible heat during a safe shutdown following a fire, station blackout or ATWS.

Control Rod Drive

The purpose of the control rod drive system is to provide a means to position the control rods within the core. The reactor uses the Westinghouse magnetic-type control rod drive assemblies that are located on the upper reactor vessel head. These drives provide a means to insert or withdraw control rods in the core to control the nuclear power generated. Upon a loss of power to the coils, the rod cluster control assemblies with full-length absorber rods are released and fall by gravity into the core. Each control rod drive assembly is designed as a hermetically sealed unit to prevent leakage of reactor coolant. All pressure-containing components are designed to meet the requirements of the ASME Code, Section III, Division 1 for Class A vessels.

The CRD system has the following intended functions for 10 CFR 54.4(a)(1)

- Provide reactor coolant system pressure boundary integrity.
- Release the control rods upon receipt of a reactor trip signal to ensure rapid shutdown and reactivity control.

The CRD system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

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[1] For Unit 2, RCP oil collection components are included in the fire protection system (Section 2.3.3.12), so their intended function is not listed here.

In-Core Instrumentation

The purpose of the in-core instrumentation (ICI) is to provide information on the neutron flux distribution and fuel assembly outlet temperatures at selected core locations. Using the information obtained from the in-core instrumentation system, it is possible to confirm the reactor core design parameters and calculated hot channel factors. The system provides means for acquiring data and performs no operational plant control.

The in-core instrumentation system consists of thermocouples, positioned to measure fuel assembly coolant outlet temperature at preselected locations; flux thimbles, which run the length of selected fuel assemblies to measure the neutron flux distribution within the reactor core using moveable in-core detectors; and in-core drives, drive motors, positioning equipment and instruments. The flux thimbles, seal table and guide tube form part of the reactor coolant pressure boundary.

The in-core instrumentation system includes the pressure-retaining guide tubes that form part of the reactor coolant pressure boundary. For Unit 2, other, non-pressure boundary portions of the in-core instrumentation are included in the RCS system and the nuclear instrumentation system (listed in Table 2.2-1b-IP2 with the EIC systems).

The in-core instrumentation system has the following intended function for 10 CFR 54.4(a)(1).

- Provide reactor coolant system/pressure boundary integrity via the in-core thermocouple guide tube and seals.

The in-core instrumentation system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Unit 3

Unit 3 system code RCS includes the reactor vessel and internals, reactor coolant pumps, RCP oil collection tanks, the steam generators, and all connecting piping. The pressurizer has a separate system code (PZR). System code SG is the steam generator (secondary side instrumentation). The reactor coolant system evaluation also includes the control rod drive (CRD) system, the in-core instrumentation (INCOR) system, and the reactor vessel level instrumentation system (RVLIS).

Reactor Coolant System

The reactor coolant system consists of four similar heat transfer loops connected in parallel to the reactor vessel. Each loop contains a reactor coolant pump and a steam generator. The reactor coolant system transfers the heat generated in the core to the steam generators, where steam is produced to drive the turbine generator. Cooling water is circulated at the flow rate and temperature consistent with achieving the reactor core thermal-hydraulic performance. The water also acts as a neutron moderator and reflector and as a solvent for the neutron absorber used in chemical shim control.

The reactor coolant system provides a boundary for containing the coolant under operating temperature and pressure conditions. It serves to confine radioactive material and limits, to acceptable values, its uncontrolled release to the secondary system and to other parts of the plant under conditions of either normal or abnormal reactor behavior. The layout of the system assures natural circulation capability following a loss of forced flow to permit decay heat removal without overheating the core. The system is connected to a pressurizer, included in the PZR system code, which maintains the required RCS pressure during steady-state operation, limits the pressure changes during normal load transients, and prevents the system from exceeding the RCS design pressure. Part of the RCS piping is used by the safety injection system to deliver cooling water to the core during a loss-of-coolant accident.

Reactor Vessel

The reactor vessel is cylindrical in shape with a hemispherical bottom head and a flanged and gasketed removable upper head. The upper reactor closure head and the reactor vessel flange are joined by studs. Two metallic O-rings seal the reactor vessel when the reactor closure head is bolted in place. A leak-off connection is provided between the two O-rings to monitor leakage across the inner O-ring. The vessel was designed in accordance with Section III (Nuclear Vessels) of ASME Boiler and Pressure Vessel Code. Coolant enters the reactor vessel through inlet nozzles in a plane just below the vessel flange and above the core. The coolant flows downward through the annular space between the vessel wall and the core barrel into a plenum at the bottom of the vessel, where it reverses direction and flows up through the core.   All the coolant is mixed in the upper plenum, and the mixed coolant stream then flows out of the vessel through exit nozzles located on the same plane as the inlet nozzles. The core instrumentation nozzles are located on the lower head and the control rods are located on the upper head.

Reactor Vessel Internals

The reactor vessel internals are designed to direct the coolant flow, support the reactor core, and guide the control rods. The reactor vessel contains the core support assembly, upper plenum assembly, fuel assemblies, control cluster assemblies, surveillance specimens, and in-core instrumentation. The lower core support structure, the upper core support structure, and the incore instrumentation support structure are the three major parts of the reactor vessel internals. A one-piece thermal shield, concentric with the reactor core, is located between the core barrel and the reactor vessel. The shield, which is cooled by the coolant on its downward pass, protects the vessel by attenuating much of the gamma radiation and some of the fast neutrons which escape from the core.

Steam Generators

Each loop contains a vertical shell and U-tube steam generator. Reactor coolant enters the inlet side of the channel head at the bottom of the steam generator through the inlet nozzle, flows through the U-tubes to an outlet channel and leaves the generator through another bottom nozzle. The inlet and outlet channels are separated by a partition. Feedwater to the steam generator enters just above the top of the U-tubes through a feedwater ring. The water flows downward through an annulus between the tube wrapper and the shell and then upward through the tube bundle, where it is converted to a steam-water mixture. The steam-water mixture from the tube bundle passes through a primary separator assembly, which reduces the water content in the mixture. The separated water combines with the feedwater for another pass through the tube bundle. The remaining higher quality steam-water mixture rises through additional secondary separators that further reduce the moisture content of the steam.

Reactor Coolant Pumps

Each reactor coolant loop contains a vertical single-stage centrifugal pump that employs a controlled leakage seal assembly. Reactor coolant is pumped by the impeller attached to the bottom of the rotor shaft. The coolant is drawn up through the impeller, discharged through passages in the diffuser and out through a discharge nozzle in the side of the casing. A flywheel at the top of the rotor shaft extends the pump coastdown flow in the event of a loss of power to the pump motor. A portion of the flow from the CVCS charging pumps is injected into the reactor coolant pump between the impeller and the controlled leakage seal. Component cooling water is supplied to the motor bearing oil coolers and the thermal barrier cooling coil.

The RCS system has the following intended functions for 10 CFR 54.4(a)(1).

- Remove sensible and decay heat from the reactor core via natural circulation or forced circulation following design basis accidents.
- Provide a pressure boundary capable of withstanding all anticipated temperatures, pressures, and seismic accelerations.
- Provide the capability to vent non-condensable gases from the RCS that may impair emergency core cooling or natural circulation following design basis accidents.
- Provide a path for coolant to the core following a LOCA.
- Provide primary to secondary heat transfer (steam generators).
- Provide part of the reactor coolant pressure boundary (steam generators).
- Maintain secondary system pressure boundary to support primary heat removal (steam generators).

The RCS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function (includes RCP oil collection tanks).

The RCS system has the following intended functions for 10 CFR 54.4(a)(3).

- Support the evaluation for pressurized thermal shock (10 CFR 50.61).
- Provide RCP oil collection capability as required by Appendix R (10 CFR 50.48).
- The RCS is credited with maintaining its pressure boundary and providing core cooling and removal of sensible heat during a safe shutdown following a fire (10 CFR 50.48), station blackout (10 CFR 50.63), or ATWS (10 CFR 50.62).

Pressurizer

The purpose of the pressurizer (PZR system) is to maintain the required reactor coolant pressure during steady-state operation, limit the pressure changes caused by coolant thermal expansion and contraction during normal load transients, and prevent the pressure in the reactor coolant system from exceeding the design pressure. Pressure in the pressurizer is maintained through the use of electrical heaters and sprays. Steam can either be formed by the heaters or condensed by a pressurizer spray to minimize pressure variations due to contraction and expansion of the coolant. The pressurizer was designed to accommodate inflow and outflow surges caused by load transients. The surge line, which is attached to the bottom of the pressurizer, connects the pressurizer to the hot leg of a reactor coolant loop. The pressurizer protects the reactor coolant system from overpressure by code relief valves connected to the top head of the pressurizer. Two power-operated relief valves and three code safety valves are provided to protect against pressure surges which are beyond the pressure limiting capacity of the pressurizer spray. The power operated relief valves also operate from the overpressure protection system to prevent RCS pressure from exceeding the limits of Appendix G of Section III of the ASME Pressure Vessel Code during low temperature operation.

Steam and water discharge from the power relief and safety valves passes to the pressurizer relief tank, which is partially filled with water at or near ambient containment conditions. The tank normally contains water in a predominantly nitrogen atmosphere. Steam is discharged under the water level to condense and cool by mixing with the water. The tank is protected against a discharge exceeding the design value by rupture discs that discharge into the reactor containment.

The PZR system includes the pressurizer, the pressurizer relief valves, power-operated relief valves, spray line components, pressurizer relief tank, piping, valves, instruments and controls. The system includes several containment penetrations supporting the pressurizer relief tank.

The PZR system has the following intended function for 10 CFR 54.4(a)(1).

- Maintain the integrity of the reactor coolant system pressure boundary.
- Provide pressure relief capability via the pressurizer safety valves during over-pressure transients.
- Provide a means to depressurize the RCS via the power-operated relief valves relieving to the pressurizer relief tank following a steam generator tube rupture.
- Provide low temperature over-pressure protection of the reactor vessel via the power-operated relief valves during plant start-up and shutdown.
- Provide containment isolation capability for lines penetrating containment.

The PZR system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The PZR system has the following intended functions for 10 CFR 54.4(a)(3).

- The PZR is credited with maintaining its pressure boundary to support the RCS functions of providing core cooling and removal of sensible heat during a safe shutdown following a fire (10 CFR 50.48).
- The PZR is credited with maintaining its pressure boundary to support the RCS functions of providing core cooling and removal of sensible heat during a station blackout (10 CFR 50.63).

Control Rod Drive

The purpose of the control rod drive (CRD) system is to provide a means to position the control rods within the core. The reactor uses the Westinghouse magnetic-type control rod drive assemblies that are located on the upper reactor vessel head. These drives provide a means to insert or withdraw control rods in the core to control the nuclear power generated. Upon a loss of power to the coils, the rod cluster control assemblies with full-length absorber rods are released and fall by gravity into the core. Each control rod drive assembly is designed as a hermetically sealed unit to prevent leakage of reactor coolant. All pressure-containing components are designed to meet the requirements of the ASME Code, Section III, Division 1 for Class A vessels.

The CRD system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide reactor coolant system pressure boundary integrity.
- Release the control rods upon receipt of a reactor trip signal to ensure rapid shutdown and reactivity control.

The CRD system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

In-Core Instrumentation

The purpose of the in-core instrumentation (INCOR system) is to provide information on the neutron flux distribution and fuel assembly outlet temperatures at selected core locations. Using the information obtained from the in-core instrumentation system, it is possible to confirm the reactor core design parameters and calculated hot channel factors. The system provides means for acquiring data and performs no operational plant control.

The in-core instrumentation system consists of thermocouples, positioned to measure fuel assembly coolant outlet temperature at preselected locations; flux thimbles, which run the length of selected fuel assemblies to measure the neutron flux distribution within the reactor core using moveable in-core detectors; and in-core drives, drive motors, positioning equipment and instruments. The flux thimbles, seal table and guide tube form part of the reactor coolant pressure boundary.

The in-core instrumentation system has the following intended function for 10 CFR 54.4(a)(1).

- Provide reactor coolant system/pressure boundary integrity via the in-core thermocouple guide tube and seals.

The in-core instrumentation system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Reactor Vessel Level Instrumentation

The purpose of the RVLIS is to monitor the water level in the reactor vessel or relative voids in the RCS during accident conditions. The level instrumentation gives level indication from the bottom of the reactor vessel to the top of the reactor head during natural circulation conditions and indication of reactor vessel liquid level for any combination of running RCPs. The RVLIS utilizes RCS penetrations leading to manual isolation valves. At the valves are sealed capillary impulse lines which transmit pressure measurements to transmitters located outside the containment building. The capillary impulse lines are sealed at the RCS end and at the penetrations with sensor bellows, which serve as hydraulic couplers. The impulse lines extend through the containment wall to hydraulic isolators which seal and isolate the lines as well as provide hydraulic coupling to capillary tubes going to the transmitters.

The RVLIS system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the reactor coolant pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Provide containment isolation capability for lines penetrating containment.

The RVLIS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The RVLIS system has no intended functions for 10 CFR 54.4(a)(3).

Steam Generator (Secondary Side Instrumentation)

The purpose of the SG system is to provide steam generator secondary side instrumentation. This system code includes the passive mechanical instrument piping and valves for the steam generator secondary side level instrumentation. These components are safety-related since they form part of the pressure boundary for the steam generators.

The SG system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain secondary system pressure boundary to support primary heat removal.
- Support containment boundary as a closed system extension of the containment.

The SG system has no intended function for 10 CFR 54.4(a)(2).

The SG system has the following intended functions for 10 CFR 54.4(a)(3).

- Maintain the pressure boundary for the steam generator secondary side for secondary cooling following a fire (10 CFR 50.48) or station blackout (10 CFR 50.63).

Steam Generator Level Control

The purpose of the steam generator level control (SGLC) system is to support the control of feedwater flow to maintain steam generator secondary side level. The SGLC system is primarily an electrical system; however, it does include several level instrument vent valves. These components are safety-related since they form part of the pressure boundary for the steam generators.

The SGLC system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain secondary system pressure boundary to support primary heat removal.
- Support containment boundary as a closed system extension of the containment.

The SGLC system has no intended function for 10 CFR 54.4(a)(2).

The SGLC system has the following intended functions for 10 CFR 54.4(a)(3).

- Maintain the pressure boundary for the steam generator secondary side for secondary cooling following a fire (10 CFR 50.48) or station blackout (10 CFR 50.63).

UFSAR References

Unit 2		*Unit 3*	
RCS	Chapters 3 and 4	RCS	Sections 3.2 and 4.2 (includes the pressurizer)
CRD	Sections 3.1.3.4.4 and 3.2.3.4	CRD	Sections 3.1.3 and 7.3
In-cores	Sections 3.2.3.1.1.3 and 7.6	In-cores	Section 7.6
		RVLIS	Section 7.5.2
		SG	Sections 4.2.2 and 7.3.2
		SGLC	Section 7.3

Components Subject to Aging Management Review

The RCS Class I piping evaluation boundary extends into portions of systems attached to the RCS. For both units, the Class I components of the systems listed below are included in the RCS aging management review. The non-Class 1 portions of the systems listed below are reviewed as referenced.

- Chemistry and Volume Control System (CVCS) (Section 2.3.3.6)
- Isolation Valve Seal Water (IVSW) (Section 2.3.2.3)
- Primary Sampling System (PS) (Section 2.3.3.19)
- Residual Heat Removal (RHR) (Section 2.3.2.1)
- Safety Injection System (SIS) (Section 2.3.2.4)

Unit 2 RCS components containing air are evaluated with compressed air systems (Section 2.3.3.4). A small number of Unit 2 RCS components are evaluated with the primary makeup water systems (Section 2.3.3.7) and the nitrogen systems (Section 2.3.3.5).

Unit 3 RCS RCP lube oil collection components are evaluated with the fire protection – CO_2, halon and RCP oil collection systems (Section 2.3.3.12), with the Unit 2 RCP lube oil collection components. (Unit 2 RCP lube oil collection components are part of the Unit 2 fire protection system, not the RCS.)

Components in the Unit 3 nitrogen supply to the power-operated relief valves (PORVs) are evaluated with the nitrogen systems (Section 2.3.3.5). A small number of Unit 3 PZR components are evaluated with the primary makeup water systems (Section 2.3.3.7).

The following components are evaluated with containment penetrations (Section 2.3.2.5):

- Unit 2 RCS containment penetration components not part of the reactor coolant pressure boundary;
- Unit 3 PZR system containment penetration components; and
- certain mechanical Unit 3 RVLIS components.

For Unit 2 RCS and Unit 3 RCS, PZR, and RVLIS, nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19).

Fuel assemblies are not subject to aging management review as they are replaced after a limited number of fuel cycles. The control rods are active components and are not subject to aging management review.

Aging management review of the remaining RCS components is covered by four separate reviews:

- reactor vessel (Section 2.3.1.1),
- reactor vessel internals (Section 2.3.1.2),
- reactor coolant pressure boundary (RCPB) (Section 2.3.1.3) and,
- steam generators (Section 2.3.1.4).

Table 2.3.1-1-IP2 through Table 2.3.1-4-IP2 list the components that require aging management review and their intended functions.

Table 3.1.2-1-IP2 through Table 3.1.2-4-IP3 provide the results of the aging management review for RCS components and components evaluated with the RCS.

License Renewal Drawings

Related license renewal drawings are listed in Section 2.3.1.3, Reactor Coolant Pressure Boundary, and Section 2.3.1.4, Steam Generators.

2.3.1.1 Reactor Vessel

The reactor vessel for each unit is described in the reactor coolant system description (Unit 2, Reactor Vessel; Unit 3 Reactor Vessel).

For each unit, the evaluation boundary for the reactor vessel encompasses the reactor vessel pressure boundary subcomponents, which includes the shell, top and bottom heads, closure head stud assembly, primary nozzles and safe ends, control rod drive mechanism (CRDM) housing penetrations, bottom mounted instrumentation (BMI) flux thimble tube penetrations, guide tubes, and seal table. Other subcomponents included that support the intended functions of the reactor vessel are the core support pads / core guide lugs, vessel flange, and closure head lifting lugs.

Table 2.3.1-1-IP2 and Table 2.3.1-1-IP3 list the mechanical components subject to aging management review and component intended functions for the reactor vessel and the pressure boundary subcomponents of the control rod drive mechanisms.

Table 3.1.2-1-IP2 and Table 3.1.2-1-IP3 provide the results of the aging management review for reactor vessel and the pressure boundary subcomponents of the control rod drive mechanisms.

2.3.1.2 Reactor Vessel Internals

The reactor vessel internals for each unit are described in the reactor coolant system description (Unit 2, Reactor Vessel Internals; Unit 3, Reactor Vessel Internals).

For both units, the lower core support structure, the upper core support structure, and the incore instrumentation support structure are the three major parts of the reactor internals.

Lower Core Support Structure

The major member of the reactor vessel internals is the lower core support structure consisting of the following components included in this evaluation.

- core baffle/former assembly: bolts
- core baffle/former assembly: plates
- core barrel assembly: bolts, screws
- core barrel assembly: axial flexure plates, flange, ring, shell, thermal shield
- core barrel assembly: outlet nozzles
- lower internals assembly: clevis insert bolt
- lower internals assembly: clevis insert
- lower internals assembly: intermediate diffuser plate
- lower internals assembly: fuel alignment pin
- lower internals assembly: lower core plate
- lower internals assembly: lower core support plate column sleeves
- lower internals assembly: lower core support column bolt
- lower internals assembly, lower core support column castings: column cap, lower core support
- lower internals assembly: radial key
- lower internals assembly: secondary core support (energy absorbing device)
- specimen guides (not subject to aging management review)
- specimen plugs (installed in IP2 only; not subject to aging management review)

The lower core support structure is supported at its upper flange from a ledge in the reactor vessel. Within the core barrel are a core baffle and a lower core plate, both of which are attached to the core barrel wall. The lower core support structure provides passageways for the coolant flow. The lower core plate at the bottom of the core below the baffle plates provides support and orientation for the fuel assemblies. Fuel alignment pins (two for each assembly) are also inserted into this plate. Columns are placed between the lower core plate and core support casting in order to provide stiffness and to transmit the core load to the core support casting. Adequate coolant distribution is obtained through the use of the lower core plate and a diffuser plate.

Upper Core Support Structure

The "top hat with deep beam features" upper core support structure consists of the following components included in this evaluation.

- upper internals assembly, rod control cluster assembly (RCCA) guide tube assembly: bolts
- upper internals assembly, RCCA guide tube assembly: guide tube
- upper internals assembly, RCCA guide tube assembly: support pin
- upper internals assembly: core plate alignment pin
- upper internals assembly: head/vessel alignment pin
- upper internals assembly: hold-down spring
- upper internals assembly: support column
- upper internals assembly, mixing devices: support column orifice base, support column mixer
- upper internals assembly: upper core plate, fuel alignment pin
- upper internals assembly: support assembly, upper support plate
- upper internals assembly: upper support column bolt

The support columns establish the spacing between the upper support assembly and the upper core plate and are fastened at top and bottom to these plates and beams.

The RCCA guide tube assemblies shield and guide the control rod drive shafts and control rods. They are fastened to the upper support and are guided by pins in the upper core plate for proper orientation and support. Additional guidance for the control rod drive shafts is provided by the control rod shroud tube which is attached to the upper support plate and guide tube.

In-Core Instrumentation Support Structure

The in-core instrumentation support structures consist of the following components included in this evaluation.

- thermocouple conduit
- flux thimble guide tube
- bottom mounted instrumentation column

An upper system (thermocouple conduit) is used to convey and support thermocouples penetrating the vessel through the head, and a lower system (flux thimble guide tube) is used to convey and support flux thimbles penetrating the vessel through the bottom.

The upper system utilizes the reactor vessel head penetrations. Instrumentation port columns are slip-connected to in-line columns that are in turn fastened to the upper support plate. These port columns protrude through the head penetrations. The thermocouples are carried through these port columns and the upper support plate at positions above their readout locations. The thermocouple conduits are supported from the columns of the upper core support system.

Table 2.3.1-2-IP2 and Table 2.3.1-2-IP3 list the mechanical components subject to aging management review and component intended functions for the reactor vessel internals.

Table 3.1.2-2-IP2 and Table 3.1.2-2-IP3 provide the results of the aging management review for the reactor vessel internals.

2.3.1.3 Reactor Coolant Pressure Boundary

The reactor coolant pressure boundary (RCPB) evaluation includes the pressurizer, the reactor coolant pumps, the interconnecting piping and fittings, system valves, and bolting associated with the included components. Piping and valves from connected systems that complete the RCPB are also included. The majority of the components included in this evaluation have the RCS system code in the component database. However, multiple components from interconnecting systems are included in this report since their safety function is to maintain the RCPB. System codes included are CVCS, IVSW, PS (and PSS), PZR, RHR, RVLIS, SI (and SIS).

The RCPB piping consists of the primary loops to and from the reactor pressure vessel (RPV), steam generator (SG), and reactor coolant pumps (RCPs). The main reactor coolant piping and fittings are austenitic stainless steel.

Smaller piping, including the pressurizer surge and spray lines, drains and connections to other systems, is austenitic stainless steel. Piping connections are welded except for flanged connections at the pressurizer relief tank and at the relief and safety valves. A listing of the lines comprising the RCPB is given below.

- reactor coolant loops
- pressurizer surge line
- pressurizer spray lines
- auxiliary spray line
- pressurizer relief lines (IP3 includes a flex hose)
- safety injection lines (SI)
- accumulator discharge lines (SI)
- residual heat removal lines (RHR)
- letdown line and excess letdown line (CVCS)
- charging lines (CVCS)
- reactor vessel level instrumentation lines (RVLIS)
- reactor vessel head vent line
- reactor vessel flange leakoff line
- fill, drain and vent lines
- sample lines (piping, tubing, orifice and delay coil)
- instrumentation piping and tubing
- isolation valve seal water (IVSW) tubing
- thermal sleeves
  - return lines from the RHR loop (safety injection lines) to the loops
  - pressurizer surge line hot leg connection
  - charging lines connections to the loops
  - auxiliary charging line connections to the loops

- branch nozzles
- fittings (caps, elbows, orifices, scoops, thermowells, flow restrictors (3/8"), etc.)

Table 2.3.1-3-IP2 and Table 2.3.1-3-IP3 list the mechanical components subject to aging management review and component intended functions for the RCPB and pressurizer.

Table 3.1.2-3-IP2 and Table 3.1.2-3-IP3 provide the results of the aging management review for the RCPB and pressurizer.

Additional details for components subject to aging management review are provided in the following license renewal drawings.

System	Unit 2	Unit 3
Chemistry and Volume Control	LRA-208168	LRA-9321-27363
Isolation Valve Seal Water	LRA-9321-2746	LRA-9321-27463
Primary Sampling	LRA-9321-2745	LRA-9321-27453
Pressurizer	LRA-9321-2738	LRA-9321-27473
Reactor Coolant, Sheet 1	LRA-9321-2738	LRA-9321-27383
Residual Heat Removal	LRA-9321-2720	LRA-9321-27203
Reactor Vessel Level Indication	LRA-208798	LRA-9321-72043
Safety Injection	LRA-235296	LRA-9321-27353

2.3.1.4 Steam Generators

Steam generators for each unit are described in the reactor coolant system description (Unit 2, Steam Generators, and Unit 3, Steam Generators).

Four vertical shell and U-tube steam generators are provided at each unit. Both units use the Westinghouse Model 44F steam generator (SG); however, design and material property differences exist between the SGs (as identified below). Unit 2 replaced its steam generators during an outage completed in January 2001. Unit 3 had replaced its steam generators during the refueling outage completed in June 1989.

The steam generators are designed and manufactured in accordance with Section III (Nuclear Vessels) of the ASME Boiler and Pressure Vessel Code. The IP2 steam generators were constructed to the 1980 edition, through the Winter 1981 addenda. The IP3 steam generators were constructed to the 1983 edition, through the Summer 1984 addenda.

The steam generators are constructed primarily of carbon (low alloy) steel. The heat transfer tubes are Inconel: Alloy 600 for IP2, and Alloy 690 for IP3. The tubes were thermally treated after tube-forming operations. The interior surfaces of the channel heads and nozzles are clad with austenitic stainless steel, and the tube sheet surfaces in contact with reactor coolant are clad with Inconel. The tube-to-tube sheet joints are welded. The primary nozzles are provided with safe ends with weld metal overlay.

Table 2.3.1-4-IP3 and Table 2.3.1-4-IP2 list the mechanical components subject to aging management review and component intended functions for the steam generators.

Table 3.1.2-4-IP2 and Table 3.1.2-4-IP3 provide the results of the aging management review for the steam generators.

Additional details for components subject to aging management review are provided in the following license renewal drawings

LRA-9321-2019
LRA-9321-20193
LRA-9321-2017
LRA-9321-20173
LRA-9321-2738
LRA-9321-27383

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Table 2.3.1-1-IP2
Reactor Vessel
Components Subject to Aging Management Review

Component Type	Intended Function
Bottom-mounted guide tube • guide tubes	Pressure boundary
Bottom-mounted instrumentation • flux thimble tube • bullet plug • seal table	Pressure boundary
Closure head • closure head • studs • nuts • washers	Pressure boundary
Closure head • flange	Pressure boundary Structural support
Control rod drive head penetration • core exit thermocouple nozzle assembly (CETNA) • housing adapter flange • housing tube (nozzle) • pressure housing • pressure housing cap (latch housing)	Pressure boundary
Nozzles • inlet / outlet • closure head vent	Pressure boundary
Nozzle safe ends and welds • inlet / outlet safe ends • inlet / outlet safe end welds • closure head vent	Pressure boundary
Penetrations • bottom head instrument tubes • bottom head safe ends and welds	Pressure boundary

Table 2.3.1-1-IP2 (Continued)
Reactor Vessel
Components Subject to Aging Management Review

Component Type	Intended Function
Vessel external attachments • lifting lugs • vessel support pads	Structural support
Vessel external attachments • refueling seal support ring	Pressure boundary
Vessel internal attachments • core support lugs (pads)	Structural support
Vessel shell • bottom head • upper • intermediate (including beltline welds) • lower (including beltline welds) • vessel flange	Pressure boundary

.

Table 2.3.1-1-IP3
Reactor Vessel
Components Subject to Aging Management Review

Component Type	Intended Function
Bottom-mounted instrumentation • guide tubes • flux thimble tube • bullet plug • seal table	Pressure boundary
Closure head • closure head • studs • nuts • washers	Pressure boundary
Closure head • flange	Pressure boundary Structural support
Control rod drive head penetration • CETNA • housing adapter flange • housing tube (nozzle) • pressure housing • pressure housing cap (latch housing)	Pressure boundary
Nozzles • inlet / outlet • closure head vent	Pressure boundary
Nozzle safe ends and welds • inlet / outlet safe ends • inlet / outlet safe end welds • closure head vent	Pressure boundary
Penetrations • bottom head instrument tubes • bottom head safe ends and welds	Pressure boundary
Vessel external attachments • lifting lugs • vessel support pads	Structural support

Table 2.3.1-1-IP3 (Continued)
Reactor Vessel
Components Subject to Aging Management Review

Component Type	Intended Function
Vessel external attachments • refueling seal support ring	Pressure boundary
Vessel internal attachments • core support lugs (pads)	Structural support
Vessel shell • bottom head • upper • intermediate (including beltline welds) • lower (including beltline welds) • vessel flange	Pressure boundary

Table 2.3.1-2-IP2
Reactor Vessel Internals
Components Subject to Aging Management Review

Component Type	Intended Function
Lower Core Support Structure	
Core baffle/former assembly • bolts	Structural support
Core baffle/former assembly • plates	Structural support Flow distribution Shielding
Core barrel assembly • bolts and screws	Structural support
Core barrel assembly • axial flexure plates • flange • ring • shell • thermal shield	Structural support Flow distribution Shielding
Core barrel assembly • outlet nozzles	Flow distribution
Lower internals assembly • clevis insert bolt • clevis insert • fuel alignment pin • lower core support plate column sleeves • lower core support plate column bolt • radial key	Structural support
Lower internals assembly • intermediate diffuser plate	Flow distribution

Table 2.3.1-2-IP2 (Continued)
Reactor Vessel Internals
Components Subject to Aging Management Review

Component Type	Intended Function
Lower internals assembly • lower core plate • lower core support castings • column cap • lower core support • secondary core support	Structural support Flow distribution
Upper Core Support Structure—Upper Internals Assembly	
RCCA guide tube assembly • bolt • guide tube • support pin	Structural support
Core plate alignment pin	Structural support
Head / vessel alignment pin	Structural support
Hold-down spring	Structural support
Mixing devices • support column orifice base • support column mixer	Structural support Flow distribution
Support column	Structural support
Upper core plate, fuel alignment pin	Structural support Flow distribution
Upper support plate, support assembly	Structural support
Upper support column bolt	Structural support
Incore Instrumentation Support Structure	
Bottom mounted instrumentation column	Structural support
Flux thimble guide tube	Structural support

Table 2.3.1-2-IP2 (Continued)
Reactor Vessel Internals
Components Subject to Aging Management Review

Component Type	Intended Function
Thermocouple conduit	Structural support

Table 2.3.1-2-IP3
Reactor Vessel Internals
Components Subject to Aging Management Review

Component Type	Intended Function
Lower Core Support Structure	
Core baffle/former assembly • bolts	Structural support
Core baffle/former assembly • plates	Structural support Flow distribution Shielding
Core barrel assembly • bolts and screws	Structural support
Core barrel assembly • axial flexure plates • flange • ring • shell • thermal shield	Structural support Flow distribution Shielding
Core barrel assembly • outlet nozzles	Flow distribution
Lower internals assembly • clevis insert bolt • clevis insert • fuel alignment pin • lower core support plate column bolt • lower core support plate column sleeves • radial key	Structural support
Lower internals assembly • intermediate diffuser plate	Flow distribution

Table 2.3.1-2-IP3 (Continued)
Reactor Vessel Internals
Components Subject to Aging Management Review

Component Type	Intended Function
Lower internals assembly • lower core plate • lower core support castings • column cap • lower core support • secondary core support	Structural support Flow distribution
Upper Core Support Structure—Upper Internals Assembly	
RCCA guide tube assembly • bolt • guide tube • support pin	Structural support
Core plate alignment pin	Structural support
Head / vessel alignment pin	Structural support
Hold-down spring	Structural support
Mixing devices • support column orifice base • support column mixer	Structural support Flow distribution
Support column	Structural support
Upper core plate, fuel alignment pin	Structural support Flow distribution
Upper support plate, support assembly	Structural support
Upper support column bolt	Structural support
Incore Instrumentation Support Structure	
Bottom mounted instrumentation column	Structural support
Flux thimble guide tube	Structural support

Table 2.3.1-2-IP3 (Continued)
Reactor Vessel Internals
Components Subject to Aging Management Review

Component Type	Intended Function
Thermocouple conduit	Structural support

Table 2.3.1-3-IP2
Reactor Coolant Pressure Boundary
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Fittings (elbows, flanges, scoops, tees, etc.)	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heater sheath	Pressure boundary
Heater wells	Pressure boundary
Manway cover	Pressure boundary
Manway insert plate	Pressure boundary
Nozzle	Pressure boundary
Orifice	Flow control Pressure boundary
Piping $\geq$ 4” nps	Pressure boundary
Piping < 4” nps (includes RV flange leak-off lines)	Pressure boundary
Pressurizer penetration	Pressure boundary
Pressurizer shell and heads	Pressure boundary
Pressurizer spray head	Flow distribution
Pressurizer spray head coupling and locking bar	Structural support
Pump casing	Pressure boundary
Safe end	Pressure boundary

Table 2.3.1-3-IP2 (Continued)
Reactor Coolant Pressure Boundary
Components Subject to Aging Management Review

Component Type	Intended Function
Support	Structural support
Support lug	Structural support
Support skirt	Structural support
Thermal sleeve	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body ≥ 4” nps	Pressure boundary
Valve body < 4” nps	Pressure boundary

Table 2.3.1-3-IP3
Reactor Coolant Pressure Boundary
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Fittings (elbows, flanges, scoops, tees, etc.)	Pressure boundary
Flex hose	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heater sheath	Pressure boundary
Heater wells	Pressure boundary
Manway cover	Pressure boundary
Manway insert plate	Pressure boundary
Nozzle	Pressure boundary
Orifice	Flow control Pressure boundary
Piping $\geq$ 4” nps	Pressure boundary
Piping < 4” nps (includes RV flange leak-off lines)	Pressure boundary
Pressurizer penetration	Pressure boundary
Pressurizer shell and heads	Pressure boundary
Pressurizer spray head	Flow distribution
Pressurizer spray head coupling and locking bar	Structural support
Pump casing	Pressure boundary

Table 2.3.1-3-IP3 (Continued)
Reactor Coolant Pressure Boundary
Components Subject to Aging Management Review

Component Type	Intended Function
Safe end	Pressure boundary
Support	Structural support
Support lug	Structural support
Support skirt	Structural support
Thermal sleeve	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body ≥ 4” nps	Pressure boundary
Valve body < 4” nps	Pressure boundary

Table 2.3.1-4-IP2
Steam Generator
Components Subject to Aging Management Review

Component Type	Intended Function
Primary Side	
Bolting (primary manway)	Pressure boundary
Channel (primary) head	Pressure boundary
Channel (primary) head divider plate	Pressure boundary
Primary nozzle	Pressure boundary
Primary nozzle safe end	Pressure boundary
Primary nozzle closure ring	Pressure boundary
Primary manway	Pressure boundary
Primary manway cover	Pressure boundary
Primary manway cover insert plate	Pressure boundary
Tubesheet	Pressure boundary
Tube	Heat transfer Pressure boundary
Tube plug	Pressure boundary
Secondary Side Externals	
Bolting (secondary manway, handhole, and inspection port)	Pressure boundary
Shell (lower shell, upper shell, transition cone, elliptical upper head)	Pressure boundary
Feedwater nozzle	Pressure boundary
Steam outlet nozzle	Pressure boundary
Secondary manway (upper shell)	Pressure boundary
Secondary manway cover	Pressure boundary

Table 2.3.1-4-IP2 (Continued)
Steam Generator
Components Subject to Aging Management Review

Component Type	Intended Function
Secondary handhole and inspection port, inspection port threaded plug	Pressure boundary
Secondary handhole and inspection port cover	Pressure boundary
Secondary shell drain connection	Pressure boundary
Instrument connections; steam drum pressure, narrow range water level, and wide range water level	Pressure boundary
Steam flow restrictor (inside main steam nozzle)	Flow control
Blowdown pipe connection (nozzle)	Pressure boundary
Secondary Side Internals	
Flow distribution baffle	Flow distribution
Tube bundle wrapper and cone assembly	Flow distribution
Tube bundle wrapper handhole plug assembly	Flow distribution
Tube support plate	Structural support
Tube support plate stayrod	Structural support
Tube support plate stayrod spacer pipe	Structural support
Tube support plate stayrod nut	Structural support
Tube support plate stayrod washer	Structural support
Anti-vibration bar and peripheral retaining ring	Structural support
Feedwater ring and fittings	Flow distribution

Table 2.3.1-4-IP2 (Continued)
Steam Generator
Components Subject to Aging Management Review

Component Type	Intended Function
Feedwater ring J-nozzles	Flow distribution
Feedwater nozzle thermal sleeve	Pressure boundary
Steam Generator Instrumentation	
Bolting	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.1-4-IP3
Steam Generator
Components Subject to Aging Management Review

Component Type	Intended Function
Primary Side	
Bolting (primary manway)	Pressure boundary
Channel (primary) head	Pressure boundary
Channel (primary) head divider plate	Pressure boundary
Primary nozzle	Pressure boundary
Primary nozzle safe end	Pressure boundary
Primary nozzle closure ring	Pressure boundary
Primary manway	Pressure boundary
Primary manway cover	Pressure boundary
Primary manway cover insert plate	Pressure boundary
Tubesheet	Pressure boundary
Tube	Heat transfer Pressure boundary
Tube plug	Pressure boundary
Secondary Side Externals	
Bolting (secondary manway, handhole, and inspection port)	Pressure boundary
Shell (lower shell, upper shell, transition cone, elliptical upper head)	Pressure boundary
Feedwater nozzle	Pressure boundary
Steam outlet nozzle	Pressure boundary
Secondary manway (upper shell)	Pressure boundary
Secondary manway cover	Pressure boundary

Table 2.3.1-4-IP3 (Continued)
Steam Generator
Components Subject to Aging Management Review

Component Type	Intended Function
Secondary handhole and inspection port, inspection port threaded plug	Pressure boundary
Secondary handhole and inspection port cover	Pressure boundary
Secondary handhole cover RTD boss	Pressure boundary
Secondary handhole cover RTD well	Pressure boundary
Secondary shell drain connection	Pressure boundary
Instrument connections: steam drum pressure, narrow range water level, wide range water level, and sampling	Pressure boundary
Steam flow restrictor (inside main steam nozzle)	Flow control
Blowdown pipe connection (nozzle)	Pressure boundary
Secondary Side Internals	
Flow distribution baffle	Flow distribution
Tube bundle wrapper and cone assembly	Flow distribution
Tube bundle wrapper handhole plug assembly	Flow distribution
Tube support plate	Structural support
Tube support plate stayrod	Structural support
Tube support plate stayrod spacer pipe	Structural support
Tube support plate stayrod nut	Structural support
Tube support plate stayrod washer	Structural support
Anti-vibration bar	Structural support

Table 2.3.1-4-IP3 (Continued)
Steam Generator
Components Subject to Aging Management Review

Component Type	Intended Function
Anti-vibration bar end caps and peripheral retaining ring	Structural support
Feedwater ring and fittings	Flow control
Feedwater ring J-nozzles	Flow control
Feedwater nozzle thermal sleeve	Pressure boundary
Steam Generator Instrumentation	
Bolting	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

2.3.2 Engineered Safety Features

The engineered safety features are described in UFSAR Sections 5 and 6 for both Unit 2 and Unit 3.

The following systems are described in this section.

- Residual Heat Removal
- Containment Spray System
- Containment Isolation Support Systems
- Safety Injection Systems
- Containment Penetrations

2.3.2.1 Residual Heat Removal

System Description

Unit 2

The purpose of the residual heat removal (RHR) system is to provide emergency core cooling as part of the safety injection system and provide residual heat removal during later stages of plant cooldown. The RHR system is part of the auxiliary coolant systems that consist of the component cooling water system, the spent fuel pit cooling system and the RHR system. The RHR system consists of two RHR heat exchangers, two seal coolers, two RHR pumps and the required piping, valves, instrumentation and control components.

The RHR system is used to provide emergency core cooling during the injection phase of a loss-of-coolant accident (LOCA). The RHR heat exchangers in conjunction with the safety injection recirculation pumps are used for post-accident heat removal during the recirculation phase of a LOCA. Outlet flow from the RHR heat exchangers may be directed to the containment spray headers, to the RCS cold legs, or to the RCS hot legs via the high-head safety injection pumps. The RHR pumps also serve as a backup to the safety injection system recirculation pumps during the recirculation phase of a LOCA. In this capacity, the RHR pumps may draw water from the containment sump and deliver it to the RCS cold leg injection lines, to the suction of the high-head safety injection pumps, or to the containment spray headers.

The RHR system is used to provide residual heat removal during later stages of plant cooldown and during cold shutdown and refueling operations. After the reactor coolant system temperature and pressure have been reduced to 350°F and less than 365 psig, decay heat cooling is initiated by aligning the RHR pumps to take suction from one reactor hot leg and discharge through the RHR heat exchangers into the reactor cold legs.

The RHR system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Provide a borated water flow path from the refueling water storage tank (RWST) to the RCS cold leg via the RHR pumps.
- Provide a flow path via the RHR heat exchangers for the recirculation pumps to deliver spilled reactor coolant back to the reactor core and containment spray header.
- Provide a flow path from the containment sump for the RHR pumps to deliver spilled reactor coolant, via the RHR heat exchangers, back to the reactor core and containment spray header.
- Provide a flow path for the recirculation pumps or RHR pumps to deliver spilled reactor coolant, via the RHR heat exchangers, back to the reactor core through the high head safety injection pumps.

- Support an alternate flow path for the RHR pumps to deliver spilled reactor coolant to the suction of the safety injection pumps, bypassing the RHR heat exchangers (this supports a safety injection system function).
- Provide containment isolation capability for lines penetrating containment.

The RHR system has no intended function for 10 CFR 54.4(a)(2).

The RHR system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide long-term decay heat removal to support Appendix R safe shutdown (10 CFR 50.48) and station blackout (10 CFR 50.63).

Unit 3

The purpose of the residual heat removal system is to provide emergency core cooling as part of the safety injection system and provide residual heat removal during later stages of plant cooldown. The RHR system is part of the auxiliary coolant systems that consist of the component cooling water system, the spent fuel pit cooling system, and the RHR system. The RHR system consists of two RHR heat exchangers, two seal coolers, two RHR pumps and the required piping, valves, instrumentation and control components.

The RHR system is used to provide emergency core cooling during the injection phase of a loss-of-coolant accident (LOCA). The RHR heat exchangers in conjunction with the safety injection recirculation pumps are used for post-accident heat removal during the recirculation phase of a LOCA. Outlet flow from the RHR heat exchangers may be directed to the containment spray headers, to the RCS cold legs, or to the RCS hot legs via the high-head safety injection pumps. Additionally, RHR heat exchanger outlet flow may be directed to the suction of the high-head safety injection pumps or to the containment spray headers. The RHR pumps also serve as a backup to the safety injection system recirculation pumps during the recirculation phase of a LOCA. In this capacity, the RHR pumps may draw water from the containment sump and deliver it to the RCS cold leg injection lines, to the suction of the high-head safety injection pumps, or to the containment spray headers.

The RHR system is used to provide residual heat removal during later stages of plant cooldown, during cold shutdown and refueling operations. After the reactor coolant system temperature and pressure have been reduced to 350°F and less than 450 psig, decay heat cooling is initiated by aligning the RHR pumps to take suction from one reactor hot leg and discharge through the RHR heat exchangers into the reactor cold legs.

The RHR system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).

- Provide a borated water flow path from the RWST to the RCS cold leg via the RHR pumps.
- Provide a flow path via the RHR heat exchangers for the recirculation pumps to deliver spilled reactor coolant back to the reactor core and containment spray header.
- Provide a flow path from the containment sump for the RHR pumps to deliver spilled reactor coolant, via the RHR heat exchangers, back to the reactor core and containment spray header.
- Provide a flow path for the recirculation pumps or RHR pumps to deliver spilled reactor coolant, via the RHR heat exchangers, back to the reactor core through the high head safety injection pumps.
- Support an alternate flow path for the RHR pumps to deliver spilled reactor coolant to the suction of the safety injection pumps, bypassing the RHR heat exchangers (this supports a safety injection system function).
- Provide containment isolation capability for lines penetrating containment.

The RHR system has no intended function for 10 CFR 54.4(a)(2).

The RHR system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide long-term decay heat removal to support Appendix R safe shutdown (10 CFR 50.48).

UFSAR References

Unit 2: Sections 6.2 and 9.3

Unit 3: Sections 6.2 and 9.3

Components Subject to Aging Management Review

Unit 2

ASME Class 1 components with the intended function of maintaining the reactor coolant pressure boundary are reviewed with the RCS (Section 2.3.1). A small number of components are reviewed with the safety injection system (Section 2.3.2.4). Remaining RHR components are reviewed as listed below.

Unit 3

ASME Class 1 components with the intended function of maintaining the reactor coolant pressure boundary are reviewed with the RCS (Section 2.3.1). A small number of components are reviewed with the component cooling water system (Section 2.3.3.3). Remaining RHR components are reviewed as listed below.

Table 2.3.2-1-IP2 and Table 2.3.2-1-IP3 list the component types that require aging management review.

Table 3.2.2-1-IP2 and Table 3.2.2-1-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-9321-2735	LRA-9321-27513-001
LRA-235296	LRA-9321-27353
LRA-9321-2745	LRA-9321-27203
LRA-9321-2720	LRA-9321-27453
LRA-251783	LRA-9321-27503
	LRA-9321-27263

2.3.2.2 Containment Spray System

System Description

Unit 2

The purpose of the containment spray system is to provide containment cooling and iodine removal following an accident. The containment spray system consists of two trains of pumps, valves and spray headers that are designed to automatically start and spray borated water into the containment when high containment pressure is sensed following a LOCA or main steam line break accident. The containment spray system sprays a portion of the contents of the RWST into the containment atmosphere. The spray water enters containment through spray nozzles connected to four ring headers in the containment dome. Each spray pump supplies two ring headers. The containment spray pumps take their suction from the RWST. After injection from the RWST has been terminated, the spray headers can be supplied recirculated water from the recirculation sump or the containment sump by a diversion of a portion of the injection flow from the safety injection system.

Long-term post-accident retention of iodine is assured by four trisodium phosphate baskets located in the containment at an elevation (46') that will be flooded under accident conditions, allowing the trisodium phosphate to dissolve into the fluid for pH control. The four trisodium phosphate baskets are included in the containment structural evaluation (summarized in Section 2.4.1) but are not discussed further as they have no license renewal intended function and are therefore not subject to aging management review.

The containment spray system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide means for rapid reduction of containment pressure and temperature by providing borated water from the RWST following a design basis LOCA or a steam line break accident inside containment.
- Distribute flow from the containment recirculation pumps or RHR pumps to the containment atmosphere during the recirculation phase of an accident.
- Provide for chemical additives (trisodium phosphate) to increase the pH of post-accident fluids in the recirculation and containment sumps.
- Provide containment isolation capability for lines penetrating containment.

The containment spray system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Unit 3

The purpose of the containment spray system is to provide containment cooling and iodine removal following an accident. The containment spray system consists of two trains of pumps, valves and spray headers that are designed to automatically start and spray borated water into the containment when high containment pressure is sensed following a LOCA or main steam line break accident. The containment spray system sprays a portion of the contents of the RWST into the containment atmosphere. The spray water enters containment through spray nozzles connected to four ring headers in the containment dome. Each spray pump supplies two ring headers. The containment spray pumps take their suction from the RWST. After injection from the RWST has been terminated, the spray headers can be supplied recirculated water from the recirculation sump or the containment sump by a diversion of a portion of the injection flow from the safety injection system.

The containment spray system includes a spray additive tank containing sodium hydroxide and eductors that draw from the tank when the containment spray pumps are in operation following a LOCA for pH control of the water in containment. The containment spray system also includes a dousing system for the carbon filter bank of each fan cooler unit of the containment air recirculation cooling and filtration system. Each dousing system can be started manually if high temperature conditions occur.

The containment spray system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide means for rapid reduction of containment pressure and temperature by providing borated water from the RWST following a design basis loss-of-coolant accident (LOCA) or a steam-line-break accident inside containment.
- Distribute flow from the containment recirculation pumps or RHR pumps to the containment atmosphere during the recirculation phase of an accident.
- Provide a means to inject chemical spray additives (sodium hydroxide) into the containment spray stream to increase the pH of post-accident fluids in the recirculation and containment sumps.
- Provide containment isolation capability for lines penetrating containment.

The containment spray system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The containment spray system has the following intended function for 10 CFR 54.4(a)(3).

- Provide fire-dousing water to the containment recirculation fan carbon filter banks (10 CFR 50.48).

UFSAR References

Unit 2: Section 6.3

Unit 3: Section 6.3

Components Subject to Aging Management Review

Components in the CS systems that support the RHR system pressure boundary are evaluated with the RHR systems (Section 2.3.2.1). A small number of components are reviewed with the safety injection system (Section 2.3.2.4). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining CS components are reviewed as listed below.

Table 2.3.2-2-IP2 and Table 2.3.2-2-IP3 list the component types that require aging management review.

Table 3.2.2-2-IP2 and Table 3.2.2-2-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

LRA-A235296	LRA-9321-27503
LRA-9321-2735	LRA-9321-27353

2.3.2.3 Containment Isolation Support Systems

System Description

The containment isolation support systems (CISS) evaluation includes the isolation valve seal water systems (IVSWS) for both units and the weld channel and penetration pressurization systems (WCPS on Unit 2 and WCCPPS (weld channel and containment penetration pressurization system) on Unit 3). For Unit 3, this evaluation also includes the primary auxiliary building (PAB) system code, which has a containment penetration.

CISS consists of piping and valves routed to the various system piping that penetrates the containment. The IVSW, WCPS, and WCCPP systems support isolation of the containment from the outside environment for various systems whose piping penetrates containment.

CISS provides injection of fluid or air/gas into system lines in between the containment isolation valves penetrating the containment to ensure pressure boundary integrity against leakage of radioactive fluids to the environment in the event of a loss-of-coolant accident. These barriers, in the form of piping and isolation valves systems, are defined on an individual line basis. In addition to satisfying containment isolation criteria, the valving was designed to facilitate normal operation and maintenance of the systems and to ensure reliable operation of other engineered safeguards systems.

Unit 2

IVSWS

The purpose of the IVSWS is to provide sealing water or gas between the isolation valves and double disk isolation valves of containment penetrations. By providing a water seal (and in a few cases a gas seal) at the valves, the system ensures the effectiveness of those containment isolation valves that are located in lines connected to the reactor coolant system or that could be exposed to the containment atmosphere during any condition which requires containment isolation. This system operates to limit the fission product release from the containment. Although operation of the system is not credited in the post-accident dose analyses, the system provides assurance that the containment leak-rate in the event of an accident is lower than that assumed in the accident analysis and the offsite dose calculations. Components of the system form part of the containment penetration isolation boundary.

The IVSWS has the following intended function for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Inject pressurized seal water to containment isolation valves in the lines which are either connected to the reactor coolant system or could be exposed to containment pressure.

- Supply nitrogen to containment penetration lines that are connected to the reactor coolant system and are subjected to pressure in excess of the water portion of the isolation valve seal water system design pressure.
- Provide containment isolation capability for components that are part of containment penetrations.

The IVSWS has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

WCPS

The purpose of the WCPS is to provide pressurized gas to all containment penetrations and most liner inner weld seams such that in the event of a LOCA, there would be no leakage through these potential leakage paths from the containment to the atmosphere. Spaces between selected isolation valves are also served by the WCPS. Although operation of the system is not credited in the post-accident dose analyses, by maintaining the WCPS at some pressure level above the peak accident pressure, any postulated leakage would be into the containment rather than out of the containment. A regulated supply of clean and dry compressed air from either of the plant's compressed air systems located outside the containment is supplied to all containment penetrations and most inner liner weld channels. The primary source of air for this system is the instrument air system. The station air system acts as a backup to the instrument and control air system. A standby source of gas pressure for the system is provided by a bank of nitrogen cylinders.

The WCPS has the following intended functions for 10 CFR 54.4(a)(1).

- Provide pressurized air or nitrogen above the accident containment pressure to containment penetrations, weld channel joints, some containment isolation valves, airlock seals, and fuel transfer tube flange gaskets to minimize vapor containment post-accident leakage to the environment.
- Provide containment isolation capability for lines penetrating containment.

The WCPS has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

<u>Unit 3</u>

IVSW

The purpose of the IVSW system is to provide sealing water or gas between the isolation valves and double disk isolation valves of containment penetrations. By providing a water seal (and in a few cases a gas seal) at the valves, the system ensures the effectiveness of those containment isolation valves that are located in lines connected to the reactor coolant system or that could be exposed to the containment atmosphere during any condition which requires containment isolation. This system operates to limit the fission product release from the containment.

Although operation of the system is not credited in the post-accident dose analyses, the system provides assurance that the containment leak-rate in the event of an accident is lower than that assumed in the accident analysis and the offsite dose calculations. Components of the system form part of the containment penetration isolation boundary.

The IVSW system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Inject pressurized seal water to containment isolation valves in the lines which are either connected to the reactor coolant system or could be exposed to containment pressure.
- Supply nitrogen to containment penetration lines that are connected to the reactor coolant system and are subjected to pressure in excess of the water portion of the isolation valve seal water system design pressure in the event of an accident.
- Provide containment isolation capability for components that are part of containment penetrations.

The IVSW system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

WCCPPS

The purpose of the WCCPPS is to provide pressurized gas to all containment penetrations and most liner inner weld seams such that in the event of a LOCA, there would be no leakage through these potential leakage paths from the containment to the atmosphere. Spaces between selected isolation valves are also served by the WCCPPS. Although operation of the system is not credited in the post-accident dose analyses, by maintaining the WCCPPS at some pressure level above the peak accident pressure, any postulated leakage would be into the containment rather than out of the containment. A regulated supply of clean and dry compressed air from either of the plant's compressed air systems located outside the containment is supplied to all containment penetrations and most inner liner weld channels. The primary source of air for this system is the instrument air system. The station air system acts as a backup to the instrument and control air system. A standby source of gas pressure for the system is provided by a bank of nitrogen cylinders.

The WCCPPS has the following intended functions for 10 CFR 54.4(a)(1).

- Provide pressurized air above peak accident pressure to all containment penetrations, most liner inner weld seams, and the spaces between some isolation valves to minimize vapor containment post-accident leakage to the environment.
- Provide containment isolation capability for lines penetrating containment.
- Provide automatic transfer to supply nitrogen from the nitrogen storage assembly upon receipt of a low pressure signal from the WCCPP air receivers.

The WCCPPS has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The WCCPPS has no intended function for 10 CFR 54.4(a)(3).

PAB

The purpose of the primary auxiliary building (PAB) is to house and protect emergency safeguards equipment and other systems supporting the safe operation of the reactor. This system code is primarily for structural use, but, because it also includes the guard pipe and enclosure mini-containment leakage boundary for a containment sump penetration, the system has a mechanical intended function and is discussed here. This enclosure (tank) provides a second leakage boundary for the primary containment penetration from the containment sump.

The PAB system has the following intended function for 10 CFR 54.4(a)(1).

- Provide guard pipe and enclosure mini-containment leakage boundary for containment sump penetration.

The PAB system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

UFSAR References

Unit 2		*Unit 3*	
IVSWS	Section 6.5.1	IVSWS	Section 6.5
WCPS	Sections 6.6.2 and 14.3.6.1	WCCPPS	Section 6.6
		PAB	Section 6.2.2

Components Subject to Aging Management Review

IVSWS components with the intended function of maintaining the reactor coolant pressure boundary are reviewed with the RCS (Section 2.3.1.3). Nonsafety-related portions of the Unit 3 WCCPPS not evaluated with other systems that have the potential to prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining CISS components are reviewed as listed below.

Table 2.3.2-3-IP2 and Table 2.3.2-3-IP3 list the component types that require aging management review.

Table 3.2.2-3-IP2 and Table 3.2.2-3-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

LRA-9321-F-2726
LRA-9321-F-27263
LRA-9321-F-2746
LRA-9321-F-27463
LRA-9321-F-2025
LRA-9321-F-7052
LRA-9321-F-4022
LRA-9321-F-26533

2.3.2.4 Safety Injection Systems

System Description

Unit 2

The primary purpose of the safety injection (SI) system is the automatic delivery of cooling water to the reactor core in the event of a loss-of-coolant accident. This limits the fuel clad temperature and thereby ensures that the core will remain intact and in place, with its essential heat transfer geometry preserved. Components comprising the SI system code include the refueling water storage tank, the three safety injection (high-head) pumps, the accumulators (one for each loop), recirculation pumps and piping, valves, and other components associated with these subsystems.

The three safety injection (high-head) pumps inject borated water stored in the RWST into the RCS to provide core cooling. The safety injection signal automatically opens the required safety injection system isolation valves and starts the safety injection pumps.

The accumulators contain borated water pressurized with nitrogen and are connected to the RCS by injection piping and valves. Two check valves isolate these tanks from the RCS during normal operation. When RCS pressure falls below accumulator pressure, the check valves open, discharging the contents of the tanks into the RCS through the same injection piping used by the safety injection pumps.

After the injection operation, coolant spilled from the break and water collected from the containment spray are cooled and returned to the reactor coolant system by the recirculation system. The system is arranged so that the recirculation pumps take suction from the recirculation sump in the containment floor and deliver spilled reactor coolant and borated refueling water back to the core through the residual heat removal heat exchangers. For smaller breaks in the reactor coolant system where recirculated water must be injected against higher pressures for long-term cooling, the system is arranged to deliver the water from a residual heat removal heat exchanger to the high-head safety injection pump suction and by this external recirculation route to the reactor coolant loops. The system is also arranged to allow either of the residual heat removal pumps to take over the recirculation function (see Section 2.3.2.1).

The SI system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Provide a flow path from the RWST to supply borated water to the RCS via the SI pumps to the cold legs.
- Provide a water source from the RWST to supply borated water to the suction of the containment spray pumps.

- Provide a flow path to inject borated water from the SI accumulators to the core via the RCS cold legs.
- Provide a flow path for the recirculation pumps to inject borated water, via the RHR heat exchangers, to the RCS cold legs and containment spray header.
- Provide an alternate flow path from the containment sump for the RHR pumps to deliver reactor coolant, via the RHR heat exchangers, back to the reactor core and containment spray header.
- Provide capability for the recirculation pumps or RHR pumps to deliver reactor coolant, via the RHR heat exchangers, back to the RCS cold and/or hot legs through the high head safety injection pumps.
- Provide an alternate flow path, in the event a failure of the normal SI pump suction line from the RHR heat exchanger, for the RHR pumps to deliver reactor coolant to a high-head safety injection pump, bypassing the RHR heat exchangers.
- Provide a flow path from containment to containment pressure sensing instruments.
- Provide containment isolation capability for lines penetrating containment.

The SI system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SI system has the following intended function for 10 CFR 54.4(a)(3).

- Provide a borated water source to the charging pumps and support isolation of components to maintain RCS inventory control to support Appendix R Safe Shutdown (10 CFR 50.48).

Unit 3

SI System

The primary purpose of the SI system is the automatic delivery of cooling water to the reactor core in the event of a loss-of-coolant accident. This limits the fuel clad temperature and thereby ensures that the core will remain intact and in place, with its essential heat transfer geometry preserved. Components comprising the SI system code include the refueling water storage tank, three safety injection (high-head) pumps, accumulators (one for each loop), recirculation pumps and piping, valves, and other components associated with these subsystems.

The three safety injection (high-head) pumps are designed to inject borated water stored in the RWST into the RCS to provide core cooling. The safety injection signal automatically opens the required safety injection system isolation valves and starts the safety injection pumps.

The accumulators contain borated water pressurized with nitrogen and are connected to the RCS by injection piping and valves. Two check valves isolate these tanks from the RCS during normal operation. When RCS pressure falls below accumulator pressure, the check valves open, discharging the contents of the tanks into the RCS through the same injection piping used by the safety injection pumps.

After the injection operation, coolant spilled from the break and water collected from the containment spray are cooled and returned to the reactor coolant system by the recirculation system. The system is arranged so that the recirculation pumps take suction from the recirculation sump in the containment floor and deliver spilled reactor coolant and borated refueling water back to the core through the residual heat exchangers. For the smaller breaks in the reactor coolant system where recirculated water must be injected against higher pressures for long-term cooling, the system is arranged to deliver the water from a residual heat removal heat exchanger to the high-head safety injection pump suction and by this external recirculation route to the reactor coolant loops. The system is also arranged to allow either of the residual heat removal pumps to take over the recirculation function.

The SI system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Provide a flow path from the RWST to supply borated water to the RCS via the SI pumps to the cold legs.
- Provide a water source from the RWST to supply borated water to the suction of the containment spray pumps.
- Provide a flow path to inject borated water from the SI accumulators to the core via the RCS cold legs.
- Provide a flow path for the recirculation pumps to inject borated water to the RCS cold legs.
- Provide a flow path from the recirculation sump to the RHR heat exchangers and the containment spray header.
- Provide an alternate flow path from the containment sump for the RHR pumps to deliver reactor coolant, via the RHR heat exchangers, back to the reactor core and containment spray header.
- Provide a flow path to inject borated water from the recirculation sump through the RHR heat exchangers to the RCS cold legs via the SI pumps.
- Provide a flow path to inject borated water through the RHR heat exchangers then via the SI pumps to the RCS hot legs.
- Provide containment isolation capability for lines penetrating containment.
- Provide nitrogen supply from SI accumulators to the nitrogen supply line to the pressurizer power-operated relief valves (PORVs) during an RCS over-pressurization event.

- Provide alternate flow path from containment sump via RHR pumps to a high-head safety injection pump in response to passive failures in the normal high-head SI suction flow path.

The SI system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SI system has the following intended function for 10 CFR 54.4(a)(3).

- Supply water from the RWST as makeup water for the RCS and support isolation of components to maintain RCS inventory control following a fire (10 CFR 50.48).

Engineered Safeguards Initiation Logic

The engineered safeguards initiation logic (ESS) system is evaluated with the SI system.

The purpose of the ESS system is to actuate the engineered safety features. The system actuates (depending on the severity of the condition) the safety injection system, the containment isolation system, the containment air recirculation system, and the containment spray system. The ESS system is primarily an electrical system; however, it does include some mechanical components, specifically the piping and valves from the containment to the containment pressure transmitters, and therefore has the following mechanical intended function.

The ESS system has the following intended function for 10 CFR 54.4(a)(1).

- Maintain containment integrity and provide a flowpath to the containment pressure transmitters.

The ESS system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

UFSAR References

Unit 2: Section 6.2

Unit 3: Safety injection, Section 6.2; ESS, Section 7.2

Components Subject to Aging Management Review

Unit 2 and Unit 3

ASME Class 1 components with the intended function of maintaining the reactor coolant pressure boundary are reviewed with the RCS (Section 2.3.1.3). A small number of components are reviewed with the containment spray system (Section 2.3.2.2), residual heat removal systems (Section 2.3.2.1) or nitrogen systems (Section 2.3.3.5). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining SI and ESS components are reviewed as listed below.

Table 2.3.2-4-IP2 and Table 2.3.2-4-IP3 list the component types that require aging management review.

Table 3.2.2-4-IP2 and Table 3.2.2-4-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-9321-2720	LRA-9321-27203
LRA-9321-2735	LRA-9321-27353
LRA-9321-2745	LRA-9321-27453
LRA-227781	LRA-9321-27503
LRA-235296	LRA-9321-27513, sheet 1
LRA-251783	LRA-9321-27513, sheet 2

2.3.2.5 Containment Penetrations

System Description

Containment penetrations is not an independent system but is a grouping of containment penetration components not evaluated with other systems. Mechanical penetrations for systems with a system-level aging management review are evaluated with that system. The scope of this evaluation is passive mechanical penetration components not included in other system evaluations. This evaluation includes only the containment penetration portion of these systems.

The grouping of containment isolation valves from various plant systems into one consolidated review is appropriate, as stated in NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants*, Section 2.1.3.1.

Containment penetrations have the following intended function for 10CFR54.4(a)(1).

- Prevent release of radioactivity to outside environment.

Containment penetrations have no intended functions for 10CFR54.4(a)(2) or (a)(3).

The following systems are described in this section because their only intended function is performed by a containment penetration.

Unit 2

Electrical Penetrations

The purpose of electrical penetrations is to provide a means of passing electrical conductors through the containment boundary. The electrical penetrations (EP) system code is primarily composed of structural and electrical components that are evaluated in the structural and electrical aging management reviews; however, the system contains mechanical components that are evaluated here. The penetrations are provided with a pressure connection to allow continuous pressurization by the weld channel system. This is considered part of the containment isolation boundary.

The EP system has the following intended function for 10 CFR 54.4(a)(1).

- Support the containment isolation boundary.

The EP system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Fuel Core Component Handling System

The purpose of the fuel core component handling (FCCH) system is to provide the ability to defuel and refuel the reactor core. The fuel handling system provides a safe effective means of transporting and handling fuel. Most of the system components (e.g., fuel handling bridges) are structural components evaluated with their respective structures. The fuel transfer tube and blind flange are components in the FCCH system and together constitute a containment penetration.

The FCCH system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for transfer line penetrating containment.

The FCCH system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Hydrogen Recombiners

The purpose of the hydrogen recombiners (HR system) is to reduce the hydrogen concentration in the containment volume following a design basis accident. The system includes two redundant passive autocatalytic recombiners that replaced earlier flame units. The recombiners are passive devices: they contain no moving parts and do not need electrical power or any other support system. Recombination is accomplished by the attraction of oxygen and hydrogen molecules to the surface of a palladium catalyst. The exothermic reaction of the combination produces heat, which results in a convective flow that draws more gases from the containment atmosphere into the unit. Based on a recent license amendment (Amendment No. 243), hydrogen recombination is no longer required as a safety function.

The system includes containment penetrations from the original flame hydrogen recombiners.

The HR system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

The HR system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Unit 3

Building Vent Sampling

The purpose of the building vent sampling (BVS) system is to draw samples from the building ventilation to determine radioactive gasses that may be present. This provides indication that verifies the plant radioactive gaseous effluents are within the Technical Specification limits. The system includes several containment penetrations and provides a flow path to two process radiation monitors.

The BVS system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Provide a process flow path to radiation monitors.

The BVS system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Fuel Handling

The purpose of the fuel handling (FHS) system is to provide the ability to defuel and refuel the reactor core. The fuel handling system provides a safe effective means of transporting and handling fuel. The majority of the components shown in the database and the fuel storage racks and pools are structural components and covered in the structural evaluations. The fuel transfer tube blind flange is included in this system code and is a passive mechanical component for that containment penetration.

The FHS has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability via the fuel transfer tube blind flange.

The FHS has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Integrated Leak Rate Testing

The purpose of the integrated leak rate testing (ILRT) system is to support containment integrated leak rate testing during shutdown conditions. The system includes the piping, valves and equipment used to pressurize containment and the instrumentation used to monitor containment parameters during the test. The system includes containment penetrations that are isolated by blind flanges during normal operation.

The ILRT system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

The ILRT system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

UFSAR References

Unit 2		*Unit 3*	
containment penetrations	Section 5.1.4	containment penetrations	Section 5.1.4
EP	Section 5.1.4.2.1	BVS	Sections 9.4.2 and 11.2
FCCH	Section 9.5.2		
HR	Section 6.8	FHS	Sections 1.2.2 and 9.5
		ILRT	None

Components Subject to Aging Management Review

Components in the containment penetrations evaluated in this section are those that maintain the pressure boundary of the system inside containment from the first weld from the penetration to the class boundary change outside containment. Components in the Class 1 boundary are evaluated with the reactor coolant pressure boundary (Section 2.3.1.3). Structural portions of the containment penetrations are evaluated with the containment building (Section 2.4.1). Electrical portions of electrical penetration assemblies are evaluated with electrical components (Section 2.5). Containment penetrations not included in other systems' aging management reviews are reviewed as listed below. This review includes the BVS system process flow path to the radiation monitors.

Table 2.3.2-5-IP2 and Table 2.3.2-5-IP3 list the component types that require aging management review.

Table 3.2.2-5-IP2 and Table 3.2.2-5-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 2*	*Unit 3*	*Unit 3*
LRA-9321-2027	LRA-9321-72043	LRA-9321-70453	LRA-9321-26533
LRA-9321-2727	LRA-9321-2726	LRA-9321-27503	
LRA-9321-2750	LRA-227178	LRA-9321-27473	
LRA-9321-2025	LRA-238106	LRA-9321-27783	
LRA-208879		LRA-9321-20253	
LRA-208479		LRA-24043	

Table 2.3.2-1-IP2
Residual Heat Removal System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flex hose	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary Flow control

Table 2.3.2-1-IP3
Residual Heat Removal System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary Flow control

Table 2.3.2-2-IP2
Containment Spray System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flow element	Pressure boundary
Nozzle	Pressure boundary Flow control
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary Flow control

Table 2.3.2-2-IP3
Containment Spray System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Eductor	Pressure boundary Flow control
Flow element	Pressure boundary
Nozzle	Pressure boundary Flow control
Piping	Pressure boundary
Pump casing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.2-3-IP2
Containment Isolation Support System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Flow control Pressure boundary
Indicator	Pressure boundary
Instrument	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.2-3-IP3
Containment Isolation Support System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Filter	Filtration
Filter housing	Pressure boundary
Flow element	Pressure boundary Flow control
Indicator	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.2-4-IP2
Safety Injection Systems
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flow element	Pressure boundary Flow control
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (housing)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heat exchanger (tubesheet)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Seal jacket cooler	Heat transfer Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.2-4-IP3
Safety Injection Systems
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flow element	Pressure boundary Flow control
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heat exchanger (tubesheet)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Seal jacket cooler	Heat transfer Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.2-5-IP2
Containment Penetrations
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Regulator	Pressure boundary
Sampler housing	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.2-5-IP3
Containment Penetrations
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

2.3.3 Auxiliary Systems

The following systems are described in this section.

- Spent Fuel Pit Cooling
- Service Water
- Component Cooling Water
- Compressed Air
- Nitrogen Systems
- Chemical and Volume Control
- Primary Water Makeup
- Heating, Ventilation and Air Conditioning
- Containment Cooling and Filtration
- Control Room Heating, Ventilation and Cooling
- Fire Protection – Water
- Fire Protection – CO2, Halon, and RCP Oil Collection Systems
- Fuel Oil
- Emergency Diesel Generators
- Security Generators
- Appendix R Diesel Generators
- City Water
- Plant Drains
- Miscellaneous Systems in Scope for (a)(2)

2.3.3.1 Spent Fuel Pit Cooling

System Description

Unit 2

The purpose of the spent fuel pit cooling (SFPC) system is to maintain the spent fuel in a safe storage configuration and to remove heat generated by stored spent fuel elements from the spent fuel pit. The spent fuel pit cooling loop consists of two pumps, a heat exchanger, filter, demineralizer, piping, and associated valves and instrumentation. One of the pumps draws water from the pit, circulates it through the heat exchanger and returns it to the pit. Component cooling water (CCW) cools the heat exchanger. Loop piping is so arranged that the failure of any pipeline does not drain the spent fuel pit below the top of the stored fuel elements. The spent fuel pit pump suction line, which is used to draw water from the pit, penetrates the spent fuel pit wall above the fuel assemblies. The system also includes the spent fuel pit.

The spent fuel storage racks provide a storage location at the bottom of the spent fuel storage pit for spent fuel assemblies. The racks are full length, top entry type. The spent fuel storage racks are made of stainless steel with Boraflex as a neutron absorber.

The SFPC system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide pressure boundary capability for the CCW system within the spent fuel heat exchanger.
- Provide criticality protection. This function is performed by Boraflex plates in the pit racks.

The SFPC system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SFPC system has no intended functions for 10 CFR 54.4(a)(3).

Unit 3

The purpose of the spent fuel pit cooling loop is to maintain the spent fuel in a safe storage configuration and to remove residual heat from fuel stored in the spent fuel pit. The spent fuel pit cooling loop consists of pumps (main and standby), heat exchanger, filters, demineralizer, piping, and associated valves and instrumentation. The operating pump draws water from the pit, circulates it through the heat exchanger and returns it to the pit. Component cooling water cools the heat exchanger, which forms part of the CCW system pressure boundary. Loop piping is so arranged that the failure of any pipeline does not drain the spent fuel pit below the top of the stored fuel elements. The spent fuel pit pump suction line, which is used to draw water from the pit, penetrates the spent fuel pit wall above the fuel assemblies. A purification loop is used to circulate spent fuel pit water through the demineralizer and filter for purification. A portion of the system piping supporting the RWST purification loop using the spent fuel pit demineralizer forms part of the safety injection (SI) system pressure boundary. The system also includes the spent fuel pit.

The spent fuel storage racks provide a storage location at the bottom of the spent fuel storage pit for spent fuel assemblies. The racks are full length, top entry type. The spent fuel storage racks are made of stainless steel with Boral as a neutron absorber.

The SFPC system has the following intended functions for 10 CFR 54.4(a)(1).

- Support the pressure boundary of the CCW and SI systems.
- Provide criticality protection. This function is performed by Boral plates in the pool racks.

The SFPC system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SFPC system has no intended functions for 10 CFR 54.4(a)(3).

UFSAR References

Unit 2: Sections 9.3.1, 9.5.2.1.5 and 14.2.1

Unit 3: Sections 9.3 and 9.5

Components Subject to Aging Management Review

Unit 2

The spent fuel pit (including liner and the spent fuel racks) are included in the evaluation of the fuel storage buildings (Section 2.4.3). The heat exchanger components forming part of the CCW system pressure boundary are evaluated with the component cooling water systems (Section 2.3.3.3). A small number of components are evaluated with the primary makeup water systems (Section 2.3.3.7). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining Unit 2 SFPC components (Boraflex plates) are reviewed as listed below.

Unit 3

The pit and the spent fuel racks are included in the evaluation of the fuel storage buildings (Section 2.4.3). Components supporting the pressure boundary of the CCW system are evaluated with the component cooling water systems (Section 2.3.3.3). Components supporting the pressure boundary of the SI system are evaluated with the safety injection systems (Section 2.3.2.4). A small number of components are evaluated with the primary makeup water systems (Section 2.3.3.7). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining Unit 3 SFPC components (Boral plates) are reviewed as listed below.

Table 2.3.3-1-IP2 and Table 2.3.3-1-IP3 list the component types that require aging management review.

Table 3.3.2-1-IP2 and Table 3.3.2-1-IP3 provide the results of the aging management review.

License Renewal Drawings

The neutron absorption panels do not appear on a flow diagram; however, the LRA drawings most closely associated with the spent fuel pit are listed below.

Unit 2	*Unit 3*
LRA-9321-2720-0	LRA-9321-27513-002-0

2.3.3.2 Service Water

System Description

Unit 2

The purpose of the service water system (SWS) is to supply cooling water from the Hudson River to various heat loads in both the primary and secondary portions of the plant. Provision was made to ensure a continuous flow of cooling water to those systems and components necessary for plant safety either during normal operation or under abnormal or accident conditions. Sufficient redundancy of active and passive components was provided to ensure that short and long term cooling is maintained to vital loads in accordance with the single failure criteria.

Six identical, vertical, centrifugal sump-type pumps located at the intake structure supply service water to two independent discharge headers. Each header is supplied by three pumps. An automatic, self-cleaning, rotary-type strainer is in the discharge of each pump to remove solids. Each header is connected to an independent supply line. Either of the two supply lines can be used to supply the essential loads, with the other line feeding the nonessential loads. The essential loads are those which must have an assured supply of cooling water in the event of a loss of offsite power and/or a loss-of-coolant accident. The nonessential loads are those which are supplied with cooling water by manually starting a service water pump when required following a loss-of-coolant accident.

Nonessential loads include component cooling water heat exchangers, circulating water pump seal injection, turbine building closed cooling water system, hydrogen coolers, stator cooling water heat exchanger, exciter air coolers, and the isolated phase bus heat exchangers. The system also provides backup water for cleaning the traveling screens.

The SWS has the following intended functions for 10 CFR 54.4(a)(1).

- Provide cooling water from the Hudson River through the service water system essential header for the removal of heat from safety-related components.
- Provide cooling water from the Hudson River through the service water system nonessential header to cool the component cooling system.
- Provide water from the Hudson River to the service water strainers at the discharge of each SW Pump.
- Provide containment isolation capability for lines penetrating containment.

The SWS has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SWS has the following intended functions for 10 CFR 54.4(a)(3).

- Provide cooling water during a plant cooldown for station blackout (10 CFR 50.63).
- Provide cooling water to essential loads to achieve safe shutdown following a postulated Appendix R fire (10 CFR 50.48).
- Support safe shutdown in the event of a fire in the auxiliary feed pump room (10 CFR 50.48) (see Section 2.3.4.5).

Unit 3

The purpose of the service water system (SWS) is to supply cooling water from the Hudson River to various heat loads in both the primary and secondary portions of the plant. Provision was made to ensure a continuous flow of cooling water to those systems and components necessary for plant safety either during normal operation or under abnormal or accident conditions. Sufficient redundancy of active and passive components was provided to ensure that short and long term cooling is maintained to vital loads in accordance with the single failure criteria.

Six identical, vertical, centrifugal sump-type pumps located at the intake structure supply service water to two independent discharge headers. Each header is supplied by three pumps. An automatic, self-cleaning, rotary-type strainer is in the discharge of each pump to remove solids. Each header is connected to an independent supply line. Either of the two supply lines can be used to supply the essential loads, with the other line feeding the nonessential loads.

A backup supply to the SWS can be provided by three non-seismic class pumps. These pumps are independent of the intake structure and draw a suction from the discharge canal. One of these non-seismic class pumps is credited with supplying service water during a safe shutdown following a fire.

The service water system provides cooling water to nonessential loads to support normal operation, including SG blowdown heat exchangers, circulating water pump seal coolers, turbine building closed cooling water system, hydrogen coolers, exciter air coolers and the isolated phase bus heat exchangers.

The SWS has the following intended functions for 10 CFR 54.4(a)(1).

- Provide cooling water to engineered safety features (ESF) equipment and components required to mitigate the consequences of accidents and maintain containment integrity, including emergency diesel generators, containment fan cooling units, the control room air conditioning condenser and CCW heat exchangers.
- Provide the capability to limit/isolate flow to various essential and nonessential loads under accident conditions.
- Provide containment isolation capability for lines penetrating containment.

- Provide the capability to realign system flow during changeover from the injection to recirculation phase following a LOCA.

The SWS has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SWS has the following intended function for 10 CFR 54.4(a)(3).

- Provide cooling water to essential loads to achieve safe shutdown following a postulated Appendix R fire (10 CFR 50.48).

UFSAR References

Unit 2: Section 9.6.1

Unit 3: Section 9.6.1

Components Subject to Aging Management Review

Unit 2

Components that support safe shutdown in the event of a fire in the auxiliary feed pump room are evaluated in Section 2.3.4.5. Components cooling the CCW systems are evaluated with the component cooling water systems (Section 2.3.3.3). Components cooling the EDG systems are evaluated with the emergency diesel generator systems (Section 2.3.3.14). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining SWS components are reviewed as listed below.

Unit 3

Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining SWS components are reviewed as listed below.

Table 2.3.3-2-IP2 and Table 2.3.3-2-IP3 list the component types that require aging management review.

Table 3.3.2-2-IP2 and Table 3.3.2-2-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2

LRA-9321-2028
LRA-9321-2722
LRA-209762
LRA-235117
LRA-235122
LRA-226037
LRA-226038
LRA-242687

Unit 3

LRA-9321-20283
LRA-9321-20333-001
LRA-9321-27223

2.3.3.3 Component Cooling Water

<u>System Description</u>

<u>Unit 2</u>

The purpose of the component cooling water (CCW) system is to remove residual and sensible heat from the reactor coolant system via the residual heat removal loop during plant shutdown, cool the letdown flow to the chemical and volume control system during power operation, and provide cooling to dissipate waste heat from various primary plant components. It also provides cooling for engineered safeguards and safe shutdown components. The system includes the pumps, heat exchangers, distribution and return piping and valves, instruments and controls to provide cooling to the following.

- RHR exchangers
- reactor coolant pumps
- non-regenerative heat exchanger
- excess letdown heat exchanger
- chemistry and volume control system (CVCS) seal-water heat exchanger
- sample heat exchangers
- waste gas compressors
- reactor vessel support pads
- residual heat removal pumps
- safety injection pumps
- recirculation pumps
- spent fuel pit heat exchanger
- charging pumps, fluid drive coolers, and crankcase

Some of the CCW-cooled heat exchangers in other systems have no safety function. However, these nonsafety-related heat exchangers form part of the CCW system pressure boundary. These heat exchangers have been included in scope with an intended function to maintain the pressure boundary but not to transfer heat.

The Unit 2 CCW system was not originally designed to accommodate a passive failure (not a design consideration during initial construction of Unit 2). The subsequent consideration of a passive failure required commitments for alternate cooling water supplies to safety-related equipment. Connections to primary and city water provide the alternate supplies.

The CCW system has the following intended functions for 10 CFR 54.4(a)(1)

- Provide cooling water to engineered safety features equipment.
- Provide cooling water from the component cooling water pumps to the recirculation pump motor coolers post-LOCA.

- Provide pressure boundary function for entire system to ensure component cooling can be provided to safety-related loads.
- Provide capability to connect emergency back-up cooling water (city water or primary water) to the charging, residual heat removal, and high head safety injection pumps.
- Provide containment isolation capability for lines penetrating containment.

The CCW system has no intended functions for 10 CFR 54.4(a)(2).

The CCW system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide capability to connect city water to the charging pumps for fire protection (10 CFR 50.48).
- The CCW system is credited in the Appendix R safe shutdown analysis for fire protection (10 CFR 50.48).
- The CCW is credited with operation during the plant cooldown portion of the SBO event (10 CFR 50.63).

Unit 3

The purpose of the CCW system is to remove residual and sensible heat from the reactor coolant system via the residual heat removal loop during plant shutdown, cool the letdown flow to the chemical and volume control system during power operation, and provide cooling to dissipate waste heat from various primary plant components in the primary auxiliary building and the containment building. It also provides cooling for engineered safeguards and safe shutdown components. The system includes the pumps, heat exchangers, distribution and return piping and valves, instruments and controls to provide cooling to the following.

- RHR heat exchangers
- reactor coolant pumps
- non-regenerative heat exchanger
- excess letdown heat exchanger
- CVCS seal water heat exchanger
- sample heat exchangers
- waste gas compressors
- reactor vessel support pads
- residual heat removal pumps
- safety injection pumps
- recirculation pumps
- spent fuel pit heat exchanger
- charging pumps, fluid drive coolers, and crankcase
- gross failed fuel detector

Some of the CCW-cooled heat exchangers in other systems have no safety function. However, these nonsafety-related heat exchangers form part of the CCW system pressure boundary. These heat exchangers have been included in scope with an intended function to maintain the pressure boundary but not to transfer heat. The heat exchangers within the CCW system are safety-related components.

The CCW system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide cooling water to engineered safety features equipment.
- Provide cooling water from the auxiliary component cooling water pumps to the recirculation pump motor coolers post-LOCA.
- Provide containment isolation capability for lines penetrating containment.
- Provide cooling water to gross failed fuel monitor and reactor coolant sample heat exchangers.

The CCW system has no intended functions for 10 CFR 54.4(a)(2).

The CCW system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide cooling water to the charging pump oil coolers and RCP thermal barrier coolers following a fire (10 CFR 50.48).

UFSAR References

Unit 2: Sections 9.3 and 6.2.2.3.4

Unit 3: Section 9.3

Components Subject to Aging Management Review

Unit 2

A few components assigned the CCW system code support the RHR system pressure boundary and are therefore evaluated with the residual heat removal systems (Section 2.3.2.1). Components providing cooling to the SI systems are evaluated with the safety injection systems (Section 2.3.2.4). Components providing cooling to the CVCS systems are evaluated with the chemical and volume control systems (Section 2.3.3.6). Remaining CCW components are reviewed as listed below.

Unit 3

A few components assigned the CCW system code support the RHR system pressure boundary and are therefore evaluated with the residual heat removal systems (Section 2.3.2.1). Components providing cooling to the SI systems are evaluated with the safety injection systems (Section 2.3.2.4). Remaining CCW components are reviewed as listed below.

Table 2.3.3-3-IP2 and Table 2.3.3-3-IP3 list the component types that require aging management review.

Table 3.3.2-3-IP2 and Table 3.3.2-3-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-208168	LRA-9321-27203
LRA-209762	LRA-9321-27223
LRA-227781	LRA-9321-27273
LRA-235122	LRA-9321-27293-002
LRA-251783	LRA-9321-27303
LRA-9321-2720	LRA-9321-27453
LRA-9321-2730	LRA-9321-27513-001
	LRA-9321-27513-002

2.3.3.4 Compressed Air

System Description

The compressed air systems includes the instrument air (IA) and station air (SA) subsystems.

Unit 2

Instrument Air

The purpose of the IA system is to provide a continuous supply of dry, oil-free air for pneumatic instruments and controls. Instrument air is provided by duplicate compressors with duplicate dryers and filters. In addition, alternate supplies are provided from the Unit 2 station air system and Unit 1 station air system. A connection has been provided in the station air system to allow a backup supply of air from portable compressed air equipment. The instrument air system, although designed to meet air capacity requirements, utilizes the higher capacity Unit 1 station air compressors as a primary source of air supply. Because of the high capacity output capability of the Unit 1 air compressors, Unit 2 is able to utilize the Unit 1 air compressors for all Unit 1 and 2 station and instrument air requirements. Unit 2 station air compressor and both Unit 2 instrument air compressors serve as backups. The system includes the compressors, dryers, filters, receivers, distribution piping and valves, instruments and controls.

Those items essential for safe operation and safe cooldown are provided with air reserves or gas bottles. These supplies enable the equipment to function in a safe manner until the air supply is reestablished. The IA system includes piping, air bottles, valves and controls supporting this air reserve function, but does not include all of the air or gas bottles, which are part of other systems. The system may also be used to provide air to the post-accident venting system to pressurize containment in support of hydrogen control, but this is not a safety-related function.

The IA system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Provide a backup source of safety-related air / nitrogen supply to all pneumatic devices and valve actuators that require air pressure to go to their proper safeguards position during and after an accident.

The IA system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The IA system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide a backup source of compressed gas for pneumatically operated components for the Appendix R event (10 CFR 50.48).
- Support safe shutdown in the event of a fire in the auxiliary feed pump room (10 CFR 50.48) (see Section 2.3.4.5).

Station Air

The purpose of the SA system is to provide compressed air throughout the plant. Station air is distributed to hose connections throughout the plant, primarily for maintenance activities. The station air system can also serve as an alternate supply to the instrument air system. Station air is supplied by a Unit 2 air compressor but can also be supplied by Unit 1 compressors and equipment. The SA system consists of Unit 1 and Unit 2 station air equipment including air compressors, air receivers, filters, dryers, distribution piping and valves.

The SA system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

The SA system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SA system has the following intended function for 10 CFR 54.4(a)(3).

- Support safe shutdown in the event of a fire in the auxiliary feed pump room (10 CFR 50.48) (see Section 2.3.4.5).

Unit 3

Instrument Air

The purpose of the IA system is to provide a continuous supply of dry, oil-free air for pneumatic instruments and controls. Instrument air is provided by duplicate compressors with duplicate dryers and filters. Each compressor discharges into a common air receiver. In addition, a backup supply is taken from the station air system. To meet current and future instrument air loads, a third compressor/dryer package is available to supply the conventional plant. This compressor can also supply the station air system with backup air, if necessary. The system includes the compressors, dryers, filters, receivers, distribution piping and valves, instruments and controls.

Those items essential for safe operation and safe cooldown are provided with air reserves or gas bottles. These supplies will enable the equipment to function in a safe manner until the air supply is re-established. The IA system includes piping, valves and controls supporting this air reserve function, but does not include the air or gas bottles, which are part of other systems.

The IA system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Provide a backup source of safety-related air / nitrogen supply to all pneumatic devices and valve actuators that require air pressure to go to their proper safeguards position during and after an accident.

The IA system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The IA system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide a backup source of compressed gas for the atmospheric steam dump valves for Appendix R event reliability (10 CFR 50.48).
- Provide a backup source of compressed gas for the steam driven auxiliary feedwater flow control valves and speed controller under Appendix R (10 CFR 50.48) and station blackout (10 CFR 50.63) conditions.

Station Air

The purpose of the SA system is to provide compressed air for pneumatic tools, circulating water pump priming, and miscellaneous cleaning and maintenance purposes throughout the secondary and primary plants. The system includes diesel-driven and motor-driven air compressors, inter- and after-coolers, receiver, piping, valves, and instruments and controls. Distribution piping to the containment includes containment isolation valves.

The SA system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

The SA system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SA system has no intended functions for 10 CFR 54.4(a)(3).

UFSAR References

Unit 2: Sections 9.6.4 (IA) and 9.6.4.2 (SA)

Unit 3: Section 9.6.3 (IA and SA)

Components Subject to Aging Management Review

Unit 2

IA system components that support safe shutdown in the event of a fire in the auxiliary feed pump room are evaluated in Section 2.3.4.5. Components containing nitrogen are evaluated with the nitrogen systems (Section 2.3.3.5). Nonsafety-related compressed air system components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining compressed air system components are reviewed as listed below.

Unit 3

Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining compressed air system components are reviewed as listed below.

Table 2.3.3-4-IP2 and Table 2.3.3-4-IP3 list the component types that require aging management review.

Table 3.3.2-4-IP2 and Table 3.3.2-4-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2

LRA-9321-2035
LRA-9321-2036
LRA-9321-2736-0
LRA-9321-4022-0
LRA-242656-0
LRA-242688-0
LRA-251232-0
LRA-308762
LRA-D-227176

Unit 3

LRA-9321-20353-0
LRA-9321-20363-0, Sheet 2
LRA-9321-21543-0
LRA-9321-40223-0
LRA-9321-70093-0
LRA-9321-70123-0
LRA-D-360858

2.3.3.5 Nitrogen Systems

System Description

Unit 2

The purpose of the gas (GAS) system is to store and distribute gases, primarily hydrogen, carbon dioxide, and nitrogen, for various uses around the plant. The GAS system includes the hydrogen (H_2) gas subsystem, carbon dioxide (CO_2) gas subsystem, and nitrogen (N_2) gas subsystem.

Hydrogen gas is supplied to the chemical and volume control tank for oxygen scavenging of the RCS water to support water chemistry control. Hydrogen is also supplied to the main generator for cooling gas. Carbon dioxide gas is provided for purging the main generator of hydrogen to support outage work on the generator.

The nitrogen gas subsystem includes the various nitrogen supplies to provide motive gas to individual components as a backup to the instrument air supply and to various components for process functions (including cover gas, purge gas, and gas required for operation of level instrumentation). Nitrogen enters containment through several containment penetrations.

For the Appendix R safe shutdown, nitrogen is required for pneumatically actuated components. The nitrogen gas subsystem provides a nitrogen supply to the atmospheric dump valves (ADVs), a backup nitrogen supply to auxiliary feedwater system valve actuators, a portable nitrogen bottle that can be carried into containment to operate the auxiliary spray valve, the ability to provide motive gas for the charging pumps suction valve, and the nitrogen supply to pneumatically powered instrumentation.

Nitrogen supplies that are required to support the SBO event include the nitrogen supply to the atmospheric dump valves (ADVs), backup nitrogen supply to auxiliary feedwater (AFW) system valve actuators, and the nitrogen supply to pneumatically powered instrumentation.

The GAS system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for the lines penetrating containment.
- Provide a means to actuate the pressurizer PORVs via the nitrogen accumulators.
- Provide nitrogen to the IVSW system for sealing pressure between containment isolation valves.
- Provide backup motive gas for AFW valves.

The GAS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The GAS system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide motive gas to pneumatically actuated valves as required during an Appendix R (10 CFR 50.48) or SBO (10 CFR 50.63) event.
- Provide nitrogen to pneumatically powered instrumentation (pressurizer level, pressurizer pressure, and steam generator level) that is used during the during an Appendix R (10 CFR 50.48) or SBO (10 CFR 50.63) event.

Unit 3

The purpose of the nitrogen (N2) system is to provide motive gas to individual components as a backup to the instrument air supply and nitrogen supply to various components for process functions (including cover gas, calibration gas, purge gas, and gas required for operation of level instrumentation). Nitrogen enters containment through several containment penetrations that must isolate to provide containment isolation capability under accident conditions. The containment penetration pressurization system (see Section 2.3.2.3, Containment Isolation Support Systems, WCCPP system) also has nitrogen-filled components that are not included with this system code.

The N2 system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for the lines penetrating containment.
- Provide a means to actuate the pressurizer PORVs via the nitrogen accumulators and backup supply from the safety injection accumulators.
- Provide capability to operate various components via backup N2 accumulators following a loss of instrument air.
- Prevent oversupply of nitrogen to the condensate storage tank. This function is performed by the orifice in the nitrogen supply to the condensate storage tank.

The N2 system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The N2 system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide motive gas to ADVs for cooldown during an Appendix R event (10 CFR 50.48).
- Provide backup motive gas for AFW valves during an Appendix R event (10 CFR 50.48).

UFSAR References

Unit 2

To the extent they are described in the UFSAR, the components in this system code that provide motive gas are addressed in the UFSAR section describing the system they support: Section 4.3.4.2 for nitrogen to the power operated relief valves; Section 7.2.1.5 for nitrogen to pneumatically powered instrumentation; Section 10.2.6.3 for nitrogen to the auxiliary feedwater system; Section 9.2 for hydrogen to CVCS; and Section 10.2.2 for hydrogen to the main generator.

Unit 3

The components in this system code that provide motive gas are described in the UFSAR with the system they support. Section 7.3 of the UFSAR identifies the backup supply to the power operated relief valves from both small accumulators on the nitrogen system and an alternate backup from the nitrogen in the safety injection accumulator tanks. Section 9.6.2.5 identifies the nitrogen components required for safe shutdown, including the nitrogen supply to the atmospheric dump valves and the auxiliary feedwater system. Section 9.9.2 identifies the nitrogen system backup to the control room ventilation system dampers. Section 10.2.6 identifies the nitrogen supply to the condensate storage system.

Components Subject to Aging Management Review

Unit 2

GAS system components that are part of containment penetrations are evaluated with the containment penetrations (Section 2.3.2.5). A small number of components are evaluated with the compressed air systems (Section 2.3.3.4), the city water system (Section 2.3.3.17), the plant drains (Section 2.3.3.18) and with the auxiliary feedwater systems (Section 2.3.4.3). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Unit 3

A small number of N2 system components are evaluated with the auxiliary feedwater systems (Section 2.3.4.3). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Table 2.3.3-5-IP2 and Table 2.3.3-5-IP3 list the component types that require aging management review.

Table 3.3.2-5-IP2 and Table 3.3.2-5-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-235296	LRA-9321-21543
LRA-235306	LRA-9321-27233
LRA-242656	LRA-9321-27353
LRA-242688	
LRA-251232	
LRA-308762	
LRA-9321-2723	
LRA-9321-2746	

2.3.3.6 Chemical and Volume Control

System Description

Unit 2

The purpose of the chemical and volume control system (CVCS) is to provide inventory and chemistry control of the reactor coolant system. The CVCS provides RCS inventory management by controlling the amount of makeup and letdown to the RCS. It provides a means to control the RCS boron concentration and other RCS chemical additions. The system provides for reactor coolant cleanup including degasification and purification. This system provides seal water injection to the reactor coolant pumps and provides RCS depressurization capability via pressurizer auxiliary spray flow path. The system provides a means for injection of control poison in the form of boric acid solution from the boric acid storage tanks.

During normal plant operation, reactor coolant letdown flows through the shell side of the regenerative heat exchanger where its temperature is reduced by transferring heat to the charging fluid. The coolant then flows through a letdown orifice, which regulates flow and reduces the coolant pressure. The cooled, low-pressure water leaves the reactor containment and enters the primary auxiliary building. After passing through the non-regenerative heat exchanger and one of the mixed-bed demineralizers, the fluid flows through the reactor coolant filter and enters the volume control tank.

The coolant flows from the volume control tank to the charging pump(s), which raise the pressure above that in the reactor coolant system. Three positive displacement, variable speed charging pumps are provided. The high-pressure water flows from the primary auxiliary building to the reactor containment along two parallel paths. One path returns directly to the reactor coolant system through the tube side of the regenerative heat exchanger to the RCS cold leg. The second path injects water into the seals of the reactor coolant pumps (RCP) through seal injection filters. The RCP seal water returns to the CVCS through a seal water filter and heat exchanger back to the volume control tank.

The refueling water storage tanks and the boric acid storage tanks can provide borated water to the charging system. The refueling water storage tank is available to the charging pumps for injection of borated water. The boric acid system includes boric acid transfer pumps, a boric acid filter, and storage tanks to maintain a large inventory of concentrated boric acid solution.

The CVCS system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Provide containment isolation capability for lines penetrating containment.
- Provide pressure boundary for the piping connection to the RWST.

- Maintain pressure boundary interface with the CCW system at the CVCS heat exchangers cooled by CCW.

The CVCS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The CVCS system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide capability for the charging system to support safe shutdown following an Appendix R event (10 CFR 50.48).
- Provide capability for the plant to cope with loss of all A/C power (station blackout) (10 CFR 50.63).
- Provide a flow path from the boric acid storage tanks via the boric acid transfer pumps and charging pumps as an alternate means of reactivity control for an ATWS event (10 CFR 50.62).

Unit 3

The purpose of the chemical and volume control system is to provide inventory and chemistry control of the reactor coolant system. The CVCS provides RCS inventory management by controlling the amount of makeup and letdown to the RCS. It provides a means to control the RCS boron concentration and other RCS chemical additions. The system provides for reactor coolant cleanup including degasification and purification. This system provides seal water injection to the reactor coolant pumps and provides RCS depressurization capability via pressurizer auxiliary spray flow path. The system provides a means for injection of control poison in the form of boric acid solution from the boric acid storage tanks.

During normal plant operation, reactor coolant letdown flows through the shell side of the regenerative heat exchanger where its temperature is reduced by transferring heat to the charging fluid. The coolant then flows through a letdown orifice, which regulates flow and reduces the coolant pressure. The cooled, low-pressure water leaves the reactor containment and enters the primary auxiliary building. After passing through the non-regenerative heat exchanger and one of the mixed-bed demineralizers, the fluid flows through the reactor coolant filter and enters the volume control tank.

The coolant flows from the volume control tank to the charging pumps, which raise the pressure above that in the reactor coolant system. Three positive displacement, variable speed charging pumps are provided. The high-pressure water flows from the primary auxiliary building to the reactor containment along two parallel paths. One path returns directly to the reactor coolant system through the tube side of the regenerative heat exchanger to the RCS cold leg. The second path injects water into the seals of the reactor coolant pumps (RCP) through seal injection filters. The RCP seal water returns to the CVCS through a seal water filter and heat exchanger back to the volume control tank.

The refueling water storage tanks and the boric acid storage tanks can provide borated water to the charging system. The refueling water storage tank is available to the charging pumps for injection of borated water. The boric acid system includes boric acid transfer pumps, a boric acid filter, and storage tanks to maintain a large inventory of concentrated boric acid solution.

The CVCS system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Provide containment isolation capability for lines penetrating containment.

The CVCS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The CVCS system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide RCS reactivity, inventory and pressure (via the auxiliary pressurizer spray) control during an Appendix R event (10 CFR 50.48).
- Provide water to RCP seals during an Appendix R event (10 CFR 50.48).
- Provide a flow path from the boric acid storage tanks, via the boric acid transfer pumps and charging pumps, to inject borated water into the RCS as an alternate means of reactivity control for the ATWS event (10 CFR 50.62).

UFSAR References

Unit 2: Section 9.2.2

Unit 3: Section 9.2.2

Components Subject to Aging Management Review

Unit 2

CVCS components that maintain the RCS pressure boundary are evaluated with the reactor coolant system pressure boundary (Section 2.3.1.3). Some system components are evaluated with the primary makeup water systems (Section 2.3.3.7). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Unit 3

CVCS components that maintain the RCS pressure boundary are evaluated with the reactor coolant system pressure boundary (Section 2.3.1.3). A small number of system components are evaluated with the primary makeup water systems (Section 2.3.3.7) and with the component cooling water systems (Section 2.3.3.3). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Table 2.3.3-6-IP2 and Table 2.3.3-6-IP3 list the component types that require aging management review.

Table 3.3.2-6-IP2 and Table 3.3.2-6-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-9321-2736-0	LRA-9321-27363-0
LRA-208168-0	LRA-9321-27513-001-0
LRA-227781-0	

2.3.3.7 Primary Water Makeup

System Description

Unit 2

The purpose of the primary water (PW) system is to provide water for makeup to the primary plant systems as required to support normal plant operation. The PW system includes tanks, piping, valves, pumps, etc. to provide makeup water to various primary systems. The system includes a containment penetration.

The PW system is capable of providing a backup supply of cooling water to safety-related components in the event of a passive failure of the CCW system.

The PW system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide a backup source of cooling water to the CCW system for cooling of the safety injection pumps and residual heat removal pumps.
- Provide containment isolation capability for lines penetrating containment.

The PW system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The PW system has no intended functions for 10 CFR 54.4(a)(3).

Unit 3

The purpose of the PW system is to provide water for makeup to primary plant systems as required to support normal plant operation. The PW system includes tanks, piping, valves, pumps, etc. to provide makeup water to various primary systems. The system also provides a source of fire water to the containment. The system includes a containment penetration and one component is safety-related because it is part of the RWST pressure boundary.

The PW system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Support RWST pressure boundary.

The PW system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The PW system has the following intended function for 10 CFR 54.4(a)(3).

- The system provides a source of fire water to the containment (10 CFR 50.48).

Demineralized Water

The demineralized water system is evaluated with the primary water system.

The purpose of the DW system is to provide demineralized water to support normal plant operation and refueling activities. The system provides demineralized water for the spent fuel pit, refueling cavity, and refueling water storage tank; for decontamination, hydrostatic testing and flushing during refueling outages; and to condensate polisher regeneration through the sluice water pumps. The system also provides a supply of water for fire protection in containment. The system includes safety-related position indications for the containment penetration isolation valves, but the valves themselves are in the PW system; consequently, this system has no safety-related mechanical function.

The DW system no intended function for 10 CFR 54.4(a)(1).

The DW system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The DW system has the following intended function for 10 CFR 54.4(a)(3).

- Provide a supply of water for fire protection in containment (10 CFR 50.48).

UFSAR References

Unit 2: Sections 9.2.2.5.13 and 9.2.2.5.14

Unit 3: PW, Section 9.2.2; DW, Sections 9.6.2.3 and 9.11.1

Components Subject to Aging Management Review

Unit 2

Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Unit 3

Portions of the PW system that support the RWST pressure boundary are evaluated with the safety injection system (Section 2.3.2.4). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Table 2.3.3-7-IP2 and Table 2.3.3-7-IP3 list the component types that require aging management review.

Table 3.3.2-7-IP2 and Table 3.3.2-7-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-9321-2719	LRA-9321-27193-002
LRA-9321-2724	LRA-9321-27243
LRA-9321-2736	LRA-9321-27363
LRA-9321-2737	LRA-9321-27473
LRA-9321-2738	LRA-9321-27513-001
LRA-227781	LRA-9321-27513-002
LRA-235309	

2.3.3.8 Heading, Ventilation and Air Conditioning

System Description

Unit 2

The purpose of heating, ventilation and air conditioning (HVAC) systems is to maintain the area environment for personnel and equipment. The HVAC system code includes various ventilation subsystems serving different areas of the plant. With the exception of the containment cooling and filtration system and a few components associated with the operation of other mechanical systems, the HVAC system encompasses all the ventilation systems and components for Unit 2 and some components from Unit 1. The main HVAC systems supporting plant operation include the following systems. For containment cooling and filtration, see Section 2.3.3.9. For control room HVAC, see Section 2.3.3.10.

Containment Purge Supply and Exhaust

The containment purge supply and exhaust system provides fresh air to purge the containment to allow for personnel access. The system consists of a makeup air unit to supply fresh air to containment, a filtration unit to filter the air released from containment, supply and exhaust ductwork, and the associated containment penetration piping and valves.

The system is not required to be in operation during design basis accidents or for any of the regulated events. The system includes two penetrations that have safety-related piping and valves that support the containment isolation function. Portions of the system are also required for their pressure boundary function to prevent drawing air into the shared fan housing for the containment purge/primary auxiliary building exhaust fans.

Containment Pressure Relief

The containment pressure relief system accommodates normal pressure changes in the containment during reactor power operation. The system consists of a filtration unit, fan, pressure relief ductwork, and the associated containment penetration piping and valves.

The system is not required to be in operation during design basis accidents or for any of the regulated events. The system includes a penetration that has safety-related piping and valves that support the containment isolation function.

Containment Iodine Removal

The containment iodine removal system consists of two auxiliary particulate and charcoal filter units installed in the containment primarily for pre-access cleanup. During power operation, the containment air particulate and gas monitor indications will help determine desirability of using either one or both of these units. These units, wholly contained within containment, are not safety-related or required during design basis accidents and are not required for regulated events.

Control Rod Drive Mechanism Cooling

The control rod drive mechanism cooling system maintains the control rod drive operating coil stacks below their maximum allowable temperature during normal operation. Four fans take a suction from the control rod drive shroud and discharge into the containment atmosphere. This equipment is not required to function during accident conditions nor is it required for the response to the regulated events.

Primary Auxiliary Building Ventilation

The primary auxiliary building ventilation system provides ventilation of the waste hold-up tank pit and the enclosed spaces in the primary auxiliary building (PAB). The waste hold-up tank pit houses the waste hold-up tanks, which are the central collection point for liquid radioactive waste. The primary auxiliary building houses equipment and components required for normal plant operation as well as accident mitigation functions. The primary auxiliary building heating and ventilation system maintains an acceptable operating environment for personnel and equipment during normal operating and post-accident conditions. The system includes supply and exhaust fans with associated ductwork and dampers. Filtration is not credited in any dose consequence analyses.

The primary auxiliary building ventilation system is used during normal operating conditions such as plant start-up, power operation and normal shutdown. Its operation is also required during design basis accidents and is required to support safe shutdown following a fire.

Fuel Storage Building Ventilation

The fuel storage building heating and ventilation system provides heating and ventilation to the fuel storage building, minimizes leakage of unfiltered air from the building during fuel handling operations, and provides filtration of building exhaust. The system includes two fresh air tempering units with supply fans and heaters, exhaust roughing, HEPA and carbon filters, exhaust fan, motor operated dampers, and ducts. The system was originally credited in the fuel handling accident. However, the new analysis described in UFSAR Section 14.2.1.1 using the alternate source term no longer assumes operation of the ventilation system or any holdup of the radionuclides released from the spent fuel pit. Consequently, the system has no safety functions.

Cable Spreading Room/Electrical Tunnel Ventilation

The cable spreading room/electrical tunnel exhaust system provides ventilation of the 33' elevation of the control building. The system consists of two exhaust fans mounted above the tunnel in a plenum. Air is drawn into the cable spreading room via intake louvers on the north and south walls. The system maintains acceptable operating environment for personnel and equipment during normal operating and post-accident conditions. This equipment is required to provide cooling during design basis accidents as well as during regulated events.

480 Volt Switchgear Room Ventilation

The electrical switchgear room ventilation system provides ventilation of the electrical switchgear room on elevation 15' of the control building. The room is ventilated by three fans mounted in the north wall of the control building. The fans take suction from the switchgear room and discharge outside. Air is drawn into the switchgear room via a fixed louver with fire damper. The system maintains an acceptable operating environment for personnel and equipment during normal operating and post-accident conditions. This equipment is required to provide cooling during design basis accidents as well as during regulated events.

Battery Room Exhaust

Battery rooms in the control building and superheater building are provided with exhaust fans to prevent the long term buildup of hydrogen during normal operation when the batteries are charging. These exhaust fans are not required to function during the design basis accidents or during regulated events.

Emergency Diesel Generator Building Ventilation

The emergency diesel generator (EDG) building ventilation system includes exhaust fans, exhaust dampers, and intake louvers. These HVAC components are required for support of diesel operation during design basis accidents as well as regulated events such as the Appendix R safe shutdown.

Auxiliary Feed Pump Room Ventilation

The auxiliary boiler feed pump building heating and ventilation system is used during normal operating conditions. It consists of several exhaust fans to provide cooling during normal plant operation. A roll-up door can be opened to provide cooling for emergency operation of the AFW system. Following a fire, portable blowers can be used to ventilate this area. Therefore, operation of the auxiliary boiler feed pump building heating and ventilation system is not required during design basis accidents or for the response to regulated events.

Diesel Fire Pump House Ventilation

The diesel fire pump house ventilation system cools the structure housing the diesel fire pump. This structure is cooled by louvers; the diesel itself is cooled by fire water. These HVAC components are required to support fire system operation, which is credited in evaluations for 10 CFR 50 Appendix R.

Electric Fire Pump Room Ventilation

The electric fire pumps are located in two rooms in the Unit 1 turbine building. These rooms are cooled by exhaust fans and dampers that operate to provide cooling to the electric fire pumps. These HVAC components are required to support fire system operation, which is credited in evaluations for 10 CFR 50 Appendix R.

Plant Vent

The purpose of the plant vent system is to provide a flowpath for plant ventilation systems to exhaust to atmosphere. The system includes the plant vent duct and some vent flow monitoring instrumentation. The plant vent is not credited as the release point in the offsite dose analyses but, because of its proximity to the control room air intake, is the release point for control room dose calculations.

Shield Wall Area Enclosure Heating and Ventilation System

The IP2 shield wall area enclosure heating and ventilation system is designed to provide heating and ventilation of the shield wall area enclosure. Located in the main enclosure are components and piping associated primarily with the main steam system and feedwater system. The shield wall area enclosure heating and ventilation system is used during normal operating conditions such as plant start-up, power operation and normal shutdown. The operation of this equipment is not required during design basis accidents or for the regulated events.

SBO/Appendix R Diesel Generator Ventilation

Before entering the period of extended operation, IP2 will have completed the installation of a new station blackout (SBO) and Appendix R diesel. The IP2 SBO/Appendix R diesel generator is credited with providing backup power to the plant to assist in safe shutdown following a fire and following station blackout and its associated ventilation equipment is required for this equipment to function. The IP2 SBO/Appendix R diesel will utilize louvers, fire dampers, an exhaust fan, and outlet ductwork. The fan will operate when the diesel is in operation.

Portable HVAC Credited in Appendix R

The Appendix R safe shutdown report indicates that for a fire in certain plant areas, portable blowers and flexible ductwork can be used to ventilate the safe shutdown equipment and are therefore required to support 10 CFR 50 Appendix R. Power can be supplied by portable generators.

Security Diesel Room Ventilation

The IP2 security diesel generator is credited with providing emergency lighting for some areas to support a safe shutdown following a fire. The ventilation equipment that provides cooling to this diesel consists of dampers, ductwork, and an engine driven blower that provides ventilation for the room when the engine is in operation. This ventilation is required for the operation of the security diesel, which is credited with providing power for lighting for 10 CFR 50 Appendix R.

Turbine Hall Ventilation

The turbine building ventilation system draws air in through fixed and adjustable louvers and awning sashes. The air is exhausted by power roof ventilators and wall exhaust fans. This cooling is not required during design basis accidents and not required for plant response to regulated events.

Technical Support Center Ventilation

The technical support center ventilation maintains appropriate environmental conditions in the technical support center. The system includes fans, dampers, filters and cooling equipment. This system performs no safety-related functions during accident conditions and is not required for support of any regulated events.

Administration Building Ventilation

The administration building ventilation system provides heating, ventilation and air conditioning to the administration building personnel and equipment. This system is not required during design basis accidents or regulated events.

The HVAC system has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the integrity of the plant vent and PAB ventilation as a release path to minimize post-accident control room dose.
- Provide containment isolation capability for lines penetrating containment.
- Provide ventilation for components that are required for design basis events.

The HVAC system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The HVAC system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide ventilation during a station blackout (10 CFR 50.63).
- Provide ventilation to support Appendix R safe shutdown (10 CFR 50.48).

Unit 3

The Unit 3 HVAC systems evaluation includes the following HVAC systems. For containment cooling and filtration, see Section 2.3.3.9. For control room HVAC, see Section 2.3.3.10.

Control Building Heating and Ventilation

The purpose of the control building heating and ventilation (CBHV) system is to provide heating and ventilation for the 15' and 33' elevations of the control building. It also provides ventilation to battery rooms 31, 32 and 34 to maintain hydrogen concentrations below maximum acceptable limits during normal plant operation. The system includes dampers, ductwork, heaters, and fans.

The CBHV system has the following intended function for 10 CFR 54.4(a)(1).

- Provide ventilation to the cable spreading room and 480 VAC switchgear rooms at elevations 15' and 33' of the Control Building.

The CBHV system has no intended functions for 10 CFR 54.4(a)(2).

The CBHV system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide ventilation to the cable spreading room and 480 VAC switchgear rooms during an Appendix R event (10 CFR 50.48).
- Provide ventilation system isolation (via fire damper operability) as required during an Appendix R event (10 CFR 50.48).

Fire Barriers

The purpose of the fire barriers (FBAR system) is to provide structural barriers and components for penetrations in the structural barriers that can prevent or delay the spread of fire from one area to the adjoining area. This system code includes fire doors and fire dampers. The system includes fire dampers that also support the operation of HVAC systems such as the diesel generator building HVAC system.

The fire doors and fire dampers are evaluated with their respective structures for their fire barrier function. Fire damper housings that form part of the pressure boundary of an HVAC system within the scope of license renewal are included in the associated HVAC evaluation to ensure the housing function of supporting the HVAC system operation is maintained.

The FBAR system has the following intended function for 10 CFR 54.4(a)(1).

- Support the operation of safety-related HVAC systems.

The FBAR system has no intended functions for 10 CFR 54.4(a)(2).

The FBAR system has the following intended function for 10 CFR 54.4(a)(3).

- Support the operation of HVAC systems required for fire protection (10 CFR 50.48).

Fuel Storage Building Heating and Ventilation

The purpose of the fuel storage building heating and ventilation (FSBHV) system is to provide heating and ventilation to the fuel storage building, minimize leakage of unfiltered air from the building during fuel handling operations, and to provide filtration of building exhaust. The system includes two fresh air tempering units with supply fans and heaters, exhaust roughing, HEPA and carbon filters, exhaust fan, motor operated dampers and ducts.

During normal operation, the fresh air tempering units and exhaust fan operate, as necessary, to ventilate and heat the fuel storage building, with exhaust air passing through the roughing and HEPA filters. During fuel handling operations, the system maintains a slight negative pressure in the building and the system is configured to pass all ventilation exhaust through the roughing filters, HEPA filters, and charcoal filters prior to release through the plant vent.

The system was originally credited in the fuel handling accident. However, the new analysis described in UFSAR Section 14.2.1 using the alternate source term no longer assumes operation of the ventilation system or any holdup of the radionuclides released from the spent fuel pit. Consequently, the system has no safety functions.

The FSBHV system has no intended functions for 10 CFR 54.4(a)(1).

The FSBHV system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The FSBHV system has no intended functions for 10 CFR 54.4(a)(3).

Heating, Ventilation, and Air Conditioning

The purpose of HVAC systems is to maintain the area environment for personnel and equipment. HVAC systems for specific buildings or areas of buildings generally have a separate system code. The HVAC system code includes portions of various ventilation systems serving different areas of the plant. The HVAC system code includes fans and dampers for various areas such as the electrical tunnels, intake structure, and fire pump house. Portable ventilation equipment supporting safe shutdown requirements is also included in this system code.

The HVAC system has the following intended function for 10 CFR 54.4(a)(1).

- Provide ventilation to areas with safety-related equipment including the electrical tunnels, cable spreading room and intake structure.

The HVAC system has no intended functions for 10 CFR 54.4(a)(2).

The HVAC system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide ventilation to areas with fire protection equipment (10 CFR 50.48).
- Provide ventilation to areas with equipment required for Appendix R safe shutdown (10 CFR 50.48).

Primary Auxiliary Building Heating and Ventilation

The purpose of the PABHV system is to provide heating and ventilation of the waste hold-up tank pit and the enclosed spaces in the primary auxiliary building. The waste hold-up tank pit houses the waste hold-up tanks which are the central collection point for liquid radioactive waste. The primary auxiliary building houses equipment and components required for normal plant operation as well as accident mitigation functions. The equipment and components located in the primary auxiliary building include pumps for the component cooling water system, safety injection system, residual heat removal system, containment spray system as well as others. Also located in the primary auxiliary building are tanks associated with the waste disposal system that collect radioactive liquids and gases. The primary auxiliary building heating and ventilation system maintains acceptable operating environment for personnel and equipment during normal operating and post-accident conditions.

The primary auxiliary building (PAB) and tank pit are ventilated by balanced flow between supply and exhaust maintaining a slight negative pressure in the PAB. Air supplied to each building initially enters areas of low contamination. Air is exhausted out of the plant vent from areas of higher contamination by a second set of fans, after passing through filters. Filtration is not credited in any dose consequence analyses.

The PABHV system has the following intended function for 10 CFR 54.4(a)(1).

- Provide ventilation during postulated abnormal and accident conditions to support operation of safety-related pumps and motors.
- Sweep post-LOCA recirculation gases from the PAB to the plant vent.

The PABHV system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The PABHV system has the following intended function for 10 CFR 54.4(a)(3).

- Provide ventilation to Appendix R safe shutdown equipment in the PAB during postulated fires (10 CFR 50.48).

Plant Vent

The purpose of the PV system is to provide a flowpath for plant ventilation systems to exhaust to atmosphere. The system includes the plant vent duct and some vent flow monitoring instrumentation. The plant vent is not credited in the offsite dose analyses; however, it is the release point for control room dose calculations and structural integrity of the plant vent must be maintained for this purpose.

The PV system has the following intended function for 10 CFR 54.4(a)(1).

- Maintain the integrity of the plant vent as a release path to minimize post accident control room dose.

The PV system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Security Heating and Ventilation

The purpose of the SECHV system is to provide heating and ventilation to the security building, including ventilation supporting operation of the security propane generator. The system includes fans, heaters and dampers.

The SECHV system has no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The SECHV system has the following intended function for 10 CFR 54.4(a)(3).

- Support the security propane generator which provides lighting in the yard to illuminate operator access/egress routes used for an Appendix R event (10 CFR 50.48).

Vapor Containment Purge and Supply

The purpose of the VCHVP system is to purge the containment air to the plant vent for dispersion to the environment and provide makeup air to containment. The exhaust air is filtered and monitored before discharging to the plant vent. Radioactivity concentrations inside containment are maintained within acceptable limits by operation of the purge system during reactor shutdown. The purge system is maintained isolated to maintain containment integrity whenever the plant is above the cold shutdown condition. The system includes filters, heating coils, fans, penetration isolation valves, ductwork, instruments and controls. Some system components share a common pressure boundary with PABHV system components.

The VCHVP system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Support PABHV system pressure boundary.

The VCHVP system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The VCHVP system has no intended functions for 10 CFR 54.4(a)(3).

Vapor Containment Pressure Relief

The purpose of the VCPR system is to relieve the normal pressure changes in containment during reactor power operation. This system consists of a pressure relief line equipped with three isolation valves, one inside and two outside the containment. The pressure relief line discharges through roughing, HEPA, and charcoal filters to the plant vent.

The VCPR system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

The VCPR system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The VCPR system has no intended functions for 10 CFR 54.4(a)(3).

The evaluation of HVAC systems also includes the Unit 3 Appendix R diesel generator heating and ventilation system (see Section 2.3.3.16) and the Unit 3 emergency diesel generator heating and ventilation (see Section 2.3.3.14), described below. These heating and ventilation components are part of their respective diesel generator systems and support the intended functions of that system. Remaining Unit 3 HVAC systems have no intended functions and are therefore not within the scope of license renewal.

Appendix R Diesel Generator Heating and Ventilation

The IP3 Appendix R DG is in its own enclosure in the yard. Ventilation to the engine is provided by exhaust fans that draw outside air through covered intake dampers/louvers when ventilation is required. Ventilation to the electrical enclosure and battery enclosure are provided by exhaust fans that draw outside air in through louvers. This equipment is required to support operation of the IP3 Appendix R DG, which is credited for 10 CFR 50 Appendix R requirements and also for station blackout response.

Emergency Diesel Generator Building Heating and Ventilation

The IP3 EDG building houses and protects the emergency diesel generators. The rooms have outside air fixed louvers, pneumatically operated adjustable louvers and exhaust fans with motor operated discharge dampers. The pneumatically operated dampers operate from control air supplied by the EDG starting air system. Operation of EDG building ventilation is relied upon to support EDG operations during design basis accidents and during regulated events.

UFSAR References

Unit 2

Containment systems	Section 5.3.2
PAB HVAC	Section 9.8
Fuel storage building ventilation	Section 9.10

Unit 3

Fire barriers (FBAR)	Section 9.6.2.2
FSBHV	Sections 1.3.6, 9.5 and 14.2.1
PABHV	Section 9.8
VCHVP	Section 5.3.2.3
VCPR	Section 5.3.2.5

Remaining Unit 2 and Unit 3 systems are not described in the UFSARs.

Components Subject to Aging Management Review

Unit 2

Some HVAC components are evaluated with the compressed air systems (Section 2.3.3.4) or with containment cooling and filtration systems (Section 2.3.3.9). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components, including portable ventilation equipment used following a fire, are reviewed as listed below.

Unit 3

Instrument air volume tanks, tubing and valves in the vapor containment pressure relief system needed for the containment penetration valves to close are evaluated with the compressed air systems (Section 2.3.3.4). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components, including damper housings that have a HVAC pressure boundary function, are reviewed as listed below.

Table 2.3.3-8-IP2 and Table 2.3.3-8-IP3 list the component types that require aging management review.

Table 3.3.2-8-IP2 and Table 3.3.2-8-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-9321-4022-0	LRA-9321-40223-0
	LRA-9321-41023-001-0
	LRA-9321-41683-0

2.3.3.9 Containment Cooling and Filtration

System Description

Unit 2

The purpose of the containment cooling and filtration (CCF) system is to provide containment cooling. Air recirculation cooling during normal operation is accomplished using air handling units discharged into a common header ductwork distribution system to ensure adequate flow of cooled air throughout the containment. Each air-handling unit consists of the following equipment arranged so that, during normal and accident operation, air flows through the unit in the following sequence: cooling coils, moisture separators (demisters), centrifugal fan with direct-drive motor, and distribution header. The heat is rejected to cooling coils supplied by the service water system. These units provide cooling for normal operation, emergency operation, and during safe shutdown following a fire.

The CCF system has the following intended function for 10 CFR 54.4(a)(1).

- Remove heat from the reactor containment building following the initial phase of a loss-of-coolant accident or steam line break inside the containment.

The CCF system has no intended functions for 10 CFR 54.4(a)(2).

The CCF system has the following intended function for 10 CFR 54.4(a)(3).

- Support safe shutdown for Appendix R (10 CFR 50.48) and station blackout (10 CFR 50.63) by maintaining ambient temperature inside containment such that operator entry can be made in order to perform manual valve manipulations.

Unit 3

The purpose of the vapor containment building ventilation (VCV) system is to provide recirculation cooling and filtration in containment to remove the normal heat losses from equipment and piping in containment during plant operation, assure personnel access and safety during shutdown, and depressurize the containment vessel following an accident. Air recirculation cooling and filtering during normal operation is accomplished using all five air handling units discharged to a common header ductwork distribution system. Each air handling unit consists of cooling coils, centrifugal fan with direct-drive motor, and distribution header. In the event of an accident, the flow path will first be diverted through a compartment containing moisture separators, HEPA filters and charcoal filters. Dose analyses for some accidents credit fission product removal by the HEPA filters, but the charcoal filters are not credited in any analyses.

The VCV system has the following intended function for 10 CFR 54.4(a)(1).

- Provide post-accident containment atmosphere cooling, depressurization and fission product removal.

The VCV system has no intended functions for 10 CFR 54.4(a)(2).

The VCV system has the following intended function for 10 CFR 54.4(a)(3).

- Provide containment atmosphere cooling for Appendix R safe shutdown (10 CFR 50.48).

UFSAR References

Unit 2: Sections 5.3.2.2 and 6.4.2

Unit 3: Sections 5.3.2.2 and 6.4.2

Components Subject to Aging Management Review

Unit 2 and Unit 3

System components are reviewed as listed below.

Table 2.3.3-9-IP2 and Table 2.3.3-9-IP3 list the component types that require aging management review.

Table 3.3.2-9-IP2 and Table 3.3.2-9-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-9321-F-4022-0	LRA-9321-F-40223-0
LRA-209762-0	LRA-9321-F-27223-0

2.3.3.10 Control Room Heating, Ventilation and Cooling

System Description

Unit 2

The purpose of the control room ventilation system is to maintain the central control room (CCR) in a safe, habitable environment during normal operation and under accident conditions. The system includes an air conditioning unit with fan, steam heating coil, and roughing filter to recirculate air inside the control room, and a backup fan in parallel with the air conditioning unit. The system also includes a filter unit consisting of HEPA filters, charcoal filters, post-filters, and booster fans to permit filtration of incoming air, which provides a slight positive pressure in the control room during accident conditions. System ducts, dampers and controls allow three system operating modes: Mode 1 (Normal Operation), with outside air makeup; Mode 2 (Safety Injection or High Radiation), outside filtered air; and Mode 3 (Toxic Gas or Smoke), all outside air isolated. Operation of this system, including the filtration of incoming air, is credited in control room dose analyses.

Unit 1 and Unit 2 share a central control room. The Unit 1 control room ventilation equipment for the central control room has been modified for recirculation mode only. The Unit 1 control room ventilation equipment is not credited for cooling or filtration.

The CCR HVAC system has the following intended function for 10 CFR 54.4(a)(1).

- Maintain a suitable environment in the main control room for operating personnel and safety-related equipment.
- Provide filtration of incoming air and maintain a positive pressure in the control room.

The CCR HVAC system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The CCR HVAC system has the following intended function for 10 CFR 54.4(a)(3).

- Provide system isolation (via damper operability) as required during an Appendix R event (10 CFR 50.48).

Unit 3

The purpose of the CRHV system is to maintain the CCR in a safe, habitable environment during normal operation and under accident conditions. The fresh air intake duct supplying make-up air to the control room is provided with air-operated dampers to divert this air through carbon filters or close off this supply to the control room completely. The control room air conditioning, heating and ventilation system consists of two air conditioning units with fans and roughing filters; roughing, HEPA and charcoal filters; charcoal filter booster fans; and heaters, exhaust fans, and duct system with dampers, controls and instrumentation. The system also includes five independent air conditioning units that supplement the cooling capacity of the water-cooled air conditioning units. Each supplemental unit has an evaporator and electric heater wall-mounted in the control room.

The CRHV system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide ventilation as required to maintain the desired temperature and relative humidity inside the CCR during accident conditions.
- Provide filtering of airborne radioactive particulates entering the CCR (via the 10% incident mode) to ensure that the radiological exposures to the CCR operators are within acceptable limits during accident conditions involving radioactive release.
- Maintain a slight positive pressure in the CCR (via the 10% incident mode) during accident conditions involving radioactive release to prevent infiltration.
- Maintain habitability of the CCR with no makeup (100% recirculation) air during an accidental release of toxic gases.

The CRHV system has no intended function for 10 CFR 54.4(a)(2).

The CRHV system has the following intended functions for 10 CFR 54.4(a)(3).

- Maintain the CCR temperature during an Appendix R event (10 CFR 50.48) (function may also be performed by the CCR supplemental cooling units).
- Provide ventilation system isolation (via damper operability) as required during an Appendix R event (10 CFR 50.48).

UFSAR References

Unit 2: Section 9.9

Unit 3: Section 9.9

Components Subject to Aging Management Review

Unit 2

Control room HVAC components are reviewed as listed below.

Unit 3

Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Table 2.3.3-10-IP2 and Table 2.3.3-10-IP3 list the component types that require aging management review.

Table 3.3.2-10-IP2 and Table 3.3.2-10-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-252665	LRA-9321-41023-002
LRA-138248	LRA-9321-27223

2.3.3.11 Fire Protection – Water

System Description

Unit 2

The purpose of the fire protection (FP) system is to provide fire protection for the station through the use of water, dry chemicals, foam, detection and alarm systems, and rated fire barriers, doors, and dampers. Passive mechanical components in the FP system include many fire-fighting subsystem components and features, such as piping, fire dampers, valves, hydrants, portable fire extinguishers, a 300,000 gallon fire water tank, etc. Also included in this system code are the Unit 1 fire pumps and some associated Unit 1 fire protection components such as hydrants, valves, fire extinguishers, and strainers. Plant drain components in the FP system are passive fire protection features required to assure adequate protection of safety-related equipment from water damage in areas containing fixed suppression systems.

The fire protection system is evaluated as fire protection – water in this section and fire protection – CO_2, halon, and RCP oil collection systems in Section 2.3.3.12.

The fire protection – water system draws water from two storage tanks: a 1.5 million-gallon storage tank supplied by the city water distribution system for fire protection purposes, and a 300,000-gallon fire water storage tank (FWST) supplied with city water, which is provided as a redundant water supply for the water-based fire protection systems. The pumping facilities consist of two electric fire pumps taking suction from the site city water main. There are also two small electric pressure maintenance pumps provided to maintain pressure on the fire water system. A diesel fire pump is provided for redundant pumping capabilities and normally takes suction from the FWST. The pumping facilities provide flow and pressure requirements for the water-based fire protection systems. The fire protection water distribution system consists of outdoor underground piping, indoor distribution piping, isolation valves, strainers, hose stations, and outdoor hydrants. The water-based fire suppression systems include the wet pipe sprinkler systems, pre-action sprinkler systems, deluge water spray systems, foam water spray systems, and hydrants and hose stations.

The FP – water system has no intended functions for 10 CFR 54.4(a)(1).

The FP – water system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.
- Provide a backup source of makeup water to the spent fuel pit.

The FP – water system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide fixed automatic and manual fire suppression (including hydrants, hose stations and portable extinguishers) to extinguish fires in vital areas of the plant (10 CFR 50.48).
- Assure adequate protection of safety-related equipment from water damage in areas susceptible to flooding (10 CFR 50.48).
- Assure that drain systems in areas containing combustible materials prevent the spreading of fires into other areas of the plant (10 CFR 50.48).

Unit 3

The purpose of all fire protection systems is to provide fire protection for the station through the use of water, foam, halon, detection and alarm systems, and rated fire barriers, doors, and dampers. The fire water system components are identified in system code FRW. This includes fire water and foam subsystem pumps, piping, hydrants, hose reels, valves, tanks, drains, etc. The fuel oil supply to the fire pump house diesel is also included in this system code. Fire protection systems include the fire detection and alarm system, described below. For CO_2 and halon systems, see Section 2.3.3.12, Unit 3 systems. For the fire barrier system code, see Section 2.3.3.8, Heating, Ventilation and Air Conditioning, Unit 3 systems.

Fire Water

The fire water (FRW) system includes two ground level storage tanks supplied by the city water distribution system. Heating provisions for the storage tanks consists of two sets of dual electric heaters and two sets of dual circulating pumps. The pumping facilities maintain system pressure and provide makeup for system leakage by jockey pumps. There are two main fire pumps provided for automatically supplying water in the event of a fire. One pump is electric motor driven and the other is diesel engine driven. The pumping facilities provide flow and pressure requirements for the water-based fire protection systems. The fire protection water distribution system consists of outdoor underground and above-ground piping and indoor distribution piping in all buildings except the containment building. Demineralized water piping is used for fire protection inside containment. Unit 3 underground piping has two inter-connections with the Unit 1 fire protection system. These inter-connections represent defense-in-depth for the Unit 3 fire protection systems with respect to both water supply and pumping capacity. The distribution system also consists of isolation valves, strainers, hose stations, and outdoor hydrants. The distribution piping delivers anticipated fire water requirements to individual suppression systems. The yard hydrants provide an effective hose stream protection for exterior hazards and for supplementary use for fire conditions within the main buildings of the plant. The water-based fire suppression systems include the wet pipe sprinkler systems, pre-action sprinkler systems, deluge water spray systems, foam water spray systems, and hydrants and hose stations.

Areas with safety-related equipment or equipment required for safe plant shutdown that are provided with automatically operated fire protection have either gravity or pump drains designed to handle the maximum quantity of spray water to prevent local flooding. The FRW system includes plant drain components that protect safety-related equipment from the effects of failure of class III components.

The fire water system can be used to provide makeup to the spent fuel pit. This is not a safety function but is included as a license renewal intended function.

The fire protection – water system has no intended functions for 10 CFR 54.4(a)(1).

The fire protection – water system has the following intended function for 10 CFR 54.4(a)(2).

- Support makeup from the fire water system to the spent fuel pit.
- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The fire protection – water system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide fixed automatic and manual fire suppression (including hydrants, hose stations and portable extinguishers) to extinguish fires in vital areas of the plant (10 CFR 50.48).
- Assure adequate protection of safety-related equipment from water damage in areas susceptible to flooding (10 CFR 50.48).

Fire Detection and Alarm

The purpose of the fire detection and alarm (FDA) system is to transmit fire alarm and supervisory signals to the control room where audible and visual alarms are provided. The system includes signals for actuation of fire detectors, status of most installed fire suppression systems, control and indicating lights for the fire pumps, level indicators for the fire water storage tanks, and door status indicating lights for operator notification of critical fire doors. The FDA system is primarily an electrical system; however, it does include instrument air valves and piping that are part of a fire alarm in the electrical tunnel. The alarm actuates on a loss of pressure within the piping.

The FDA has no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The FDA has the following intended function for 10 CFR 54.4(a)(3).

- Support a fire alarm in the electrical tunnel (10 CFR 50.48).

UFSAR References

Unit 2: Section 9.6.2

Unit 3: Section 9.6.2.3; FDA, Section 9.6.2.4

Components Subject to Aging Management Review

Unit 2

The drain portion of the system is evaluated with plant drains (Section 2.3.3.18). The fuel oil subsystem components are evaluated with fuel oil systems (Section 2.3.3.13). A small number of components are evaluated with city water systems (Section 2.3.3.17). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Unit 3

The mechanical portions of the FDA system are in scope for license renewal, but the pressure boundary for the instrument air piping is not required for the system to perform its intended function. Therefore, the components are not subject to aging management review.

The drain portion of the system is evaluated with plant drains (Section 2.3.3.18). The fuel oil subsystem components are evaluated with fuel oil systems (Section 2.3.3.13). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Table 2.3.3-11-IP2 and Table 2.3.3-11-IP3 list the component types that require aging management review.

Table 3.3.2-11-IP2 and Table 3.3.2-11-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2

- LRA-9321-4006
- LRA-227551
- LRA-227552
- LRA-227553

Unit 2 (cont.)

- LRA-227554
- LRA-193183
- LRA-192506

Unit 3

- LRA-9321-40903
- LRA-9321-40913

2.3.3.12 Fire Protection – CO_2, Halon, and RCP Oil Collection Systems

System Description

Unit 2

The purpose of the fire protection (FP) system is to provide fire protection for the station through the use of water, dry chemicals, foam, detection and alarm systems, and rated fire barriers, doors, and dampers. Passive mechanical components in the FP system include many fire-fighting subsystem components and features, such as piping, fire dampers, valves, hydrants, portable fire extinguishers, a 300,000 gallon fire water tank, etc. Also included in this system code are the Unit 1 fire pumps and some associated Unit 1 fire protection components such as hydrants, valves, fire extinguishers and strainers.

The fire protection system is evaluated as fire protection – CO_2, halon, and RCP oil collection systems in this section and fire protection – water in Section 2.3.3.11.

The fire protection – CO_2, halon, and RCP oil collection system consists of fixed fire suppression systems utilizing carbon dioxide (CO_2) and bromotrifluoromethane (Halon 1301) as well as oil leakage collection for the reactor coolant pumps (RCPs). The CO_2 and halon systems consist of gas storage tanks and the necessary piping, valves, and instrumentation. The RCP oil collection system consists of drain pans, collection tanks and the necessary piping, valves, and instrumentation to collect any leakage of the RCP lube oil system.

The Unit 2 fire protection – CO_2 system is not required to meet the requirements of 10 CFR 50.48 and is therefore not within the scope of license renewal.

A fixed halon fire suppression system is used to meet 10 CFR 50.48 requirements for the cable spreading room. The halon system for the cable spreading room is a total flooding, manually actuated system that is divided into four zones of discharge nozzles.

The reactor coolant pump oil collection system is capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems. Leakage is collected and drained to a vented closed tank that can hold the required lube oil system inventory.

The FP – halon and RCP oil collection systems have no intended functions for 10 CFR 54.4(a)(1).

The RCP oil collection system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The FP – halon and RCP oil collection systems have the following intended functions for 10 CFR 54.4(a)(3).

- Provide fixed automatic and manual fire suppression to extinguish fires in vital areas of the plant (10 CFR 50.48).
- Provide each reactor coolant pump with an oil collection system that is designed to contain and direct the oil to remote storage containers in the event of an oil leak.

Unit 3

The purpose of the fire protection systems is to provide fire protection for the station through the use of water, foam, halon, detection and alarm systems, and rated fire barriers, doors, and dampers. Fire water system components are in system code FRW, which is evaluated in Section 2.3.3.11. For the fire barrier (FBAR) system code, see Section 2.3.3.8, Heating, Ventilation and Air Conditioning, Unit 3 systems.

The FP – CO_2, halon and RCP oil collection systems for IP3 are in the following system codes:

- the CO_2 system is in system code CO_2;
- Halon is in system code HAL; and
- the RCP oil collection components are in system code RCS.

CO_2

The purpose of the CO_2 system is to provide fire protection and to provide CO_2 gas to purge the main generator. The CO_2 fire protection system is provided with two ten-ton capacity low pressure tanks, a distribution header and associated piping and valves. An automatic total flooding carbon dioxide fire suppression system is provided to protect the 480V switchgear room, cable spreading room, diesel generator rooms and the turbine generator exciter enclosure.

A local application CO_2 fire suppression system is provided to protect hazards in the turbine building, including the main boiler feedwater pumps, turbine governor, main steam and re-heat valves, and generator bearings.

Before maintenance work is performed on the main generator, the hydrogen gas must be evacuated from the system. Inert carbon dioxide gas from a carbon dioxide gas vaporizing system is used to purge the generator. The Unit 2 CO_2 gas vaporizing system may also be used through a supply line from the Unit 1 intake structure area.

Halon

The purpose of the HAL system is to suppress fires in the administration/service building in the technical support center computer room. Halon is also used in the Appendix R diesel enclosure and in the meteorological building. Halon is not used to protect any safety-related plant equipment. Protection of the Appendix R diesel from fire is not itself an Appendix R required function.

For Unit 3, the halon system has no intended functions for 10 CFR 54.4(a)(1), (a)(2) or (a)(3).

RCP Oil Collection

The RCP oil collection system is designed, engineered, and installed such that an RCP lube oil system failure will not lead to fire during normal or design basis accident conditions and will not fail in a manner to impact the capability of any safety-related system during the safe shutdown earthquake. The collection system is capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems. Leakage is collected and drained to a vented closed tank that can hold the required lube oil system inventory. A flame arrester in each tank vent prevents fire flashback.

The collection system consists of leak proof enclosures or pans under oil-bearing components to contain oil from leaks.

The FP – CO_2 and RCP oil collection systems have no intended functions for 10 CFR 54.4(a)(1).

The RCP oil collection system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The FP – CO_2 and RCP oil collection systems have the following intended functions for 10 CFR 54.4(a)(3).

- Provide automatic and manual CO_2 flooding for areas of the plant that (1) contain safety-related equipment and/or (2) pose significant hazards to areas containing safety-related equipment (10 CFR 50.48).

- Provide each reactor coolant pump with an oil collection system that is designed to contain and direct the oil to remote storage containers in the event of an oil leak.

UFSAR References

Unit 2: Section 9.6.2

Unit 3: CO_2, Sections 9.6.2.3 and 10.2.2; Halon, Section 9.6.2

Components Subject to Aging Management Review

Fire protection – CO_2, halon, and RCP oil collection systems components are reviewed as listed below.

Table 2.3.3-12-IP2 and Table 2.3.3-12-IP3 list the component types that require aging management review.

Table 3.3.2-12-IP2 and Table 3.3.2-12-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-D-8775-002-0	LRA-9321-24403-0
LRA-D-8775-004-0	LRA-9321-51081-0
LRA-D-8775-005-0	
LRA-1952M015-0	
LRA-9321-23523-0	

2.3.3.13 Fuel Oil

<u>System Description</u>

This evaluation covers fuel oil systems for Unit 2 and 3 emergency diesel generators, Unit 2 security diesel generator, Unit 2 and 3 Appendix R diesel generators, and Unit 2 and 3 fire protection diesel-driven fire pumps. The fuel oil supply components for these systems are components in their respective systems but are evaluated together as fuel oil components. The grouping of similar components from various plant systems into one consolidated review is appropriate, as stated in NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants*, Section 2.1.3.1.

<u>Unit 2</u>

Fuel Oil

The Unit 2 fuel oil (FO) system code includes the 1,000,000-gallon Unit 1 fuel oil tank and many of the associated Unit 1 components. This system code does not include the safety-related fuel oil components associated with the emergency diesel generators and does not contain any safety-related components. The FO system includes components that supply the bulk fuel oil to site components, including the house heating boiler and the bulk fuel oil supply to Unit 3. This tank and associated piping are not required to support fire diesel or EDG operation, since these components have separate fuel oil tanks.

The FO system has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

The FO system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Gas Turbine System

The gas turbine system description is included in the fuel oil section because its only intended function for license renewal is performed by its fuel oil subsystem.

The purpose of the gas turbine (GT) system is to provide an alternate source of standby power for the site. Gas turbine Unit 1 is located adjacent to the Unit 1 turbine building. Gas turbine Units 2 and 3 are located at the Buchanan substation. The gas turbines have been credited as an alternate power supply for the Appendix R and station blackout events; however, these functions will be assumed by the IP2 SBO/Appendix R diesel generator (SBO/ARDG) prior to the period of extended operation.

The fuel supply for gas turbines in the Unit 2 GT system supplies dedicated fuel capacity to supplement fuel oil storage for the Unit 2 and Unit 3 EDGs. This shared fuel storage consists of two onsite 30,000-gallon fuel oil tanks and a 200,000-gallon storage tank located at the Buchanan substation site. A minimum of 29,000 gallons from these storage tanks is dedicated for use by the emergency diesel generators. The tanks are not directly connected to the EDG fuel oil storage tanks, but trucking facilities exist to ensure oil can be transferred within one day's notice.

The GT system has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

The GT system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain an oil supply for use by the Unit 2 and Unit 3 emergency diesel generators.

Unit 3

Unit 3 has no system code for fuel oil. Each system that uses fuel oil includes these components in its respective system.

Fuel Oil Subsystems, Both Units

The fuel oil subsystems included in this evaluation are as follows. Except where noted, these descriptions apply to both units.

Emergency Diesel Generators

Diesel fuel oil storage and transfer systems supply fuel to the emergency diesel generators with each having their own fuel oil day tank plus an underground storage tank. The day tanks are located within the diesel-generator buildings. The fuel is fed from the day tank by an engine-driven fuel oil pump to supply the engine. The day tank is automatically filled during engine operation from its dedicated underground storage tank located adjacent to the diesel-generator building. Each underground storage tank is provided with a motor-driven transfer pump to transfer fuel to the day tank.

Fire Protection Diesel Engines

Independent diesel fuel oil storage and transfer systems supply fuel to the fire protection diesel engines for Unit 2 and Unit 3. The Unit 2 fuel oil storage tank, pump, and associated components are located in the Unit 2 diesel fire pump house. The Unit 3 fuel oil storage tank and components are located in the Unit 3 fire protection pump house.

IP2 Security Diesel Generator

An independent diesel fuel oil storage and transfer system supplies fuel to the Unit 2 security diesel generator, which has its own fuel oil day tank located within the security access building diesel generator room plus an independent underground storage tank adjacent to the building.

Appendix R Diesel Generators

An independent diesel fuel oil storage and transfer system supplies fuel to the Unit 2 SBO/ Appendix R diesel generator (see Section 2.3.3.16) using the gas turbine fuel oil storage tanks and transfer pumps located in the oil room. The SBO/Appendix R diesel generator has its own day tank, which supplies fuel to the engine. The day tank is automatically filled during engine operation from the storage tanks by the transfer pumps.

An independent diesel fuel oil storage and transfer system supplies fuel to the Unit 3 Appendix R diesel generator, which has its own fuel oil day tank plus an underground storage tank. The day tank supplies fuel directly to the engine. The fuel oil day tank is automatically filled during engine operation from its storage tank by a transfer pump.

Fuel oil subsystems have the following intended function for 10 CFR 54.4(a)(1).

- Support operation of systems which perform a safety function.

Fuel oil subsystems have the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Fuel oil subsystems have the following intended function for 10 CFR 54.4(a)(3).

- Support operation of systems credited for meeting the requirements of station blackout (10 CFR 50.63) and for fire protection (10 CFR 50.48).

UFSAR References

Unit 2: EDGs, Section 8.2.3; GT, Sections 8.1 and 8.2

Unit 3: EDGs, Sections 8.2, 16.1.3; shared fuel oil storage tanks for EDGs (tanks in the IP2 GT system), Section 1.3.1

Components Subject to Aging Management Review

Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Table 2.3.3-13-IP2 and Table 2.3.3-13-IP3 list the component types that require aging management review.

Table 3.3.2-13-IP2 and Table 3.3.2-13-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2

LRA-9321-2030
LRA-227551
LRA-400881
LRA-260586
LRA-304122
LRA-302773

Unit 3

LRA-9321-20303
LRA-9321-40903
LRA-9321-21213

2.3.3.14 Emergency Diesel Generators

System Description

Unit 2

The purpose of the emergency diesel generator (EDG) system is to supply emergency shutdown power in the event of loss of all other AC auxiliary power. The emergency diesel generator system consists of three emergency diesel generator sets, each consisting of a diesel engine coupled to a 480 volt generator. Each emergency diesel is automatically started by two redundant air motors, each unit having an air storage tank and compressor system. Each diesel includes its own starting air subsystem, fuel oil subsystem, intake air subsystem, exhaust subsystem, lube oil subsystem, and jacket water cooling subsystem. The system also includes ventilation equipment for the diesel generator building.

The EDG system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide reliable source of backup emergency power for the ESF loads that are required during a design basis accident concurrent with a loss of offsite power.

The EDG system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The EDG system has the following intended function for 10 CFR 54.4(a)(3).

- Provide sufficient emergency backup power during an Appendix R event (10 CFR 50.48).

Unit 3

The purpose of the emergency diesel generator system is to supply emergency shutdown power in the event of loss of all other AC auxiliary power. The emergency diesel generator system consists of three emergency diesel generator sets, each consisting of a diesel engine coupled to a 480-volt generator. Each emergency diesel is automatically started by two redundant air motors, each unit having an air storage tank and compressor system. Each diesel includes its own starting air subsystem, fuel oil subsystem, intake air subsystem, exhaust subsystem, lube oil subsystem, and jacket water cooling subsystem. The system also includes ventilation equipment for the diesel generator building.

The emergency diesel generator system includes the system codes EDG and EG. The EDG system code includes various components of the diesel generator supporting systems but does not include the diesel generators themselves. The EG system code includes various components of the diesel generator supporting systems and includes the diesels generators.

The EDG system has the following intended function for 10 CFR 54.4(a)(1).

- Supply emergency shutdown power in the event of loss of all other AC auxiliary power, with adequate capacity to supply the engineered safety features for the hypothetical accident concurrent with loss of outside power.

The EDG system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The EDG system has the following intended function for 10 CFR 54.4(a)(3).

- Provide generating capacity to service loads important-to-safety during an Appendix R event (10 CFR 50.48).

Emergency Generator

The emergency diesel generator system includes the system codes EDG and EG. The EG system code includes various components of the diesel generator supporting systems and includes the diesels generators.

The EG system has the following intended function for 10 CFR 54.4(a)(1).

- Supply emergency shutdown power in the event of loss of all other AC auxiliary power, with adequate capacity to supply the engineered safety features for the hypothetical accident concurrent with loss of outside power.

The EG system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The EG system has the following intended function for 10 CFR 54.4(a)(3).

- Provide generating capacity to service loads important-to-safety during an Appendix R event (10 CFR 50.48).

UFSAR References

Unit 2: Section 8.2.3

Unit 3: Sections 8.2 and 16.1.3

Components Subject to Aging Management Review

Unit 2

Some of the valves in this system code are part of the service water system pressure boundary and are evaluated with the service water system (Section 2.3.3.2). The fuel oil subsystem components are evaluated with fuel oil (Section 2.3.3.13). A small number of components are evaluated with the city water system (Section 2.3.3.17). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Unit 3

The HVAC components that are part of this system code are evaluated with HVAC systems (Section 2.3.3.8). The fuel oil subsystem components are evaluated with fuel oil (Section 2.3.3.13). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Table 2.3.3-14-IP2 and Table 2.3.3-14-IP3 list the component types that require aging management review.

Table 3.3.2-14-IP2 and Table 3.3.2-14-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*	*Unit 3 (cont.)*
LRA-9321-2722	LRA-9321-27223	LRA-9321-20283
LRA-9321-2028	LRA-9321-20293	LRA-9321-41023-001
LRA-9321-2029	LRA-9321-21193	
LRA-A207698		

2.3.3.15 Security Generators

System Description

Unit 2

The purpose of the security (SEC) system is to provide plant security equipment. The majority of the equipment in this system is not mechanical. The security diesel is included in system code SEC. The security diesel provides back up electrical power to security equipment, including lighting used to illuminate the operator access/egress routes used during an Appendix R event.

The SEC system has no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The SEC system has the following intended function for 10 CFR 54.4(a)(3).

- Provide power for lighting in the yard to illuminate operator access/egress routes for an Appendix R event (10 CFR 50.48).

Unit 3

The purpose of the security propane generator (SPG) is to provide power to the security lighting system and other security functions. A portion of this security lighting is credited with meeting Appendix R III.J (emergency lighting) to illuminate access and egress to the Appendix R diesel generator, the main and backup service water pumps, condensate storage tank, and refueling water storage tank.

The SPG system has no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The SPG system has the following intended function for 10 CFR 54.4(a)(3).

- Provide lighting in the yard to illuminate operator access/egress routes used for an Appendix R event (10 CFR 50.48).

UFSAR References

Unit 2: None

Unit 3: Section 9.6.2.6

Components Subject to Aging Management Review

Unit 2

The fuel oil subsystem components are evaluated with fuel oil (Section 2.3.3.13). Remaining components are reviewed as listed below.

Unit 3

Security generator components are reviewed as listed below.

Table 2.3.3-15-IP2 and Table 2.3.3-15-IP3 list the component types that require aging management review.

Table 3.3.2-15-IP2 and Table 3.3.2-15-IP3 provide the results of the aging management review.

License Renewal Drawings

No license renewal drawings are provided for the security generators as there are no flow diagrams associated with these components.

2.3.3.16 Appendix R Diesel Generators

<u>System Description</u>

<u>Unit 2</u>

The purpose of the SBO/Appendix R diesel generator (SBO/ARDG) system is to provide power to selected equipment and power supplies relied on for Appendix R and station blackout events. The SBO/Appendix R diesel generator is capable of providing sufficient power for safe shutdown loads.

The SBO/Appendix R diesel generator (SBO/ARDG) will be the source of alternate AC power credited for IP2 compliance with 10 CFR 50.63 continuing through the period of extended operation. The SBO/ARDG will replace the gas turbines to provide power for Appendix R and station blackout events. The integrated plant assessment for license renewal identified the SBO/ARDG as within the scope of license renewal.

The SBO/Appendix R diesel will be located inside the Unit 1 turbine building. The SBO/Appendix R diesel generator installation will be a self-contained package that is designed to operate upon a complete loss of power. The package contains batteries, a battery charger, jacket water heater and cooler, jacket water pump, lube oil heater and cooler, lube oil pump, and necessary filters and strainers. The SBO/Appendix R diesel generator can supply the safe shutdown loads through the 6.9 kV distribution and the emergency 480 V buses and motor control centers or the turbine building switchgear and motor control centers.

The SBO/ARDG system has no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The SBO/ARDG system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide power to selected equipment and power supplies relied on for Appendix R (10 CFR 50.48) and station blackout (10 CFR 50.63) events.

<u>Unit 3</u>

The purpose of the ARDG system is to provide power to selected equipment and power supplies relied on for Appendix R and station blackout events. The Appendix R diesel generator is capable of providing sufficient power for safe shutdown loads. The diesel was installed in compliance with 10 CFR 50 Appendix R, but also supports compliance with SBO requirements. The Appendix R diesel is located in a separate structure in the yard area. The Appendix R diesel generator installation is a self-contained package that is designed to operate upon a complete loss of power. The package contains a starting air compressor, batteries, a battery charger, jacket water heater, lube oil heater, fuel oil pump and lube oil pumps, and necessary filters and strainers. The Appendix R diesel generator can supply the safe shutdown loads through the 6.9 kV distribution and the emergency 480 V buses and motor control centers or the turbine building switchgear and motor control centers.

The ARDG system has no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The ARDG system has the following intended function for 10 CFR 54.4(a)(3).

- Provide power to selected equipment and power supplies relied on for Appendix R (10 CFR 50.48) and station blackout (10 CFR 50.63) events.

UFSAR References

Unit 2: None

Unit 3: Sections 8.1.1 and 8.2.3

Components Subject to Aging Management Review

Unit 2

Fuel oil supply components are evaluated with fuel oil (Section 2.3.3.13). Ventilation for the ARDG system is evaluated with HVAC systems (Section 2.3.3.8). Remaining components are reviewed as listed below.

Unit 3

Fuel oil supply components are evaluated with fuel oil (Section 2.3.3.13). Ventilation for the ARDG system is evaluated with HVAC systems (Section 2.3.3.8). Remaining components are reviewed as listed below.

Table 2.3.3-16-IP2 and Table 2.3.3-16-IP3 list the component types that require aging management review.

Table 3.3.2-16-IP2 and Table 3.3.2-16-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2

LRA-400882
LRA-400885

Unit 3

LRA-9321-21203
LRA-9321-21223
LRA-9321-21233

2.3.3.17 City Water

System Description

Unit 2

The purpose of the city water (CYW) system is to provide water to various components throughout the plant. The CYW system was originally installed for Unit 1, but it now has functions for all three units. The CYW system code designator includes the Unit 1 and Unit 2 components. Water is supplied to the CYW system from the Village of Buchanan. The boundary of the plant system begins with the supply piping from the water main and includes pressure regulating valves, strainers, water meters and backflow preventers. After metering, the water flows to a manifold which allows the water to either flow directly to the plant or to the 1.5 million-gallon city water storage tank for storage. City water is used for a variety of purposes throughout the plant, including supply to the fire protection systems, SBO/Appendix R diesel generator (see Section 2.3.3.16), and sanitary and potable facilities, such as emergency showers, eye wash stations, humidifiers, hose connections, sinks, water coolers, water heaters, and lavatories. Water is supplied to radiation monitors for purging and various equipment for makeup or cooling.

City water may also be used for emergency purposes such as a backup supply to the auxiliary feedwater pumps. The system is also a backup to CCW for bearing and seal water cooling for the charging pumps, safety injection pumps, and residual heat removal pumps.

The CYW system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation for the city water piping containment penetration.

The CYW system has the following intended functions for 10 CFR 54.4(a)(2).

- Provide an emergency backup supply of water from the city water storage tank to the AFW systems of both Units 2 and 3 for cooling the RCS when condensate storage tank (CST) water supply is exhausted.
- Provide a backup source of make-up water for the spent fuel pit.
- Provide a backup source of cooling water to the CCW system for cooling the charging pumps, safety injection pumps, and residual heat removal pumps.
- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The CYW system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide a supply of water (from the city water tank) to fire protection system components including the fire pumps, fire hydrants, hose reel stations inside containment, fire water tank, and various sprinkler and deluge systems (10 CFR 50.48).

- Provide a supply of water to the chemical and volume control systems for cooling ancillary components associated with the charging pumps following a fire (10 CFR 50.48).
- Support safe shutdown in the event of a fire in the auxiliary feed pump room (10 CFR 50.48) (see Section 2.3.4.5).
- Provide water supply to the SBO/Appendix R diesel generator following Appendix R (10 CFR 50.48) and station blackout events (10 CFR 50.63).
- Provide water supply to the AFW system following a fire (10 CFR 50.48).

Unit 3

The purpose of the city water (CWM) system is to provide water to various components throughout the plant. The city water supply was originally installed for Unit 1 but now has functions for all three units. The city water tank and many of the shared site components are included in the Unit 2 description of system code CYW. Only the Unit 3 components are included in the CWM system code. City water is used for a variety of purposes throughout Unit 3, including a supply of water to fire protection systems, to various equipment for makeup or cooling, and to sanitary and potable facilities, such as emergency showers, eye wash stations, hose connections, sinks, water coolers, water heaters, and lavatories. The system also provides a backup but not safety-grade source of water to the AFW pumps and can provide makeup to the spent fuel pit.

The CWM system has no intended functions for 10 CFR 54.4(a)(1).

The CWM system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.
- Provide a redundant source of water to the AFW pumps.
- Provide makeup to the spent fuel pit.

The CWM system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide water supply to the fire protection tanks (10 CFR 50.48).
- Provide water supply to the AFW pumps during an Appendix R event (10 CFR 50.48).

UFSAR References

Unit 2: Sections 9.6.3 and 10.2.6.3

Unit 3: Sections 6.1.1 and 10.3.1 refer to but do not describe the system.

Components Subject to Aging Management Review

Unit 2

Components that support safe shutdown in the event of a fire in the auxiliary feed pump room are evaluated in Section 2.3.4.5. Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Unit 3

Components of the city water makeup system that provide water to the auxiliary feedwater system are evaluated with the auxiliary feedwater systems (Section 2.3.4.3). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Table 2.3.3-17-IP2 and Table 2.3.3-17-IP3 list the component types that require aging management review.

Table 3.3.2-17-IP2 and Table 3.3.2-17-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2
LRA-9321-4006
LRA-9321-2018
LRA-227551
LRA- 227552
LRA-193183

Unit 2 (cont.)
LRA-192505
LRA-192506
LRA-9321-2729
LRA-227781
LRA-400882

Unit 3
LRA-9321-20183
LRA-9321-20343-002
LRA-9321-20343-001

2.3.3.18 Plant Drains

System Description

Plant drains are passive fire protection features required to assure adequate protection of safety-related equipment from water damage in areas containing fixed suppression systems. Plant drain components also provide assurance that drain systems in areas containing combustible materials are prevented from spreading fires into other areas of the plant. Some plant drains protect safety-related equipment from the effects of flooding.

Plant drain components are included in various systems but are grouped for this evaluation. The grouping of similar components from various plant systems into one consolidated review is appropriate, as stated in NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants*, Section 2.1.3.1.

Unit 2

Plant drain components are included in the fire protection system (FP) and waste disposal system (WDS).

For a description of the fire protection system, see Section 2.3.3.11.

The purpose of the waste disposal system (WDS) is to collect and process all potentially radioactive primary plant wastes for removal from the plant site. The system collects and processes both gaseous and liquid wastes.

The system processes gaseous waste from the primary and auxiliary systems. The system collects, compresses and stores the waste gases and provides for sampling and release of the gas. Gases vented to the vent header flow to the waste gas compressor suction header. One of the two compressors is in continuous operation with the second unit as backup for peak load conditions. From the compressors, gas flows to one of the four large gas decay tanks. The header arrangement at the tank inlet allows the operator to fill, reuse, or discharge gas to the environment. Six additional small gas decay tanks are supplied for use during degassing of the reactor coolant prior to a cold shutdown.

The system collects and processes liquid wastes from throughout the plant including wastes from equipment drains, radioactive chemical laboratory drains, decontamination drains, demineralizer regeneration, and floor drains. The waste holdup tank serves as the collection point for liquid wastes. Waste liquids drain to the waste holdup tank by gravity flow or drain to the sump tank or to the containment or primary auxiliary building sumps, then are pumped to the waste holdup tank. The liquid waste holdup tank is processed by sending its contents to the Unit 1 waste collection system. The WDS also collects and transfers liquid drained from the reactor coolant system directly to the chemical and volume control system for processing.

The system includes the vent header, waste gas compressors, large and small waste gas decay tanks, waste gas analyzer, pumps, collection tanks, station drainage piping, floor drains, instruments and controls, and piping and valves. The system includes several containment penetrations and accompanying isolation components. The system also includes the piping, valves, instruments and controls to monitor the condensation from the containment fan cooler units.

The WDS system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

The WDS system has the following intended functions for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.
- Assure adequate protection of safety-related equipment from water damage in areas susceptible to flooding.

The WDS system has the following intended function for 10 CFR 54.4(a)(3).

- Assure adequate protection of safety-related equipment from water damage in areas susceptible to flooding from fire water (10 CFR 50.48).

Unit 3

Areas provided with automatically operated fire protection have either gravity or pump drains designed to handle the maximum quantity of spray water to prevent local flooding. Plant drains protect safety-related equipment in the diesel generator rooms, electrical tunnels, primary auxiliary building, and auxiliary feed pump room from the effects of failure of Class III components.

Either floor drains are adequate to remove fire suppression water or water will flow through other passages to protect safety related equipment. In cases where safety-related equipment may be lost due to inadvertent actuation of a fire system, redundant systems are available to achieve safe shutdown.

Plant drain components are included in the floor drains system (FD), fire water system (FRW), and liquid waste disposal system (LWD). The FD system is not required for the response to the regulated events. Drainage for flooding protection is provided by other systems.

For a description of the floor drains system, see Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2), Floor Drains. For a description of the FRW system, see Section 2.3.3.11.

The purpose of the LWD system is to collect and process liquid wastes from throughout the plant, including wastes from equipment drains, radioactive chemical laboratory drains, decontamination drains, demineralizer regeneration, and floor drains. The system also collects and transfers liquid drained from the reactor coolant system directly to the chemical and volume control system for processing. The system includes piping, valves, pumps, collection tanks, instruments and controls. The system includes several containment penetrations and accompanying isolation components.

The LWD system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

The LWD system has the following intended functions for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.
- Assure adequate protection of safety-related equipment from water damage in areas susceptible to flooding.

The LWD system has the following intended function for 10 CFR 54.4(a)(3).

- Assure adequate protection of safety-related equipment from water damage in areas susceptible to flooding from fire water (10 CFR 50.48).

UFSAR References

Unit 2: Section 11.1

Unit 3: Sections 9.6.2.3, 11.1 and 16.1.3

Components Subject to Aging Management Review

Unit 2

A small number of WDS components are evaluated with the containment spray systems (Section 2.3.2.2), the safety injection systems (Section 2.3.2.4), the city water system (Section 2.3.3.17), the primary makeup water systems (Section 2.3.3.7), the component cooling water systems (Section 2.3.3.3), and the reactor coolant system pressure boundary (Section 2.3.1.3). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19).

WDS containment penetration components and drains that protect safety-related equipment from flooding damage due to fire water are reviewed as listed below.

Unit 3

A small number of LWD system components are evaluated with the safety injection systems (Section 2.3.2.4) and the primary makeup water systems (Section 2.3.3.7). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Table 2.3.3-18-IP2 and Table 2.3.3-18-IP3 list the component types that require aging management review.

Table 3.3.2-18-IP2 and Table 3.3.2-18-IP3 provide the results of the aging management review.

License Renewal Drawings

Containment penetrations in the WDS and LWD systems are shown on LRA-9321-2719 and LRA-9321-27193 sheet 1.

Some plant drain flow paths are shown only on plant layout and equipment drawings, which are not suitable for LRA drawings. In lieu of LRA drawings, the floor drain routing, describing floor drain flow paths included in this evaluation, is provided in the table below.

Table 2.3.3-18-A
Floor Drains Routing

Route Number	**Description**
1	IP2: Fire Area A, Zone 32A, Electrical Tunnel in the Primary and Control Building, contains automatic closed head, preaction water spray systems. Water from the actuated sprinklers in the electrical tunnel flow down the sloped floor toward the cable spreading room. At the end of the tunnel, a properly sized drain routes water to the yard where drainage terminates.
2	IP2: Fire Area G, Zone 10, Diesel Generator Building, contains an automatic (closed head) spray system with backflow prevention devices. Five drainage sumps are provided in the building and connect to the site drainage system routing water from elevation 64’ to elevation 18’ and terminates at manhole 17.

Table 2.3.3-18-A
Floor Drains Routing (Continued)

Route Number	Description
3	IP2: Primary Auxiliary Building (PAB) drains protect safety-related equipment from flooding at various elevations throughout the building. Drain water is routed through a series of 4” drains to a deep sump located at the 15’ elevation. The door leading to the main transformer yard is designed to provide for drainage to the yard to prevent RHR pump failure in the unlikely event the pipe failure is undetected. Operator actions are also credited to prevent flooding of the RHR pumps.
4	IP3: Fire Area CTL-3, Zones 10, 101A, 102A, Diesel Generator Building, contains automatic close head water spray systems in each zone. Floor sumps are located in each EDG room connected to 24” pipes carrying fire or flood water outside the building through buried piping and the “high water level valve” manhole to the Hudson River. Additional drains carry water to the Diesel Generator Building sump upon failure of service water or diesel cooling water piping or inadvertent actuation of the fire system. Two 500 gpm sump pumps automatically remove sump water. The additional drains and sump pumps are not subject to aging management review since the 24” passive drains are adequate to remove flood water.
5	IP3: The electrical tunnels are provided with floor drains to carry water from the cable tray pre-action water spray nozzles (automatic, closed head) to grade outside the tunnel.
6	IP3: The Primary Auxiliary Building (PAB) is designed so flooding from any elevation will result in water settling at the lowest elevation (15’). Each room utilizes drains to protect safety-related equipment from flooding at various elevations throughout the building. Drain water is routed through a series of 4” drains to a deep sump located at the 15’ elevation. Sufficient drainage area is provided in addition to a flap installed in the door leading to the main transformer yard in the unlikely event the pipe failure is undetected to prevent RHR pump failure. Operator actions are also credited to prevent flooding of the RHR pumps.
7	IP3: The Auxiliary Feed Pump Area is designed to protect the auxiliary feed pumps from failure due to flooding through a series of 4” drains terminating outside the building at storm drains. The door leading to the main transformer yard also has a flap for additional flood control.
8	IP3: A drain trap (component piping) in the cable spreading room is credited in the fire protection analysis to prevent loss of CO_2 in the event of an actuation.

2.3.3.19 Miscellaneous Systems in Scope for (a)(2)

As discussed in Sections 2.1.1.2 and 2.1.2.1.2, systems within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2) interact with safety-related systems in one of two ways: functional or physical. A functional failure is one where the failure of a nonsafety-related SSC to perform its function impacts a safety function. A physical failure is one where a safety function is impacted by the loss of structural or mechanical integrity of an SSC in physical proximity to equipment that supports the safety function.

Functional Failure

Functional failures of nonsafety-related SSCs which could impact a safety function are identified in other sections of the LRA and are not included in this evaluation.

Physical Failure

This section summarizes the scoping and screening results based on 10 CFR 54.4(a)(2) because of the potential for physical interactions which could affect a safety function.

Nonsafety-Related Systems or Components Directly Connected to Safety-Related Systems (Structural Support)

Certain components and piping outside the safety class pressure boundary must be structurally sound in order to maintain the pressure boundary integrity of safety class piping. Each mechanical system safety-related to nonsafety-related interface was reviewed to identify the components located between the safety-related/nonsafety-related interface and the structural boundary or other point that includes enough of the nonsafety-related piping run to conservatively include the components providing structural support to components with a safety function. Systems with such components where the components are not included in another evaluation are included in Table 2.3.3-19-A-IP2 or Table 2.3.3-19-A-IP3.

Nonsafety-Related Systems or Components with the Potential for Spatial Interaction with Other Systems or Components that Could Prevent Accomplishment of a Safety Function

The following modes of spatial interaction are described in Section 2.1.1.2.

Physical Impact or Flooding

The evaluation of interactions due to physical impact or flooding resulted in the inclusion of structures and structural components. Structures and structural components are reviewed in Section 2.4.

Pipe Whip, Jet Impingement, or Harsh Environments

Systems containing nonsafety-related high energy lines that can affect equipment with a safety function are included in this review if not evaluated in another review. These systems are included in the system list in Table 2.3.3-19-A-IP2 or Table 2.3.3-19-A-IP3.

Leakage or Spray

Nonsafety-related systems and nonsafety-related portions of safety-related systems containing steam or liquid are considered within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2) if such components are located in a space containing equipment with a safety function. Systems with such components where the components are not included in another evaluation are included in the system list in Table 2.3.3-19-A-IP2 or Table 2.3.3-19-A-IP3.

The following systems, described in the referenced sections, are (1) within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2) for physical interactions and (2) the components therefore subject to aging management review are not included in another evaluation.

Table 2.3.3-19-A-IP2
Miscellaneous Systems within the Scope of License Renewal for 10 CFR 54.4(a)(2)

System Number	System Name	LRA Section Describing System
AS	Auxiliary Steam	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
CCC	Conventional Closed Cooling	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
CF	Chemical Feed	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
COND	Condensate	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
CVCS	Chemical and Volume Control	Section 2.3.3.6, Chemical and Volume Control
CW	Circulating Water	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
CYW	City Water	Section 2.3.3.17, City Water
DOCK	Intake Structure System	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
EDG	Emergency Diesel Generator	Section 2.3.3.14, Emergency Diesel Generators
FO	Fuel Oil	Section 2.3.3.13, Fuel Oil
FP	Fire Protection	Section 2.3.3.11, Fire Protection – Water Section 2.3.3.12, Fire Protection – CO2, Halon, and RCP Oil Collection Systems
FW	Feedwater	Section 2.3.4.2, Main Feedwater
FWC	Fresh Water Cooling	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
GAS	Gas	Section 2.3.3.5, Nitrogen Systems
GEN	Main Generator	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)

Table 2.3.3-19-A-IP2
Miscellaneous Systems within the Scope of License Renewal for 10 CFR 54.4(a)(2) (Continued)

System Number	System Name	LRA Section Describing System
HSB	House Service Boiler	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
HVAC	Heating, Ventilation and Air Conditioning	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
IA	Instrument Air	Section 2.3.3.4, Compressed Air
IACC	Instrument Air Closed Cooling	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
IGO	Ignition Oil	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
ILWH	Integrated Liquid Waste Handing	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
LO	Lube Oil	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
MS	Main Steam	Section 2.3.4.1, Main Steam
MSCL	Miscellaneous	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
NSG	Nuclear Service Grade Makeup	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PACS	Post-Accident Containment Air Sample	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PACV	Post-Accident Containment Vent (retired in place)	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PSS	Primary Sampling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PW	Primary Water Makeup	Section 2.3.3.7, Primary Water Makeup
RCS	Reactor Coolant System	Section 2.3.1, Reactor Coolant System

Table 2.3.3-19-A-IP2
Miscellaneous Systems within the Scope of License Renewal for 10 CFR 54.4(a)(2) (Continued)

System Number	System Name	LRA Section Describing System
RMS	Radiation Monitoring	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
RW	River Water Service	Section 2.3.4.5, IP2 AFW Pump Room Fire Event
SA	Station Air	Section 2.3.3.4, Compressed Air
SD	Boiler Blowdown	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SFPC	Spent Fuel Pit Cooling	Section 2.3.3.1, Spent Fuel Pit Cooling
SGBD	Steam Generator Blowdown	Section 2.3.4.4, Steam Generator Blowdown
SIS	Safety Injection System	Section 2.3.2.4, Safety Injection Systems
SSS	Secondary Sampling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SW	Service Water	Section 2.3.3.2, Service Water
TSCD	Technical Support Center Diesel	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
TURB	Main Turbine	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
WDS	Waste Disposal System	Section 2.3.3.18, Plant Drains
WTP	Water Treatment Plant	Section 2.3.4.5, IP2 AFW Pump Room Fire Event

Table 2.3.3-19-A-IP3
Miscellaneous Systems within the Scope of License Renewal for 10 CFR 54.4(a)(2)

System Code	System Name	Section Describing System
AMA	Ammonia / Morpholine Addition	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
ASC	Auxiliary Steam and Condensate Return	Section 2.3.4.1, Main Steam
BLCA	Boron and Layup Chemical Addition	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
CAR	Condenser Air Removal	Section 2.3.4.1, Main Steam
CL	Chlorination	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
COND	Condensate	Section 2.3.4.6, Condensate
CP	Condensate Polisher	Section 2.3.4.6, Condensate
CPD	Condensate Pump Discharge	Section 2.3.4.6, Condensate
CPS	Condensate Pump Suction	Section 2.3.4.6, Condensate
CS	Containment Spray	Section 2.3.2.2, Containment Spray System
CVCS	Chemical and Volume Control	Section 2.3.3.6, Chemical and Volume Control
CW	Circulating Water	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
CWM	City Water Makeup	Section 2.3.3.17, City Water
CXFR	Condensate Transfer	Section 2.3.4.6, Condensate
DW	Demineralized Water	Section 2.3.3.7, Primary Water Makeup
EDG	Emergency Diesel Generator	Section 2.3.3.14, Emergency Diesel Generators
EG	Emergency Generators	Section 2.3.3.14, Emergency Diesel Generators

Table 2.3.3-19-A-IP3
Miscellaneous Systems within the Scope of License Renewal for 10 CFR 54.4(a)(2) (Continued)

System Code	System Name	Section Describing System
EX	Extraction Steam	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
FD	Floor Drains	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
FRW	Fire Water	Section 2.3.3.11, Fire Protection – Water
FSBHV	Fuel Storage Building HVAC	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
FW	Feedwater	Section 2.3.4.2, Main Feedwater
FWP	Main Feedwater Pump and Services	Section 2.3.4.2, Main Feedwater
GSS	Gland Seal Steam	Section 2.3.4.1, Main Steam
GWD	Gaseous Waste Disposal	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
HA	Hydrazine Addition	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
HD	Heater Drain/Moisture Separator Drain/ Vent	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
HPSD	High Pressure Steam Dump	Section 2.3.4.1, Main Steam
IA	Instrument Air	Section 2.3.3.4, Compressed Air
IACC	Instrument Air Closed Cooling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
LO	Lube Oil	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
LPSD	Low Pressure Steam Dump	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
LWD	Liquid Waste Disposal	Section 2.3.3.18, Plant Drains

Table 2.3.3-19-A-IP3
Miscellaneous Systems within the Scope of License Renewal for 10 CFR 54.4(a)(2) (Continued)

System Code	System Name	Section Describing System
MFW	Main Feedwater	Section 2.3.4.2, Main Feedwater
MS	Main Steam	Section 2.3.4.1, Main Steam
MTG	Main Turbine Generator	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
N2	Nitrogen	Section 2.3.3.5, Nitrogen Systems
NED	Nuclear Equipment Drains	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PABHV	Primary Auxiliary Building HVAC	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
PRM	Process Radiation Monitoring	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PS	Primary Plant Sampling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
PW	Primary Water Makeup	Section 2.3.3.7, Primary Water Makeup
PZR	Pressurizer	Section 2.3.1, Reactor Coolant System
RCS	Reactor Coolant System	Section 2.3.1, Reactor Coolant System
RS	Reheat Steam	Section 2.3.4.1, Main Steam
RVLIS	Reactor Vessel Level Indication	Section 2.3.1, Reactor Coolant System
RW	River Water Service	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SA	Station Air	Section 2.3.3.4, Compressed Air
SFPC	Spent Fuel Pit and Cooling	Section 2.3.3.1, Spent Fuel Pit Cooling
SGBD	Steam Generator Blowdown	Section 2.3.4.4, Steam Generator Blowdown
SGBDR	Steam Generator Blowdown Recovery	Section 2.3.4.4, Steam Generator Blowdown

Table 2.3.3-19-A-IP3
Miscellaneous Systems within the Scope of License Renewal for 10 CFR 54.4(a)(2) (Continued)

System Code	System Name	Section Describing System
SGS	Steam Generator Sampling	Section 2.3.4.4, Steam Generator Blowdown
SI	Safety Injection / Recirculation	Section 2.3.2.4, Safety Injection Systems
SO	Main Generator Seal Oil	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SS	Secondary Plant Sampling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
SWS	Service Water	Section 2.3.3.2, Service Water
TGHC	Turbine Generator Hydraulic Control	Section 2.3.4.1, Main Steam
THCC	Turbine Hall Closed Cooling	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
VCHA	Vapor Containment Hydrogen Analyzer	Section 2.3.3.19, Miscellaneous Systems in Scope for (a)(2)
VCHVP	Vapor Containment Purge and Supply	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
VCPR	Vapor Containment Pressure Relief	Section 2.3.3.8, Heating, Ventilation and Air Conditioning
WCCPP	Weld Channel and Containment Penetration Pressurization	Section 2.3.2.3, Containment Isolation Support Systems

System Description

The following systems within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2) are not described elsewhere in the application. Each system has the following intended function.

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Components in these systems supporting this intended function are those nonsafety-related, fluid-filled components located in spaces containing equipment that supports a safety function. A "space" is defined as a room or cubicle that is separated from other "spaces" by substantial objects (such as wall, floors, and ceilings). The space is defined such that potential interaction among components is limited to the space. Nonsafety-related systems and components that contain water, oil, or steam, and are in spaces with equipment that supports a safety function are in scope and subject to aging management review under criterion 10 CFR 54.4(a)(2). For a list of these components, see "Components Subject to Aging Management Review" below.

The 2.3.3.19-XX-IPX series tables provide the aging management review results for components that support this intended function if such components are not included in other system reviews. For systems with intended functions that meet additional scoping criteria, the other intended functions are noted in the descriptions below with a reference to the section where the affected components are evaluated (e.g., containment penetration components are evaluated with Containment Penetrations, Section 2.3.2.5).

Unit 2

The following Unit 2 systems are within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2) and are not described elsewhere in the application.

Chemical Feed

The purpose of the chemical feed (CF) system is to provide chemicals to be added to secondary water systems for proper water chemistry control. Hydrazine is added to the condensate for oxygen control and ammonium hydroxide and/or volatile amines are added to maintain the pH. The system consists of tanks, pumps, piping and valves to store and transfer these chemicals.

Intake Structure System

The purpose of the intake structure system (system code DOCK) is to provide rough filtering of the Hudson River water fed to the circulating water and service water systems. Fish and debris are removed from the river water by the traveling screens, washed from the screens by spray from the screen wash, and returned to the river. This system code includes the Unit 1 and Unit 2 intake structures and traveling screens. These are considered structural components and are evaluated in the structural AMRs.

There are also a few mechanical components included in the DOCK system code associated with the chlorine or hypochlorite addition subsystems. These are used to add chlorine to the intake water to limit biofouling.

Main Generator

The purpose of the main generator (GEN) system is to produce the primary electrical output of the unit. The system includes the generator and its supporting auxiliaries, including the stator cooling water system and most components of the hydrogen seal oil system. The system has no safety-related mechanical components.

House Service Boiler

The purpose of the house service boiler (HSB) system is to provide steam for plant heating via the auxiliary steam system. The HSB system includes the house service boilers, supporting equipment such as fuel oil and feedwater components, and portions of the condensate collection system from the various heat loads.

Ignition Oil

The purpose of the ignition oil (IGO) system is to provide ignition oil to the house service boilers. This system code includes 12 valves and one pipe segment. None of the components are safety-related. Most other ignition oil components, including the tanks and pumps, are in system code HSB, House Service Boiler. See the HSB description for further information.

Integrated Liquid Waste Handing

The purpose of the integrated liquid waste handing (ILWH) system is to process liquid waste collected by the waste disposal system (WDS). The ILWH system was originally the main liquid radioactive waste processing system for Unit 1. It is located in the chemical system building and includes holdup and collection tanks, demineralizer and evaporative processing equipment, various pumps, valves, instruments and controls.

Miscellaneous

The miscellaneous (MSCL) system code includes a variety of structural, electrical and mechanical components with no collective purpose. Mechanical components within the system code include a water heater and filter/pump for the asbestos decon facility, and a small number of valves, primarily from sump and sewage flowpaths.

There are also two containment penetration ILRT stop valves in the system code. These valves, removed for ILRT purposes, are the outer containment isolation valves during normal operation.

The MSCL system also has the following intended function for 10 CFR 54.4(a)(1).

- Provide for containment isolation.

Containment penetration components in this system code are evaluated with containment penetrations (Section 2.3.2.5).

Nuclear Service Grade Makeup

The NSG system code includes components of the Unit 1 water treatment facility supplying water to various service systems. There are no safety-related components in this system code.

Post-Accident Containment Air Sample

The purpose of the post-accident containment air sample (PACS) system is to provide a post-accident air sampling, including monitoring of hydrogen concentration. A containment air sample is taken from each of the containment fan cooler units at a point located downstream from the fan. Two hydrogen/oxygen analyzers are installed. The system has a closed-loop flow path with the sampled air withdrawn from and discharged to the containment. Based on a recent license amendment (License Amendment No. 243), hydrogen monitoring is no longer required as a safety function.

The PACS system also has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

Containment penetration components in this system code are evaluated with containment penetrations (Section 2.3.2.5).

Post-Accident Containment Vent

The purpose of the post-accident containment vent (PACV) system was originally to provide a backup to the hydrogen recombiner as a method to reduce the hydrogen concentration in containment atmosphere post-LOCA. The post-accident containment venting system consists of a common penetration line that acts as a supply line through which outside air can be admitted to the containment, and an exhaust line, with parallel valving and piping, through which hydrogen-bearing gases from containment may be vented through a filter. Based on a recent license amendment (License Amendment No. 243), hydrogen recombination is no longer required as a safety function.

The PACV system also has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

Containment penetration components in this system code are evaluated with containment penetrations (Section 2.3.2.5).

Primary Sampling

The primary sampling system (PSS) consists of the high-radiation sampling system, which provides the representative samples for in-line monitoring and laboratory analysis under normal or post-accident conditions. Reactor coolant hot-leg liquid, pressurizer liquid, and pressurizer steam samples originating inside the reactor containment flow through separate sample lines to the sentry liquid sampling panel. The samples pass through the reactor containment to the auxiliary building where they are cooled (pressurizer steam samples are condensed and cooled) in the sample heat exchangers. The reactor coolant samples are then routed through the in-line isotopic analyzer, where specific nuclides are identified. All samples then go to the sentry high-radiation sampling system panel. This consists of a liquid sampling panel, which is subdivided into a reactor coolant module, which includes the capability for dissolved gas analysis, a demineralizer sampling module, and a radwaste sampling module. The PSS system code includes most of the components of the primary sampling system flowpath. The system code includes several containment penetration components.

The PSS system also has the following intended function for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Provide containment isolation capability for lines penetrating containment.

A few of the components assigned this system code support the RHR system pressure boundary and are evaluated with the residual heat removal systems (Section 2.3.2.1). Some system components are evaluated with the safety injection systems Section 2.3.2.4). Containment penetration components in this system code are evaluated with containment penetrations (Section 2.3.2.5).

Radiation Monitoring

The purpose of the radiation monitoring system (RMS) is to warn of any radiation health hazard and to give early warning of a plant malfunction that might lead to a health hazard or plant damage. The system includes area and process radiation monitoring equipment and includes the piping, valves, heat exchangers, etc. needed to sample process systems. Instruments are located at selected points in and around the plant to detect, compute, and record radiation levels.

The system includes radiation monitor channels comprised entirely of electrical components, and some with mechanical components used to transport a sample to and from the monitor. Two of the monitoring channels with mechanical components have safety functions.

The RMS also has the following intended functions for 10 CFR 54.4(a)(1).

- Support isolation of the containment purge and pressure relief line on high containment radiation.
- Provide containment isolation capability for lines penetrating containment.

The RMS components in the pressure boundaries of other systems are evaluated with those systems. Some system components are evaluated with the service water system (Section 2.3.3.2). Containment penetration components in this system code are evaluated with containment penetrations (Section 2.3.2.5).

Boiler Blowdown

The purpose of the boiler blowdown purification (SD) system is to provide a location to collect and store or process blowdown from a steam generator with a primary-to-secondary leak. In the event of primary-to-secondary coolant leakage in one or more of the steam generators, the blowdown may be manually diverted to the Unit 1 secondary boiler blowdown purification system flash tank. This system includes the flash tank, sample tank and cooler, piping, valves and instruments. Diversion of the blowdown flow to this system is not credited in any dose analyses.

Secondary Sampling

The purpose of the secondary sampling (SSS) system is to provide continuous sampling and analysis of the plant's secondary systems. This system is used to determine steam and condensate/feedwater quality and chemical addition requirements. The steam and water analysis station is located in the turbine building. The SSS system includes piping, valves, sample coolers, instruments and controls necessary to collect and transport samples to the sample stations.

Technical Support Center Diesel

The purpose of the technical support center diesel (TSCDG) system is to provide a backup power supply to the Technical Support Center. The system includes the diesel generator, fuel oil supply, and supporting instruments and controls. Certain TSCD system components are located in the superheater building, which contains safety-related equipment.

Main Turbine

The purpose of the main turbine (TURB) system is to receive steam from the steam generators, economically convert a portion of the thermal energy contained in the steam to electric energy from the main generator and provide extraction steam for feedwater heating.

The TURB system consists of the main turbine and instrumentation. The turbine is a tandem-compound-unit, comprising one high pressure and three low pressure cylinders. Steam is supplied to the high-pressure turbine through four control valves. The high-pressure turbine exhaust is directed to six moisture separator/reheaters where the steam is dried and reheated. Three low-pressure turbines extract the energy in the reheated high-pressure turbine exhaust steam. The low-pressure turbines exhaust directly to the condensers. The control valves, moisture separator/reheaters and condensers are not included in this system.

Unit 3

The following Unit 3 systems are within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2) and are not described elsewhere in the application.

Ammonia / Morpholine Addition

The purpose of the ammonia / morpholine addition (AMA) system is to provide ammonia or morpholine for pH control for the condensate system. The system consists of a tank, pumps, piping and valves to store and transfer these chemicals.

Boron and Layup Chemical Addition

The purpose of the boron and layup chemical addition (BLCA) system is to provide chemicals to the steam generators for chemistry control including periods of wet layup. The system is primarily nonsafety-related, but included in this system code are several valves that form part of the auxiliary feedwater system pressure boundary.

The BLCA system also has the following intended function for 10 CFR 54.4(a)(1).

- Support the auxiliary feedwater system pressure boundary.

Components associated with the auxiliary feedwater system pressure boundary are evaluated with the auxiliary feedwater systems (Section 2.3.4.3).

Chlorination

The purpose of the chlorination (CL) system is to provide sodium hypochlorite to the intake bays to limit the microorganism fouling in these bays and in the associated water systems that use the raw water (service water, circulating water, etc.). The system includes the sodium hypochlorite tank, pumps, distribution piping and valves, instruments and controls.

Circulating Water

The purpose of the circulating water system is to provide cooling water to the condenser to condense the steam exiting the low pressure turbines. Hudson River water is used as the supply of the condenser circulating water. The six condenser circulating water pumps are located in the intake structure. The circulating water is piped to the condensers and is discharged back via the discharge canal into the river. The system includes the circulating water pumps, condenser inlet and outlet water boxes, piping, valves, instruments and controls.

Extraction Steam

The purpose of the extraction steam (EX) system is to provide steam from the main turbine extraction points to heat feedwater in the feedwater heaters. Steam from six extraction openings in the turbine casings is piped to the shells of the three parallel strings of feedwater heaters.

Floor Drains

The purpose of the floor drains (FD) system is to remove any water collected from the floor drains. The system serves non-radioactive drains of the plant including areas of the turbine building, intake structure and diesel generator building. The FD system code includes sump pumps from the floor drains. The system includes no safety-related or augmented quality components and is not required for the response to the regulated events. Drainage for flooding protection is provided by other systems.

Gaseous Waste Disposal

The purpose of the gaseous waste disposal (GWD) system is to process gaseous waste from the primary and auxiliary systems. The system collects, compresses and stores the waste gases and provides for sampling and release of the gas. The system includes the vent header, waste gas compressors, large and small waste gas decay tanks, and piping and valves. This system has no safety functions related to gaseous waste releases.

The GWD system also has the following intended function for 10 CFR 54.4(a)(1).

- Support the CCW system pressure boundary (heat exchanger components).

Components supporting the CCW system pressure boundary are evaluated with the component cooling water systems (Section 2.3.3.3).

Hydrazine Addition

The purpose of the hydrazine addition (HA) system is to provide hydrazine to the secondary system for oxygen control. The system includes the bulk hydrazine transfer pumps, chemical feed (mixing) tanks, and distribution piping and valves for the addition of hydrazine via the condensate system and turbine exhaust injection points. This system includes no safety-related components.

Heater Drain/Moisture Separator Drain/Vent

The purpose of the heater drain/moisture separator drain/vent (HD) system is to collect and transfer the drains from feedwater heaters and the moisture separator-reheaters to the suction of the main boiler feedwater pumps. The system includes the drain tank, feedwater drain pumps and associated collection piping, valves and controls.

Instrument Air Closed Cooling

The purpose of the instrument air closed cooling (IACC) system is to provide a heat removal medium for the instrument air compressors and aftercoolers. The system consists of a separate closed loop cooling water system of two small pumps, valves, piping, and heat exchangers that supplies cooling water to the instrument air compressors and aftercoolers and rejects heat to the service water system.

The IACC system also has the following intended function for 10 CFR 54.4(a)(1).

- Maintain the service water system pressure boundary (heat exchangers that are cooled by service water).

The IACC heat exchangers that are part of the service water pressure boundary are evaluated with the service water systems (Section 2.3.3.2).

Lube Oil

The purpose of the lube oil (LO) system is to maintain and provide a supply of oil for lubrication and control of the main turbine and the main boiler feedwater pumps and turbines. The system includes the main lubricating/control oil reservoirs, pumps, coolers, piping, valves and indications. The system also includes components of the main turbine controls.

Low Pressure Steam Dump

The purpose of the low pressure steam dump (LPSD) system is to prevent turbine overspeed by discharging steam from the high pressure turbine exhaust to the condenser on turbine trip. The low pressure steam dump valves discharge steam to the condenser from the header between the high pressure turbine exhaust and the moisture separators. The system includes the steam dump valves, the steam dump stop valves, and associated piping, valves, instruments and controls.

Main Turbine Generator

The purpose of the main turbine generator (MTG) system is to receive steam from the steam generators, economically convert a portion of the thermal energy contained in the steam to electric energy, and provide extraction steam for feedwater heating.

The MTG system consists of the turbine, generator, and instrumentation. The turbine is a tandem-compound unit, comprising one high-pressure and three low-pressure cylinders. Steam is supplied to the high-pressure turbine through four control valves. The high-pressure turbine exhaust is directed to six moisture separator/reheaters, where the steam is dried and reheated. Three low-pressure turbines extract the energy in the reheated high-pressure turbine exhaust steam. The low-pressure turbines exhaust directly to the condensers. The generator is a direct-coupled, hydrogen-cooled, three-phase synchronous generator. The control valves, moisture separator/reheaters, condensers, and generator cooling components are not included in this system.

Nuclear Equipment Drains

The purpose of the nuclear equipment drains (NED) system is to collect leakage and drainage from various primary plant systems. The NED system includes piping and valves to collect leakage and drainage from the charging pumps and includes the piping, valves, instruments and controls to monitor the condensation from the containment fan cooler units. The drains from the fan cooler units are not needed to support the operation of the coolers.

Process Radiation Monitoring

The purpose of the process radiation monitoring (PRM) system is to monitor various fluid streams for indication of increasing radiation levels. This system consists of independent monitoring channels that are designed to detect the minimum concentrations of the isotopes of interest and, in monitoring gross activity, are designed to generate an alarm or automatic action under abnormal conditions.

The system includes radiation monitor channels comprised entirely of electrical components, and some with mechanical components used to transport a sample to and from the monitor. Three of the monitoring channels with mechanical components have safety functions.

The PRM system also has the following intended functions for 10 CFR 54.4(a)(1).

- Support isolation of the containment purge and pressure relief line on high containment radiation.
- Provide containment isolation capability for lines penetrating containment.
- Support high control room radiation alarm for operator manual isolation of the control room HVAC system.

Components of the containment radiation monitoring channels are evaluated with containment penetrations (Section 2.3.2.5). Components of the control room radiation monitoring channel are evaluated with the control room HVAC (Section 2.3.3.10). A small number of components are evaluated with the component cooling water systems (Section 2.3.3.3).

Primary Plant Sampling

The purpose of the primary plant sampling (PS) system is to provide samples for laboratory analysis to evaluate reactor coolant and other reactor auxiliary systems chemistry during normal operation. The PS system includes piping, valves, sample coolers, instruments and controls necessary to collect and transport samples to the sample room. The system also includes the post-accident reactor coolant sampling system, which provides a safe and accurate method of obtaining a pressurized coolant sample following an accident.

The PS system also has the following intended functions for 10 CFR 54.4(a)(1).

- Maintain the RCS pressure boundary (function performed by Class 1 RCS components that are part of this system code in the database).
- Provide containment isolation capability for lines penetrating containment.

A few of the components assigned this system code support the RHR system pressure boundary and are therefore evaluated with the RHR systems (Section 2.3.2.1). Components forming part of the safety injection system pressure boundary are evaluated with the safety injection systems (Section 2.3.2.4). Components that are part of the reactor coolant pressure boundary are evaluated with the reactor coolant system pressure boundary (Section 2.3.1.3). Components cooled by the CCW system are evaluated with the component cooling water systems (Section 2.3.3.3).

River Water Service

The purpose of the river water service system (RW) is to support the circulating water system, which provides cooling water from the Hudson River to the main condensers. The system includes various components that functionally support the circulating water (CW) system.

Main Generator Seal Oil

The purpose of the main generator seal oil (SO) system is to provide oil to seal the main generator shaft seals to prevent hydrogen leakage from the generator into the turbine building. The SO system includes pumps, oil coolers, tanks, piping, valves, instruments and controls to maintain a supply of oil to the generator shaft seals.

Secondary Plant Sampling

The purpose of the secondary plant sampling (SS) system is to provide samples for laboratory analysis to evaluate condensate, feedwater and main steam system chemistry during normal operation. The SS system includes piping, valves, sample coolers, instruments and controls necessary to collect and transport samples to the sample room.

Turbine Hall Closed Cooling

The purpose of the turbine hall closed cooling (THCC) system is to provide cooling water to various components in the turbine building and administration building, including condensate and heater drain pumps, main boiler feed pump pedestals, and station, instrument, and administration building air compressors. The THCC system includes circulating pumps, heat exchangers (cooled by service water), head tank, distribution piping valves, instruments and controls. Cooling water from the THCC system is not required to support any system safety function or any function for a regulated event.

Vapor Containment Hydrogen Analyzer

The purpose of the vapor containment hydrogen analyzer (VCHA) system is to provide hydrogen analyzers to monitor post-LOCA hydrogen concentration in the vapor containment atmosphere. Two hydrogen/oxygen analyzers have been installed to monitor the hydrogen and oxygen concentrations in the containment atmosphere. The system has a closed-loop flow path with the sampled air withdrawn from and discharged to the containment. Based on a recent license amendment (License Amendment No. 228), hydrogen monitoring is no longer required as a safety function; however, the system will remain available and will use the closed loop flow path with containment penetrations.

The VCHA system also has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

Containment penetration components in this system code are evaluated with containment penetrations (Section 2.3.2.5).

UFSAR References

The following tables list the UFSAR references for systems described in this section.

Unit 2 System	**UFSAR Section**
Chemical feed	Section 10.2.6.4
Intake structure	None for mechanical components
Fresh water cooling	None
Main Generator	Section 8
House Service Boiler	Section 9.6.5
Ignition Oil	None
Integrated Liquid Waste Handling	Unit 1 SAR Section 3.7.3 Unit 2 UFSAR Section 11.1.2.1
Miscellaneous	None
Nuclear Service Grade Makeup	Unit 1 SAR Section 3.7.2
Post-Accident Containment Air Sample	Section 6.8.2.3
Post-Accident Containment Vent (Retired In Place)	Section 6.8.2.2
Primary Sampling	Section 9.4
Radiation Monitoring	Section 11.2.3

Unit 2 System (Continued)	**UFSAR Section**
River Water Service	None
Boiler Blowdown	Section 10.2.1.5
Secondary sampling	Section 9.4
Technical Support Center Diesel	None
Main Turbine	Section 10.2.2

Unit 3 System	**UFSAR Section**
Ammonia / Morpholine Addition	Steam generator water chemistry is discussed in Section 10.2.6.
Auxiliary Steam and Condensate Return	Section 9.6.4
Boron and Layup Chemical Addition	None
Chlorination	None
Circulating Water	Section 10.2.4
Extraction Steam	Section 10.2
Floor Drains	Sections 9.6.2.3 and 16.1.3
Gaseous Waste Disposal	Sections 11.1 and 14.2.3
Hydrazine Addition	Section 10.2.6
Heater Drain/Moisture Separator Drain/Vent	Section 10.2.6
Instrument Air Closed Cooling	Section 9.6.3
Lube Oil	None
Low Pressure Steam Dump	None
Main Turbine Generator	Section 10.2
Nuclear Equipment Drains	Sections 6.7.1.2
Process Radiation Monitoring	Section 11.2.3.1
Primary Plant Sampling	Section 9.4
River Water Service System	Section 10.2.4 (circulating water system)
Main Generator Seal Oil	Section 10.2.2
Secondary Plant Sampling	Section 9.4
Turbine Hall Closed Cooling	None
Vapor Containment Hydrogen Analyzer	Section 6.8

Components Subject to Aging Management Review

For structural support, components subject to aging management review are those located between a safety-related/nonsafety-related interface and the structural boundary or other point that includes enough of the nonsafety-related piping run to conservatively include the components providing structural support to components with a safety function. These components are included in this evaluation if not included in another system review.

For spatial interaction, nonsafety-related components in a system determined to be in scope for 54.4(a)(2) for spatial interaction are subject to aging management review. Components are excluded from review if their location is such that no safety function can be impacted by component failure. Nonsafety-related components containing liquid or steam located in structures or areas containing safety-related equipment are subject to aging management review. Such components are included in this evaluation if not included in another system review.

The following tables provide additional information concerning areas or components excluded.

IP2 System Code	Area or Components Excluded
ARDG (Appendix R Diesel Generator)	The Appendix R diesel generator is not yet installed for IP2; however, it will be installed in IP1 turbine hall. The ARDG system was not reviewed for 54.4(a)(2) for spatial interaction because all of the passive mechanical components were already included for (a)(1) or (a)(3) functions.
GT (Gas Turbine)	A review of the liquid-filled components that were not included in other aging management reviews identified that these components are located where they cannot affect equipment with safety functions.
HR (Hydrogen Recombiners)	There are no liquid-filled components in the HR system so there are no potential spatial effects
SEC (Security)	A review of the liquid-filled components that were not included in other aging management reviews identified that these components are located where they cannot affect equipment with safety functions.
WCPS (Weld Channel Pressurization)	A review of the components that were not included in other aging management reviews identified that these components contain air or gas only and cannot affect equipment with safety functions.
WW (Wash Water)	A review of the liquid-filled components that were not included in other aging management reviews identified that these components are located where they cannot affect equipment with safety functions.

IP3 System Code	Area or Components Excluded
ARDG (Appendix R Diesel Generator)	A review of the liquid-filled components that were not included in other aging management reviews identified that these components are located where they cannot affect equipment with safety functions.
BVS (Building Vent Sampling)	A review of the liquid-filled components that were not included in other aging management reviews identified that these components are located where they cannot affect equipment with safety functions.
CO2 (Carbon Dioxide)	A review of the components that were not included in other aging management reviews identified that these components contain air or gas only and cannot affect equipment with safety functions.
FBAR (Fire Barriers)	A review of the components that were not included in other aging management reviews identified that these components contain air or gas only and cannot affect equipment with safety functions.
FDA (Fire Detection and Alarms)	A review of the components that were not included in other aging management reviews identified that these components contain air or gas only and cannot affect equipment with safety functions.
FHS (Fuel Handling System)	A review of the components that were not included in other aging management reviews identified that these components contain air or gas only and cannot affect equipment with safety functions.
HVAC (Heating, Ventilation and Air Conditioning)	A review of the liquid-filled components that were not included in other aging management reviews identified that these components are located where they cannot affect equipment with safety functions.
ILRT (Integrated Leak Rate Testing)	A review of the liquid-filled components that were not included in other aging management reviews identified that these components are located where they cannot affect equipment with safety functions.
INCOR (Incore Nuclear Instrumentation)	A review of the components that were not included in other aging management reviews identified that these components contain air or gas only and cannot affect equipment with safety functions.
PAB (Primary Auxiliary Building)	A review of components that were not included in other aging management reviews identified that there are no other passive mechanical liquid-filled components.
PV (Plant Vent)	A review of components that were not included in other aging management reviews identified that there are no other passive mechanical liquid-filled components.

IP3 System Code	Area or Components Excluded
SECHV (Security Building HVAC)	A review of the components that were not included in other aging management reviews identified that these components contain air or gas only and cannot affect equipment with safety functions.
VCV (Vapor Containment Building Ventilation)	A review of components that were not included in other aging management reviews identified that there are no other passive mechanical liquid-filled components.

The following database location codes contain no components that perform a safety function.

IP1/IP2 Component Database Location Code	IP3 Component Database Location Code
ADMIN (IP1 Administration Building)	PC (IP3 Power Conversion Equipment Building)
ARS (IP2 Air Relief Structure)	PS (IP3 Security Building)
CP (IP2 Command Post)	RA (IP3 Radioactive Machine Shop)
CSB (IP1 Chemical Systems Building)	SE (IP3 Sewage Ejector Pit)
CWST (IP1 Metering House and City Water)	SG (IP3 Steam Generator Mockup Building)
DFPB (IP2 Diesel Fire Pump Building and Tank)	SO (IP3 Security Office Building)
DIP (IP2 De-icing Pump Pit)	SS (IP3 Switchyard Structures)
DT (IP1 Discharge Tunnel)	ST (IP3 Sewage Treatment Plant)
DVE (IP2 Deluge Valve Enclosure)	TD (IP3 Onsite Tech Support CTR Diesel)
EEC (IP2 Energy Education Center)	TF (IP3 Training Center Fire Pump House)
FSHB (IP1 Fuel Handling Building)	TR (IP3 Training Building)
FUTURE (IP1/IP2 Future Equipment)	TS (IP3 Technical Support Center)
GSB (Generation Support Building)	U2 (IP3 Unit 2 Personnel and Pipe Bridge)
GT1 (IP2 Gas Turbine #1)	UT (IP3 Utility Tunnel)
GT2 (IP2 Gas Turbine #2)	WH (IP3 Receiving Warehouse)
GT3 (IP2 Gas Turbine #3)	WP (IP3 Waste Holdup Pit)
HSB (IP1 House Service Boiler Building)	YD (IP3 Yard)
MOB (IP2 Maintenance and Outage Building)	

IP1/IP2 Component Database Location Code	IP3 Component Database Location Code
NCD (IP1 North Curtain Drain)	
ONSITE (IP2 Equipment Onsite)	
OTF (IP1 Fuel Oil Tank Farm)	
ROAD (IP1 Protected Area Road To Plant Entrance)	
SIM (IP2 Simulator Building)	
SUBSTATION A (IP1/IP2 Substation A)	
SWH (IP1 Screen Well House)	
TEST (IP2 Test)	
TSC (IP2 Tech Support Center)	
TYRD (IP2 Transformer Yard)	
WHUT (IP2 Waste Holdup Tank Area)	
VC (IP1 Vapor Containment)	

The following IP2 systems were not reviewed for 54.4(a)(2) for spatial interaction because all of their passive mechanical components were already included because of other (a)(1), (a)(3), or other (a)(2) functions.

- AFW (Auxiliary Feedwater)
- CCF (Containment Cooling and Filtration)
- CCW (Component Cooling Water)
- CRD (Control Rod Drive)
- CSS (Containment Spray System)
- EP (Electrical Penetrations)
- FCCH (Fuel and Core Component Handling)
- ICI (In-Core Instrumentation)
- IVSW (Isolation Valve Seal Water)
- RHR (Residual Heat Removal)

The following IP3 systems were not reviewed for 54.4(a)(2) for spatial interaction because all of their passive mechanical components were already included because of other (a)(1), (a)(3), or other (a)(2) functions.

- AFW (Auxiliary Feedwater)

- CBHV (Control Building HVAC)
- CCW (Component Cooling Water)
- CRD (Control Rod Drive)
- CRHV (Control Room HVAC)
- ESS (Engineered Safeguards Initiation Logic)
- IVSW (Isolation Valve Seal Water)
- RHR (Residual Heat Removal)
- RPC (Reactor Protection and Control)
- SG (Steam Generator)
- SGLC (Steam Generator Level Control)
- SPG (Security Propane Generator)

Series 2.3.3-19-xx-IP2 and 2.3.3-19-xx-IP3 tables list component types that require aging management review for 10 CFR 54.4(a)(2) based on potential for physical interactions.

Series 3.3.2-19-xx-IP2 and 3.3.2-19-xx-IP3 tables provide the results of the aging management review for 10 CFR 54.4(a)(2) based on potential for physical interactions.

Table 2.3.3-19-B-IP2
10 CFR 54.4(a)(2) Aging Management Review Tables

System Name	Series 2.3.3-19-xx-IP2 Table	Series 3.3.2-19-xx-IP2 Table
Auxiliary Steam	Table 2.3.3-19-1-IP2	Table 3.3.2-19-1-IP2
Conventional Closed Cooling	Table 2.3.3-19-2-IP2	Table 3.3.2-19-2-IP2
Chemical Feed	Table 2.3.3-19-3-IP2	Table 3.3.2-19-3-IP2
Condensate	Table 2.3.3-19-4-IP2	Table 3.3.2-19-4-IP2
Chemical and Volume Control	Table 2.3.3-19-5-IP2	Table 3.3.2-19-5-IP2
Circulating Water	Table 2.3.3-19-6-IP2	Table 3.3.2-19-6-IP2
City Water	Table 2.3.3-19-7-IP2	Table 3.3.2-19-7-IP2
Intake Structure	Table 2.3.3-19-8-IP2	Table 3.3.2-19-8-IP2
Emergency Diesel Generator	Table 2.3.3-19-9-IP2	Table 3.3.2-19-9-IP2
Fuel Oil	Table 2.3.3-19-10-IP2	Table 3.3.2-19-10-IP2
Fire Protection	Table 2.3.3-19-11-IP2	Table 3.3.2-19-11-IP2

Table 2.3.3-19-B-IP2
10 CFR 54.4(a)(2) Aging Management Review Tables (Continued)

System Name	Series 2.3.3-19-xx-IP2 Table	Series 3.3.2-19-xx-IP2 Table
Feedwater	Table 2.3.3-19-12-IP2	Table 3.3.2-19-12-IP2
Fresh Water Cooling	Table 2.3.3-19-13-IP2	Table 3.3.2-19-13-IP2
Gas	Table 2.3.3-19-14-IP2	Table 3.3.2-19-14-IP2
Main Generator	Table 2.3.3-19-15-IP2	Table 3.3.2-19-15-IP2
House Service Boiler	Table 2.3.3-19-16-IP2	Table 3.3.2-19-16-IP2
Heating, Ventilation and Air Conditioning	Table 2.3.3-19-17-IP2	Table 3.3.2-19-17-IP2
Instrument Air	Table 2.3.3-19-18-IP2	Table 3.3.2-19-18-IP2
Instrument Air Closed Cooling	Table 2.3.3-19-19-IP2	Table 3.3.2-19-19-IP2
Ignition Oil	Table 2.3.3-19-20-IP2	Table 3.3.2-19-20-IP2
Integrated Liquid Waste Handling	Table 2.3.3-19-21-IP2	Table 3.3.2-19-21-IP2
Lube Oil	Table 2.3.3-19-22-IP2	Table 3.3.2-19-22-IP2
Main Steam	Table 2.3.3-19-23-IP2	Table 3.3.2-19-23-IP2
Miscellaneous	Table 2.3.3-19-24-IP2	Table 3.3.2-19-24-IP2
Nuclear Service Grade Makeup	Table 2.3.3-19-25-IP2	Table 3.3.2-19-25-IP2
Post-Accident Containment Air Sample	Table 2.3.3-19-26-IP2	Table 3.3.2-19-26-IP2
Post-Accident Containment Vent (retired in place)	Table 2.3.3-19-27-IP2	Table 3.3.2-19-27-IP2
Primary Sampling	Table 2.3.3-19-28-IP2	Table 3.3.2-19-28-IP2
Primary Water Makeup	Table 2.3.3-19-29-IP2	Table 3.3.2-19-29-IP2
Reactor Coolant System	Table 2.3.3-19-30-IP2	Table 3.3.2-19-30-IP2
Radiation Monitoring	Table 2.3.3-19-31-IP2	Table 3.3.2-19-31-IP2
River Water Service	Table 2.3.3-19-32-IP2	Table 3.3.2-19-32-IP2

Table 2.3.3-19-B-IP2
10 CFR 54.4(a)(2) Aging Management Review Tables (Continued)

System Name	Series 2.3.3-19-xx-IP2 Table	Series 3.3.2-19-xx-IP2 Table
Station Air	Table 2.3.3-19-33-IP2	Table 3.3.2-19-33-IP2
Boiler Blowdown	Table 2.3.3-19-34-IP2	Table 3.3.2-19-34-IP2
Spent Fuel Pit Cooling	Table 2.3.3-19-35-IP2	Table 3.3.2-19-35-IP2
Steam Generator Blowdown	Table 2.3.3-19-36-IP2	Table 3.3.2-19-36-IP2
Safety Injection System	Table 2.3.3-19-37-IP2	Table 3.3.2-19-37-IP2
Secondary Sampling	Table 2.3.3-19-38-IP2	Table 3.3.2-19-38-IP2
Service Water	Table 2.3.3-19-39-IP2	Table 3.3.2-19-39-IP2
Technical Support Center Diesel	Table 2.3.3-19-40-IP2	Table 3.3.2-19-40-IP2
Main Turbine	Table 2.3.3-19-41-IP2	Table 3.3.2-19-41-IP2
Waste Disposal System	Table 2.3.3-19-42-IP2	Table 3.3.2-19-42-IP2
Water Treatment Plant	Table 2.3.3-19-43-IP2	Table 3.3.2-19-43-IP2

Table 2.3.3-19-B-IP3
10 CFR 54.4(a)(2) Aging Management Review Tables

System Name	Series 2.3.3-19-xx-IP3 Table	Series 3.3.2-19-xx-IP3 Table
Ammonia / Morpholine Addition	Table 2.3.3-19-1-IP3	Table 3.3.2-19-1-IP3
Auxiliary Steam and Condensate Return	Table 2.3.3-19-2-IP3	Table 3.3.2-19-2-IP3
Boron and Layup Chemical Addition	Table 2.3.3-19-3-IP3	Table 3.3.2-19-3-IP3
Condenser Air Removal	Table 2.3.3-19-4-IP3	Table 3.3.2-19-4-IP3
Chlorination	Table 2.3.3-19-5-IP3	Table 3.3.2-19-5-IP3
Condensate	Table 2.3.3-19-6-IP3	Table 3.3.2-19-6-IP3
Condensate Polisher	Table 2.3.3-19-7-IP3	Table 3.3.2-19-7-IP3

Table 2.3.3-19-B-IP3
10 CFR 54.4(a)(2) Aging Management Review Tables (Continued)

System Name	Series 2.3.3-19-xx-IP3 Table	Series 3.3.2-19-xx-IP3 Table
Condensate Pump Discharge	Table 2.3.3-19-8-IP3	Table 3.3.2-19-8-IP3
Condensate Pump Suction	Table 2.3.3-19-9-IP3	Table 3.3.2-19-9-IP3
Containment Spray	Table 2.3.3-19-10-IP3	Table 3.3.2-19-10-IP3
Chemical and Volume Control	Table 2.3.3-19-11-IP3	Table 3.3.2-19-11-IP3
Circulating Water	Table 2.3.3-19-12-IP3	Table 3.3.2-19-12-IP3
City Water Makeup	Table 2.3.3-19-13-IP3	Table 3.3.2-19-13-IP3
Condensate Transfer	Table 2.3.3-19-14-IP3	Table 3.3.2-19-14-IP3
Demineralized Water	Table 2.3.3-19-15-IP3	Table 3.3.2-19-15-IP3
Emergency Diesel Generator	Table 2.3.3-19-16-IP3	Table 3.3.2-19-16-IP3
Emergency Generators	Table 2.3.3-19-17-IP3	Table 3.3.2-19-17-IP3
Extraction Steam	Table 2.3.3-19-18-IP3	Table 3.3.2-19-18-IP3
Floor Drains	Table 2.3.3-19-19-IP3	Table 3.3.2-19-19-IP3
Fire Water	Table 2.3.3-19-20-IP3	Table 3.3.2-19-20-IP3
Fuel Storage Building HVAC	Table 2.3.3-19-21-IP3	Table 3.3.2-19-21-IP3
Feedwater	Table 2.3.3-19-22-IP3	Table 3.3.2-19-22-IP3
Main Feedwater Pump and Services	Table 2.3.3-19-23-IP3	Table 3.3.2-19-23-IP3
Gland Seal Steam	Table 2.3.3-19-24-IP3	Table 3.3.2-19-24-IP3
Gaseous Waste Disposal	Table 2.3.3-19-25-IP3	Table 3.3.2-19-25-IP3
Hydrazine Addition	Table 2.3.3-19-26-IP3	Table 3.3.2-19-26-IP3
Heater Drain / Moisture Separator Drains/Vents	Table 2.3.3-19-27-IP3	Table 3.3.2-19-27-IP3
High Pressure Steam Dump	Table 2.3.3-19-28-IP3	Table 3.3.2-19-28-IP3
Instrument Air	Table 2.3.3-19-29-IP3	Table 3.3.2-19-29-IP3

Table 2.3.3-19-B-IP3
10 CFR 54.4(a)(2) Aging Management Review Tables (Continued)

System Name	Series 2.3.3-19-xx-IP3 Table	Series 3.3.2-19-xx-IP3 Table
Instrument Air Closed Cooling	Table 2.3.3-19-30-IP3	Table 3.3.2-19-30-IP3
Lube Oil	Table 2.3.3-19-31-IP3	Table 3.3.2-19-31-IP3
Low Pressure Steam Dump	Table 2.3.3-19-32-IP3	Table 3.3.2-19-32-IP3
Liquid Waste Disposal	Table 2.3.3-19-33-IP3	Table 3.3.2-19-33-IP3
Main Feedwater	Table 2.3.3-19-34-IP3	Table 3.3.2-19-34-IP3
Main Steam	Table 2.3.3-19-35-IP3	Table 3.3.2-19-35-IP3
Main Turbine Generator	Table 2.3.3-19-36-IP3	Table 3.3.2-19-36-IP3
Nitrogen	Table 2.3.3-19-37-IP3	Table 3.3.2-19-37-IP3
Nuclear Equipment Drains	Table 2.3.3-19-38-IP3	Table 3.3.2-19-38-IP3
Primary Auxiliary Building HVAC	Table 2.3.3-19-39-IP3	Table 3.3.2-19-39-IP3
Process Radiation Monitoring	Table 2.3.3-19-40-IP3	Table 3.3.2-19-40-IP3
Primary Plant Sampling	Table 2.3.3-19-41-IP3	Table 3.3.2-19-41-IP3
Primary Water Makeup	Table 2.3.3-19-42-IP3	Table 3.3.2-19-42-IP3
Pressurizer	Table 2.3.3-19-43-IP3	Table 3.3.2-19-43-IP3
Reactor Coolant System	Table 2.3.3-19-44-IP3	Table 3.3.2-19-44-IP3
Reheat Steam	Table 2.3.3-19-45-IP3	Table 3.3.2-19-45-IP3
Reactor Vessel Level Indication	Table 2.3.3-19-46-IP3	Table 3.3.2-19-46-IP3
River Water Service	Table 2.3.3-19-47-IP3	Table 3.3.2-19-47-IP3
Station Air	Table 2.3.3-19-48-IP3	Table 3.3.2-19-48-IP3
Spent Fuel Pit and Cooling	Table 2.3.3-19-49-IP3	Table 3.3.2-19-49-IP3
Steam Generator Blowdown	Table 2.3.3-19-50-IP3	Table 3.3.2-19-50-IP3
Steam Generator Blowdown Recovery	Table 2.3.3-19-51-IP3	Table 3.3.2-19-51-IP3

Table 2.3.3-19-B-IP3
10 CFR 54.4(a)(2) Aging Management Review Tables (Continued)

System Name	Series 2.3.3-19-xx-IP3 Table	Series 3.3.2-19-xx-IP3 Table
Steam Generator Sampling	Table 2.3.3-19-52-IP3	Table 3.3.2-19-52-IP3
Safety Injection / Recirculation	Table 2.3.3-19-53-IP3	Table 3.3.2-19-53-IP3
Main Generator Seal Oil	Table 2.3.3-19-54-IP3	Table 3.3.2-19-54-IP3
Secondary Plant Sampling	Table 2.3.3-19-55-IP3	Table 3.3.2-19-55-IP3
Service Water	Table 2.3.3-19-56-IP3	Table 3.3.2-19-56-IP3
Turbine Generator Hydraulic Control	Table 2.3.3-19-57-IP3	Table 3.3.2-19-57-IP3
Turbine Hall Closed Cooling	Table 2.3.3-19-58-IP3	Table 3.3.2-19-58-IP3
Vapor Containment Hydrogen Analyzer	Table 2.3.3-19-59-IP3	Table 3.3.2-19-59-IP3
Vapor Containment Purge and Supply	Table 2.3.3-19-60-IP3	Table 3.3.2-19-60-IP3
Vapor Containment Pressure Relief	Table 2.3.3-19-61-IP3	Table 3.3.2-19-61-IP3
Weld Channel and Containment Penetration Pressurization	Table 2.3.3-19-62-IP3	Table 3.3.2-19-62-IP3

License Renewal Drawings

None. The determination of whether a component meets the 10 CFR 54.4(a)(2) scoping criterion is based on where structural/seismic boundaries exist, or where the component is located in a building, whether it contains gas or liquid, and its proximity to equipment that supports a safety function. Providing drawings highlighting in-scope (a)(2) components would not provide significant additional information since the drawings do not indicate proximity of components to equipment with a safety function and do not identify structural/seismic boundaries. See Section 2.1.2.1.3 for further discussion of license renewal drawings.

Table 2.3.3-1-IP2
Spent Fuel Pit Cooling System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Neutron absorber (Boraflex)	Neutron absorption

Table 2.3.3-1-IP3
Spent Fuel Pit Cooling System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Neutron absorber (Boral)	Neutron absorption

Table 2.3.3-2-IP2
Service Water System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Indicator	Pressure boundary
Mixer	Pressure boundary
Orifice	Pressure boundary Flow control
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary Flow control

Table 2.3.3-2-IP3
Service Water System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Indicator	Pressure boundary
Mixer	Pressure boundary
Orifice	Pressure boundary Flow control
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary Flow control

Table 2.3.3-3-IP2
Component Cooling Water System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flex hose	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heat exchanger (tubesheet)	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-3-IP3
Component Cooling Water System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flex hose	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-4-IP2
Compressed Air System
Components Subject to Aging Management Review

Component Type	**Intended Function(s)**
Bolting	Pressure boundary
Flex hose	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-4-IP3
Compressed Air System
Components Subject to Aging Management Review

Component Type	**Intended Function(s)**
Bolting	Pressure boundary
Flex hose	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-5-IP2
Nitrogen System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flex hose	Pressure boundary
Flow element	Flow control Pressure boundary
Piping	Pressure boundary
Regulator	Pressure boundary
Strainer	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-5-IP3
Nitrogen System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flex hose	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-6-IP2
Chemical and Volume Control System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary Flow control
Fluid drive housing	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heat exchanger (tubesheet)	Pressure boundary
Piping	Pressure boundary
Pulsation dampener housing	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary Flow control

Table 2.3.3-6-IP3
Chemical and Volume Control System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary Flow control
Fluid drive housing	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heat exchanger (tubesheet)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary Flow control

Table 2.3.3-7-IP2
Primary Water Makeup System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flow element	Flow control Pressure boundary
Heat exchanger (tubes)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-7-IP3
Primary Water Makeup System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flow element	Flow control Pressure boundary
Heat exchanger (tubes)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-8-IP2
Heating, Ventilation and Cooling Systems
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Damper housing	Pressure boundary
Duct	Pressure boundary
Duct flexible connection	Pressure boundary
Fan housing	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-8-IP3
Heating, Ventilation and Cooling Systems
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Damper housing	Pressure boundary
Duct	Pressure boundary
Duct flexible connection	Pressure boundary
Fan housing	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-9-IP2
Containment Cooling and Filtration System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Damper housing	Pressure boundary
Duct	Pressure boundary
Duct flexible connection	Pressure boundary
Fan housing	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (header)	Pressure boundary
Heat exchanger (housing)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Moisture separator	Filtration
Nozzle	Flow control
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-9-IP3
Containment Cooling and Filtration System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Damper housing	Pressure boundary
Duct	Pressure boundary
Duct flexible connection	Pressure boundary
Fan housing	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (header)	Pressure boundary
Heat exchanger (housing)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Moisture separator	Filtration
Nozzle	Flow control
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-10-IP2
Control Room HVAC System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Damper housing	Pressure boundary
Drip pan	Pressure boundary
Duct	Pressure boundary
Duct flexible connection	Pressure boundary
Fan housing	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (housing)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Louver housing	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-10-IP3
Control Room HVAC System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Damper housing	Pressure boundary
Drip pan	Pressure boundary
Duct	Pressure boundary
Duct flexible connection	Pressure boundary
Fan housing	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Louver housing	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-11-IP2
Fire Protection – Water System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Flow element	Flow control Pressure boundary
Heater housing	Pressure boundary
Hydrant	Pressure boundary
Nozzle	Flow control Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Silencer	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-11-IP3
Fire Protection – Water System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Filter housing	Filtration Pressure boundary
Flow element	Flow control Pressure boundary
Heater housing	Pressure boundary
Hydrant	Pressure boundary
Nozzle	Flow control Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Silencer	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-12-IP2
Fire Protection – CO_2, Halon, and RCP Oil Collection Systems Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Drain pan	Pressure boundary
Flame arrestor	Flow control
Flex hose	Pressure boundary
Nozzle	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-12-IP3
Fire Protection – CO_2, Halon, and RCP Oil Collection Systems
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Drain pan	Pressure boundary
Filter	Filtration
Filter housing	Pressure boundary
Flame arrestor	Flow control
Flex hose	Pressure boundary
Heat exchanger (tubes)	Pressure boundary
Nozzle	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-13-IP2
Fuel Oil
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Flow control Pressure boundary
Heat exchanger (tube)	Heat transfer Pressure boundary
Heater housing	Pressure boundary
Orifice	Flow control Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-13-IP3
Fuel Oil
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flame arrestor	Pressure boundary
Level gauge	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-14-IP2
Emergency Diesel Generator System
Components Subject to Aging Management Review

Component Type	Intended Function
Blower housing	Pressure boundary
Bolting	Pressure boundary
Duct	Pressure boundary
Duct flexible connection	Pressure boundary
Expansion joint	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (housing)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heater housing	Pressure boundary
Lubricator housing	Pressure boundary
Orifice	Flow control Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Silencer	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary

Table 2.3.3-14-IP2
Emergency Diesel Generator System
Components Subject to Aging Management Review
(Continued)

Component Type	Intended Function
Tank	Pressure boundary
Thermowell	Pressure boundary
Trap	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-14-IP3
Emergency Diesel Generator System
Components Subject to Aging Management Review

Component Type	Intended Function
Blower housing	Pressure boundary
Bolting	Pressure boundary
Dryer	Pressure boundary
Duct	Pressure boundary
Duct flexible connection	Pressure boundary
Expansion joint	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (housing)	Pressure boundary
Heat exchanger (shell)	Pressure boundary

Table 2.3.3-14-IP3
Emergency Diesel Generator System
Components Subject to Aging Management Review
(Continued)

Component Type	**Intended Function**
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heater housing	Pressure boundary
Lubricator housing	Pressure boundary
Orifice	Flow control Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Silencer	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Trap	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-15-IP2
Security Generator System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flexible bellows	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (tubes)	Heat transfer Pressure boundary
Piping	Pressure boundary
Silencer	Pressure boundary
Turbocharger	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-15-IP3
Security Generator System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flexible bellows	Pressure boundary
Flexible connection	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (tubes)	Heat transfer Pressure boundary
Piping	Pressure boundary
Silencer	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-16-IP2
SBO/Appendix R Diesel Generator System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flexible connection	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heater housing	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Silencer	Pressure boundary
Tank	Pressure boundary
Turbocharger housing	Heat transfer Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-16-IP3
Appendix R Diesel Generator System
Components Subject to Aging Management Review

Component Type	Intended Function
Blower housing	Pressure boundary
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Expansion joint	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (bonnet)	Pressure boundary
Heat exchanger (fins)	Heat transfer
Heat exchanger (housing)	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Heater housing	Pressure boundary
Lubricator housing	Pressure boundary
Motor housing	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Silencer	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary

Table 2.3.3-16-IP3
Appendix R Diesel Generator System
Components Subject to Aging Management Review
(Continued)

Component Type	**Intended Function**
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-17-IP2
City Water System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-17-IP3
City Water System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-18-IP2
Plant Drains System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Piping	Pressure boundary
Strainer	Filtration
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-18-IP3
Plant Drains System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Piping	Pressure boundary
Strainer	Filtration
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.3-19-1-IP2
Auxiliary Steam System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flex joint	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heater housing	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Steam trap	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-2-IP2
Conventional Closed Cooling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Flex joint	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-3-IP2
Chemical Feed System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Flex joint	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-4-IP2
Condensate System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Blower housing	Pressure boundary
Bolting	Pressure boundary
Ejector	Pressure boundary
Expansion joint	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-5-IP2
Chemical and Volume Control System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-6-IP2
Circulating Water System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-7-IP2
City Water System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-8-IP2
Intake Structure System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-9-IP2
Emergency Diesel Generator System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-10-IP2
Fuel Oil System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-11-IP2
Fire Protection System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Evacuator	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-12-IP2
Feedwater System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-13-IP2
Fresh Water Cooling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-14-IP2
Gas System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Dryer	Pressure boundary
Filter housing	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-15-IP2
Main Generator System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-16-IP2
House Service Boiler System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Steam trap	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Turbine housing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-17-IP2
Heating, Ventilation and Air Conditioning Systems Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Damper housing	Pressure boundary
Duct	Pressure boundary
Filter housing	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-18-IP2
Instrument Air System
Nonsafety-Related Components Potentially Affecting Safety Functions
Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Dryer	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Silencer	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Trap	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-19-IP2
Instrument Air Closed Cooling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-20-IP2
Ignition Oil System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-21-IP2
Integrated Liquid Waste Handling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-22-IP2
Lube Oil System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flex hose	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-23-IP2
Main Steam System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Silencer	Pressure boundary
Steam trap	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Turbine housing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-24-IP2
Miscellaneous System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-25-IP2
Nuclear Service Grade Makeup System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-26-IP2
Post-Accident Containment Air Sampling System Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Gas analyzer	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-27-IP2
Post-Accident Containment Vent System Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-28-IP2
Primary Sampling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-29-IP2
Primary Water Makeup System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-30-IP2
Reactor Coolant System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Rupture disk	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-31-IP2
Radiation Monitoring System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-32-IP2
River Water Service System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Strainer housing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-33-IP2
Station Air System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-34-IP2
Boiler Blowdown System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-35-IP2
Spent Fuel Pit Cooling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-36-IP2
Steam Generator Blowdown System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-37-IP2
Safety Injection System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-38-IP2
Secondary Sampling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-39-IP2
Service Water System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Strainer housing	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-40-IP2
Technical Support Center Diesel System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-41-IP2
Main Turbine System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Turbine housing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-42-IP2
Waste Disposal System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-43-IP2
Water Treatment Plant System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-1-IP3
Ammonia / Morpholine System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-2-IP3
Auxiliary Steam and Condensate Return System Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Heater housing	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Steam trap	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-3-IP3
Boron and Layup Chemical Addition System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-4-IP3
Condenser Air Removal System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Ejector	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Steam trap	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-5-IP3
Chlorination System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-6-IP3
Condensate System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-7-IP3
Condensate Polisher System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-8-IP3
Condensate Pump Discharge System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-9-IP3
Condensate Pump Suction System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-10-IP3
Containment Spray System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-11-IP3
Chemical and Volume Control System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-12-IP3
Circulating Water System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-13-IP3
City Water Makeup System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Strainer housing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-14-IP3
Condensate Transfer System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Ejector	Pressure boundary
Expansion joint	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-15-IP3
Demineralized Water System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-16-IP3
Emergency Diesel Generator System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-17-IP3
Emergency Generator System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-18-IP3
Extraction Steam System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Steam trap	Pressure boundary
Strainer housing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-19-IP3
Floor Drains System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-20-IP3
Fire Water System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-21-IP3
Fuel Storage Building HVAC System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-22-IP3
Feedwater System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-23-IP3
Main Feedwater Pump and Service System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Steam trap	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Turbine housing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-24-IP3
Gland Seal System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Rupture disk	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-25-IP3
Gaseous Waste Disposal System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-26-IP3
Hydrazine Addition System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-27-IP3
Heater Drain/Moisture Separator Drains/Vents System Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Expansion joint	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-28-IP3
High Pressure Steam Dump System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-29-IP3
Instrument Air System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Dryer	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Silencer	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Trap	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-30-IP3
Instrument Air Closed Cooling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-31-IP3
Lube Oil System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heater housing	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-32-IP3
Low Pressure Steam Dump System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Steam trap	Pressure boundary
Strainer housing	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-33-IP3
Liquid Waste Disposal System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-34-IP3
Main Feedwater System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-35-IP3
Main Steam System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Silencer	Pressure boundary
Steam trap	Pressure boundary
Strainer housing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-36-IP3
Main Turbine Generator System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Rupture disk	Pressure boundary
Turbine housing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-37-IP3
Nitrogen System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary
Vaporizer	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-38-IP3
Nuclear Equipment Drains System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-39-IP3
Primary Auxiliary Building HVAC System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Damper housing	Pressure boundary
Duct	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-40-IP3
Process Radiation Monitoring System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-41-IP3
Primary Plant Sampling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-42-IP3
Primary Water Makeup System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-43-IP3
Pressurizer System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Rupture disk	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-44-IP3
Reactor Coolant System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-45-IP3
Reheat Steam System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Steam trap	Pressure boundary
Strainer housing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-46-IP3
Reactor Vessel Level Indication System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-47-IP3
River Water Service System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-48-IP3
Station Air System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Compressor housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-49-IP3
Spent Fuel Pit and Cooling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-50-IP3
Steam Generator Blowdown System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Eductor	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-51-IP3
Steam Generator Blowdown Recovery System Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-52-IP3
Steam Generator Sampling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-53-IP3
Safety Injection / Recirculation System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Strainer housing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-54-IP3
Main Generator Seal Oil System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-55-IP3
Secondary Plant Sampling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-56-IP3
Service Water System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Filter housing	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-57-IP3
Turbine Generator Hydraulic Control System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-58-IP3
Turbine Hall Closed Cooling System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Flex joint	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-59-IP3
Vapor Containment Hydrogen Analyzer System Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Gas analyzer	Pressure boundary
Piping	Pressure boundary
Tank	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-60-IP3
Vapor Containment Purge and Supply System Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Damper housing	Pressure boundary
Duct	Pressure boundary
Filter housing	Pressure boundary
Piping	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-61-IP3
Vapor Containment Pressure Relief System
Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	**Intended Function**[1]
Bolting	Pressure boundary
Duct	Pressure boundary
Filter housing	Pressure boundary
Piping	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

Table 2.3.3-19-62-IP3
Weld Channel and Containment Penetration Pressurization System Nonsafety-Related Components Potentially Affecting Safety Functions Subject to Aging Management Review

Component Type	Intended Function[1]
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

1. For component types included under 10 CFR 54.4(a)(2), the intended function of pressure boundary includes providing structural/seismic support for components that are included for nonsafety-related SSCs directly connected to safety-related SSCs.

2.3.4 Steam and Power Conversion Systems

The following systems are included in this section.

- Main Steam
- Main Feedwater
- Auxiliary Feedwater
- Steam Generator Blowdown
- IP2 AFW Pump Room Fire Event
- Condensate

2.3.4.1 Main Steam

System Description

Unit 2

The purpose of the main steam (MS) system is to conduct steam from the four steam generators inside the containment structure to the turbine generator unit in the turbine generator building. The system has four main steam pipes, one from each steam generator to the turbine stop and control valves. The four lines are interconnected near the turbine. Each steam pipe has a main steam isolation value (MSIV) and a non-return valve located outside the containment. There are five code safety valves and one power-operated relief valve on each main steam line outside the reactor containment and upstream of the isolation and non-return valves.

A flow venturi upstream of the isolation valve measures steam flow. Steam pressure is also measured upstream of the isolation valve. The main steam system supplies steam to the main boiler feedwater pump turbines and the auxiliary feedwater pump turbine.

The main boiler feedwater pump turbines are included in the main steam system. The main steam system includes the turbine steam bypass system and the low pressure steam dump system, which channel excess steam flow to the condenser. There are MS system components in the steam generator blowdown flowpath.

The MS system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide steam generator (SG) overpressure protection via the main steam safety valves.
- Limit steam release and provide secondary side isolation capability to limit RCS cooldown following a steam line rupture.
- Provide isolation capability during a primary-to-secondary leak or steam generator tube rupture.
- Provide capability to cool down RCS via steam discharge to atmosphere.
- Support containment boundary as a closed system extension of the containment.
- Provide steam to the steam-driven auxiliary feedwater pump under certain accident conditions.

The MS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The MS system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide capability to cool down RCS via steam discharge to atmosphere for the Appendix R event (10 CFR 50.48) or for station blackout (10 CFR 50.63).
- Provide the capability to isolate steam flow should the main steam isolation valves be inoperable following an Appendix R event (10 CFR 50.48).
- Support safe shutdown in the event of a fire in the auxiliary feed pump room (10 CFR 50.48) (see Section 2.3.4.5).
- Provide steam to the steam-driven auxiliary feedwater pump during a station blackout (10 CFR 50.63) or Appendix R event (10 CFR 50.48).

Unit 3

For Unit 3, the main steam evaluation includes the following systems: main steam, auxiliary steam and condensate return, condenser air removal, gland seal steam, high pressure steam dump, reactor protection and control, reheat steam, and turbine generator hydraulic control.

Main Steam

The purpose of the main steam (MS) system is to conduct steam from the four steam generators inside the containment structure to the turbine generator unit in the turbine generator building. The system has four main steam pipes, one from each steam generator to the turbine stop and control valves. The four lines are interconnected near the turbine. Each steam pipe has a main steam isolation valve (MSIV) and a non-return valve located outside the containment. There are five code safety valves and one power-operated relief valve on each main steam line outside the reactor containment and upstream of the isolation and non-return valves.

A flow venturi upstream of the isolation valve measures steam flow. Steam pressure is also measured upstream of the isolation valve. The main steam system supplies steam to the main boiler feedwater pump turbines and the auxiliary feedwater pump turbine.

The main boiler feedwater pump turbines are included in the main steam system. The main steam system includes the turbine steam bypass system and the low pressure steam dump system, which channel excess steam flow to the condenser. There are MS system components in the steam generator blowdown flowpath.

The MS system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide steam generator (SG) overpressure protection via the main steam safety valves.
- Limit steam release and provide secondary side isolation capability to limit RCS cooldown following a steam line rupture.
- Provide isolation capability during a primary-to-secondary leak or steam generator tube rupture.

- Provide capability to cool down RCS via steam discharge to atmosphere.
- Support containment boundary as a closed system extension of the containment.
- Provide steam to the steam-driven auxiliary feedwater pump under certain accident conditions.

The MS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The MS system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide capability to cool down RCS via steam discharge to atmosphere for the Appendix R event (10 CFR 50.48) or for station blackout (10 CFR 50.63).
- Provide steam to the steam-driven auxiliary feedwater pump during a station blackout (10 CFR 50.63) or Appendix R event (10 CFR 50.48).
- Provide the capability to isolate steam flow should the main steam isolation valves be inoperable following an Appendix R event (10 CFR 50.48).

Auxiliary Steam and Condensate Return

The purpose of the auxiliary steam and condensate return (ASC) system is to provide auxiliary steam to various plant components for the purpose of heating for IP3 and to recover condensate via the associated condensate return lines. The system supplies heating steam throughout the plant including room and area heating units, refueling water and primary water storage tanks, boric acid batch mixing tank, etc. The system also supplies other minor steam loads such as the condenser waterbox air ejectors. The system is supplied by the house service boiler or steam reboiler and includes heaters, air ejectors, steam distribution piping and valves, condensate return piping, valves, pumps, tanks, controls and instruments.

The ASC system has no intended functions for 10 CFR 54.4(a)(1).

The ASC system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The ASC system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide the capability to isolate steam flow should the main steam isolation valves be inoperable following an Appendix R event (10 CFR 50.48).

Condenser Air Removal

The purpose of the condenser air removal (CAR) system is to remove air and non-condensable gasses from the condensers to prevent the buildup of gas that would interfere with the condensing of steam in the condenser. For each condenser, one four-element, two-stage air ejector with separate inter-condenser and common after-condensers is provided. For normal air removal, one air ejector unit is required per condenser. For initial condenser shell side air removal, three non-condensing priming ejectors are provided. The ejectors function by using steam from the main steam system supplied through a pressure reducing valve. The air ejector exhaust is monitored for radioactivity. In the event of a steam generator leak and the subsequent presence of radioactive contaminated steam in the secondary system, the radioactive non-condensable gases that concentrate in the air ejector effluent will be detected by this radiation monitor. A high activity level signal automatically diverts the exhaust gases from the vent stack to the containment.

The CAR system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.

The CAR system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The CAR system has the following intended function for 10 CFR 54.4(a)(3).

- Provide the capability to isolate main steam to the steam jet air ejectors and priming air ejectors if MSIVs cannot be closed due to a fire (10 CFR 50.48).

Gland Seal Steam

The purpose of the gland seal steam (GSS) system is to provide steam to the main turbine and boiler feedwater pump turbine gland seals. The system includes pressure regulating valves and distribution piping and valves.

The GSS system has no intended functions for 10 CFR 54.4(a)(1).

The GSS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The GSS system has the following intended function for 10 CFR 54.4(a)(3).

- Provide the capability to isolate steam flow should the main steam isolation valves be inoperable following an Appendix R event (10 CFR 50.48).

High Pressure Steam Dump

The purpose of the high pressure steam dump (HPSD) system is to provide a main steam flowpath bypassing the turbine to the main condenser when the turbine generator is unable to accept the steam flow. Excess steam is bypassed when necessary from the four main steam lines ahead of the turbine stop valves directly to the condensers by means of two main steam bypass lines, one on either side of the turbine. From each of the main steam bypass lines, six lines, each with a bypass control valve, discharge into the condenser. The system includes the bypass control valves and the associated piping, controls and instruments.

The HPSD system has no intended functions for 10 CFR 54.4(a)(1).

The HPSD system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The HPSD system has the following intended function for 10 CFR 54.4(a)(3).

- Provide the capability to isolate steam flow through the turbine via the high pressure steam dump valves should the MSIVs become inoperable following an Appendix R event.

Reactor Protection and Control

The purpose of the RPC system is to monitor primary and secondary plant parameters and to provide a reactor trip to protect the reactor core and reactor coolant system. The RPC system is primarily an electrical system, but it does include a small number of mechanical instrumentation components that form part of the steam generator secondary side pressure boundary.

The RPC system has the following mechanical intended function for 10 CFR 54.4(a)(1).

- Maintain steam generator secondary side pressure boundary.

The RPC system has no intended functions for 10 CFR 54.4(a)(2) or (a)(3).

Reheat Steam

The purpose of the reheat steam (RS) system is to provide reheated steam to the low pressure turbines and to provide steam to the main boiler feedwater pump turbines from main steam. Steam from the high pressure turbine exhaust passes through the moisture separator reheaters where moisture is removed and the steam is reheated by main steam extracted before the turbine main steam stop valves. Part of the extracted main steam feeds the main boiler feedwater pump turbines. The system includes the moisture separator reheaters, piping, valves, instruments and controls.

The RS system has no intended functions for 10 CFR 54.4(a)(1).

The RS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The RS system has the following intended function for 10 CFR 54.4(a)(3).

- Support the capability to isolate main steam to the moisture separator reheaters if MSIVs cannot be closed due to a fire.

Turbine Generator Hydraulic Control

The purpose of the turbine generator hydraulic control (TGHC) system is to provide direct control of the main turbine. The system includes electrical and mechanical components of the turbine hydraulic control system, including the main turbine stop valves. The main turbine stop valves provide a part of the main steam system pressure boundary for Appendix R safe shutdown.

The TGHC system has no intended functions for 10 CFR 54.4(a)(1).

The TGHC system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The TGHC system has the following intended function for 10 CFR 54.4(a)(3).

- Provide a means to trip and/or isolate steam to the main turbine (via turbine stop valves) following an Appendix R event (10 CFR 50.48).

UFSAR References

Unit 2: Section 10.2

Unit 3:

MS	Section 10.2
ASC	Section 9.6.4
CAR	Section 10.2.5
HPSD	Section 10.2.1
RPC	Section 7.2
RS	Section 10.2
TGHC	Section 10.2.2

Components Subject to Aging Management Review

Unit 2

MS components in the SGBD flowpath are evaluated with the steam generator blowdown system (Section 2.3.4.4). Components supporting the auxiliary feedwater (AFW) system are evaluated with that system (Section 2.3.4.3). Components that support safe shutdown in the event of a fire in the auxiliary feed pump room are evaluated in Section 2.3.4.5. A small number of components are evaluated with the compressed air systems (Section 2.3.3.4). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Unit 3

MS components supporting the AFW system are evaluated with the auxiliary feedwater systems (Section 2.3.4.3). Components containing air are evaluated with the compressed air systems (Section 2.3.3.4).   Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining MS system components are reviewed as listed below.

Nonsafety-related ASC components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). ASC components that form part of the main steam pressure boundary are reviewed as listed below.

CAR system components in the containment penetration are evaluated with containment penetrations (Section 2.3.2.5). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). CAR system components used to isolate main steam in the event of a fire are reviewed as listed below.

Nonsafety-related GSS components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). GSS components that form part of the main steam pressure boundary are reviewed as listed below.

Nonsafety-related HPSD components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). HPSD components required to isolate for Appendix R safe shutdown are reviewed as listed below.

RPC components supporting the mechanical intended function are evaluated with the steam generators (Section 2.3.1.4) or as listed below.

Nonsafety-related RS components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). RS system components supporting the capability to isolate moisture separator reheaters are reviewed as listed below.

Nonsafety-related TGHC components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). TGHC turbine stop valves are reviewed as listed below.

Table 2.3.4-1-IP2 and Table 2.3.4-1-IP3 list the component types that require aging management review.

Table 3.4.2-1-IP2 and Table 3.4.2-1-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-9321-F-2017	LRA-9321-F-20173
LRA-9321-F-2041	LRA-9321-F-20313

LRA-9321-F-2042
LRA-227780
LRA-A235308
LRA-9321-F-20413
LRA-9321-F-20423
LRA-9321-F-41283

2.3.4.2 Main Feedwater

System Description

Unit 2

The purpose of the main feedwater (FW) system is to transfer condensate and heater drain flow through the final stage of feedwater heating to the steam generators. Two half-size steam-driven main feedwater pumps increase the pressure of the condensate for delivery through the final stage of feedwater heating and then the feedwater regulating valves to the steam generators.

The FW system includes the high pressure feedwater heaters, the steam generators, and the piping and valves from the outlet of the main feed pumps through the heaters to the steam generators. The FW system also includes the main feed pump turbine drip tank drain pumps. The main feed pumps are part of the condensate system and the main feed pump turbines are part of the main steam system.

The FW system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide capability to automatically isolate feedwater flow to the steam generators (SGs) following certain transient, emergency, and faulted conditions.
- Provide flow paths for the delivery of auxiliary feedwater (AFW) to the SGs following transients and accidents requiring actuation of the AFW System.
- Provide primary-to-secondary heat transfer (steam generators).
- Provide part of the reactor coolant pressure boundary (steam generators).
- Maintain secondary system pressure boundary to support primary heat removal (steam generators).
- Support containment boundary as a closed system extension of the containment.

The FW system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The FW system has the following intended functions for 10 CFR 54.4(a)(3).

- The FW system is credited in the Appendix R safe shutdown analysis for fire protection (10 CFR 50.48).
- Support safe shutdown in the event of a fire in the auxiliary feed pump room (10 CFR 50.48) (see Section 2.3.4.5).

Unit 3

The purpose of the feedwater system, which includes the feedwater (FW), main feedwater (MFW), and main feedwater pumps and services (FWP) system codes, is to transfer condensate and heater drain flow through the final stage of feedwater heating to the steam generators. Two half-size steam-driven main feedwater pumps increase the pressure of the condensate for delivery through the final stage of feedwater heating and then the feedwater regulating valves to the steam generators.

Main Feedwater

The MFW system includes the high pressure feedwater heaters and piping and valves from the main feed pumps through the heaters to the steam generators.

The MFW system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide capability to isolate feedwater flow to the steam generators.
- Provide capability to isolate backflow from the auxiliary feedwater system.
- Support containment boundary as a closed system extension of the containment.

The MFW system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The MFW system has the following intended function for 10 CFR 54.4(a)(3).

- Provide flow paths for the delivery of auxiliary feedwater to the steam generators during station blackout and Appendix R events (10 CFR 50.48).

Feedwater

The FW system includes miscellaneous feedwater-related components. All of the mechanical components are instrumentation valves on the auxiliary feedwater system.

The FW system has the following intended function for 10 CFR 54.4(a)(1).

- Support the auxiliary feedwater system pressure boundary.

The FW system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The FW system has no intended function for 10 CFR 54.4(a)(3).

Main Feedwater Pumps and Services

The purpose of the FWP system is to support the main feedwater system by increasing the pressure of the condensate for delivery through the final stage of feedwater heating and then the feedwater regulating valves to the steam generators. The system includes the main feed pumps, the main feed pump turbines, and their associated support equipment.

The FWP system has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

The FWP system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

UFSAR References

Unit 2: Section 10.2.6

Unit 3: Section 10.2.6

Components Subject to Aging Management Review

Unit 2

The steam generators and secondary side instrumentation piping and valves are evaluated with the steam generators (Section 2.3.1.4). Components that support safe shutdown in the event of a fire in the auxiliary feed pump room are evaluated in Section 2.3.4.5. System components containing air are evaluated with the compressed air systems (Section 2.3.3.4). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining feedwater system components are reviewed as listed below.

Unit 3

Components of the FW system supporting the auxiliary feedwater system are evaluated with the auxiliary feedwater systems (Section 2.3.4.3). For FW, MFW, and FWP systems, nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components of MFW are reviewed as listed below.

Table 2.3.4-2-IP2 and Table 2.3.4-2-IP3 list the component types that require aging management review.

Table 3.4.2-2-IP2 and Table 3.4.2-2-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-9321-2019-0	LRA-9321-20193-0

2.3.4.3 Auxiliary Feedwater

System Description

Unit 2

The purpose of the auxiliary feedwater (AFW) system is to ensure that adequate feedwater is supplied to the steam generators for removing reactor decay heat under all circumstances, including loss of power and normal heat sink (e.g., condenser isolation or loss of circulating water flow). Major components of the system include the condensate storage tank (CST) and the three auxiliary feedwater pumps, one steam-turbine-driven and two electric-motor-driven. Diverse auxiliary feedwater supplies are provided by using two pumping systems using different sources of motive power for the pumps. Each system supplies auxiliary feedwater to all four steam generators. The steam-turbine-driven pump is capable of being supplied from two of the steam generators. The auxiliary feedwater system is used during plant startup at low power levels before the main feedwater pump is available.

The condensate storage tank is the safety-grade water source for the system. A minimum water level maintained in the condensate storage tank assures an adequate inventory. The auxiliary feedwater pumps can draw from an alternative supply of water to provide for long-term cooling. This alternative supply is from the city water storage tank.

The AFW system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide a flow path from the CST via the auxiliary feedwater pumps to the steam generators for decay heat removal under accident conditions.
- Provide capability to isolate the CST from the condensate system to maintain a dedicated water supply.

The AFW system has no intended function for 10 CFR 54.4(a)(2).

The AFW system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide a flow path from the CST to the SGs for decay heat removal via the steam-driven auxiliary feedwater pump during station blackout (10 CFR 50.63) and via all auxiliary feedwater pumps during Appendix R events (10 CFR 50.48).
- Provide a flow path from the CST via the auxiliary feedwater pumps to the SGs during an ATWS event (10 CFR 50.62).

Unit 3

The purpose of the AFW system is to provide a flow of water from the condensate storage tank to the steam generators when the main feedwater pumps are unavailable. One steam turbine-driven and two electric motor-driven auxiliary feedwater pumps ensure that adequate feedwater is supplied to the steam generators for removing reactor decay heat under all circumstances, including loss of power and normal heat sink (e.g., condenser isolation or loss of circulating water flow). All four steam generators can be supplied with auxiliary feedwater. The steam-turbine-driven pump is capable of being supplied from two of the steam generators. The auxiliary feedwater system is used during plant startup at low power levels before the main feedwater pump is available.

The system includes the auxiliary feedwater pumps and the turbine for the turbine-driven pump, piping from both the condensate storage tank and city water supply (an alternate source) through the pumps to the feedwater line supplying the steam generators, valves, instruments and controls. The system does not include the condensate storage tank, which is part of the condensate transfer system.

The AFW system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide a flow path from the condensate storage tank (CST) via the auxiliary feedwater pumps to the steam generators (SGs) for decay heat removal under accident conditions.

The AFW system has no intended functions for 10 CFR 54.4(a)(2).

The AFW system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide a flow path from the CST via the steam-driven auxiliary feedwater pump to the steam generators for decay heat removal during station blackout (10 CFR 50.63) and Appendix R (10 CFR 50.48) events.
- Provide a flow path from the CST via the auxiliary feedwater pumps to the steam generators during an ATWS event (10 CFR 50.62).

UFSAR References

Unit 2: Section 10.2.6.3

Unit 3: Sections 7.2.2, 10.2.6

Components Subject to Aging Management Review

Unit 2

Instrument air components included in the AFW system code are evaluated with the compressed air systems (Section 2.3.3.4). A small number of components are evaluated with the city water system (Section 2.3.3.17). Remaining components are reviewed as listed below.

Unit 3

Instrument air components included in the AFW system code are evaluated with the compressed air systems (Section 2.3.3.4). Remaining components are reviewed as listed below.

Table 2.3.4-3-IP2 and Table 2.3.4-3-IP3 list the component types that require aging management review.

Table 3.4.2-3-IP2 and Table 3.4.2-3-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings

Unit 2	*Unit 3*
LRA-9321-2017	LRA-9321-20173
LRA-9321-2018	LRA-9321-20183
LRA-9321-2019	LRA-9321-20193
LRA-9321-2038	LRA-9321-20383
LRA-9321-2041	LRA-9321-20413
LRA-9321-4006	LRA-9321-27233
LRA-250073	

2.3.4.4 Steam Generator Blowdown

System Description

Unit 2

The purpose of the steam generator blowdown (SGBD) system is to provide blowdown capability to control the concentration of solids in the shell side of the steam generators. The system is normally operating with a continuous blowdown and sample flow. The SGBD system includes a drain connection and two blowdown connections (nozzles) at the bottom of each steam generator. Piping from the connections (nozzles) join to form a stainless steel blowdown header. Four individual blowdown headers are routed from the respective steam generator to the primary auxiliary building through containment isolation valves. The blowdown flows are normally routed to the flash tank. The flashed vapor is discharged to the atmosphere while the condensate drains by gravity through a service water discharge line into the circulating water discharge canal. The sample flows are combined, cooled, and monitored for radiation.

The SGBD system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Isolate blowdown upon a loss of feedwater to prevent loss of secondary inventory.

The SGBD system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SGBD system has the following intended function for 10 CFR 54.4(a)(3).

- Isolate the blowdown during the shutdown/cooldown when AFW is actuated for fire (10 CFR 50.48), ATWS (10 CFR 50.62), or station blackout (10 CFR 50.63).

Unit 3

The Unit 3 evaluations of steam generator blowdown includes the following systems: steam generator blowdown, steam generator blowdown recovery, and steam generator sampling.

Steam Generator Blowdown

The purpose of the SGBD system is to provide blowdown capability to control the concentration of solids in the shell side of the steam generators. The system is normally operating with a continuous blowdown and sample flow. The SGBD system includes a drain connection and two blowdown connections (nozzles) at the bottom of each steam generator. Piping from the connections (nozzles) join to form a stainless steel blowdown header. Four individual blowdown headers are routed from the respective steam generator to the primary auxiliary building through containment isolation valves.

Downstream of the containment isolation valves, blowdown flow can be diverted to either the blowdown flash tank or the blowdown recovery system. During normal operation, blowdown is routed to the recovery system. The steam generator blowdown recovery system consists of two heat exchangers, a filter and demineralizer package, and associated piping, valves and instrumentation.

The SGBD system includes the major components of the steam generator blowdown system and the steam generator blowdown recovery system. However, piping, valves, and instrumentation associated with steam generator blowdown recovery are components in the steam generator blowdown recovery system, SGBDR, described below.

The SGBD system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Isolate blowdown upon a loss of feedwater to prevent loss of secondary inventory.

The SGBD system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SGBD system has the following intended function for 10 CFR 54.4(a)(3).

- Isolate the blowdown during the shutdown/cooldown when AFW is actuated for fire (10 CFR 50.48), ATWS (10 CFR 50.62), or station blackout (10 CFR 50.63).

Steam Generator Blowdown Recovery

The SGBDR system includes piping, valves and instrumentation of the steam generator blowdown recovery system.

The SGBDR system has no intended functions for 10 CFR 54.4(a)(1).

The SGBDR system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SGBDR system has no intended functions for 10 CFR 54.4(a)(3).

Steam Generator Sampling

The purpose of the steam generator sampling (SGS) system is to provide representative samples of the secondary side water for laboratory analysis. Analyses show both chemical and radiochemical conditions. The system provides sample capability for each steam generator from its blowdown line inside containment. Separate containment penetrations are provided for each sample line routed to the sample room, where the liquid is cooled and the pressure reduced. Each individual sample is then split into two routes: one goes to the sample sink to provide periodic samples for chemical analysis, the second goes to a conductivity cell, a radiation monitor, and then to the blowdown flash tank. This second line handles a continuous flow for a constant reading of conductivity and a constant monitoring for radiation.

The SGS system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Maintain the component cooling water system pressure boundary in the steam generator sample heat exchangers (sample cooling and heat transfer are not required, but the heat exchangers are required to maintain the cooling water system pressure boundary).

The SGS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The SGS system has no intended functions for 10 CFR 54.4(a)(3).

UFSAR References

Unit 2: Section 10.2.1.5

Unit 3: SGBD and SGBDR, Section 10.2.1; SGS, Section 9.4.1

Components Subject to Aging Management Review

Unit 2

A small number of SGBD components are evaluated with the service water systems (Section 2.3.3.2). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining components are reviewed as listed below.

Unit 3

A small number of SGBD components are evaluated with the service water systems (Section 2.3.3.2). The steam generator sample heat exchangers (SGS system) are safety-related only for their cooling water pressure boundary function (heat transfer is not a required function) and these heat exchangers are therefore evaluated with the component cooling water system (Section 2.3.3.3). Nonsafety-related components (SGBD, SGBDR, and SGS systems) not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19). Remaining SGS and SGBD components are reviewed as listed below.

Table 2.3.4-4-IP2 and Table 2.3.4-4-IP3 list the component types that require aging management review.

Table 3.4.2-4-IP2 and Table 3.4.2-4-IP3 provide the results of the aging management review.

License Renewal Drawings

Additional details for components subject to aging management review are provided in the following license renewal drawings.

Unit 2	*Unit 3*
LRA-9321-2729	LRA-9321-27293, sheet 1
	LRA-9321-27293, sheet 2

2.3.4.5 IP2 AFW Pump Room Fire Event

System Description

This evaluation is for systems that in combination provide and support main feedwater flow to the steam generators during a shutdown (Unit 2 only). This combination of systems is credited as a method of supplying make-up water to the steam generators during a fire in the auxiliary boiler feed pump room for an assumed duration of at least one hour. This method was necessary because the current design and licensing basis requires the assumption that plant personnel are unable to re-enter the fire area for at least one hour following onset of the fire.

Unit 2 UFSAR Section 9.6.2 describes the fire protection system requirements and regulations. A combination of secondary systems and components provide a method of feeding the steam generators should a fire in the AFW pump room make it temporarily unavailable for operator actions. These plant systems and components provide feedwater flow through the main feedwater isolation valves to the steam generators from the IP1 condensate storage tanks (CST). The flow path is from the Unit 1 CSTs through the hotwell dump and condensate transfer pump, through the condensate pumps and boiler feed pumps to the main feedwater isolation valves to the steam generators.

The following systems support this flow path. If the system is described elsewhere, the section reference is given.

- auxiliary steam
- conventional closed cooling
- condensate (Section 2.3.4.6)
- circulating water
- city water (Section 2.3.3.17)
- feedwater (Section 2.3.4.2)
- fresh water cooling (Unit 1 system)
- instrument air (Section 2.3.3.4)
- instrument air closed cooling
- lube oil
- main steam (Section 2.3.4.1)
- river water service (Unit 1 system)
- service water (Section 2.3.3.2)
- station air (Section 2.3.3.4) (Unit 1 system)
- water treatment plant (Unit 1 system)
- wash water

These systems are normally in service and will be available prior to a fire in the auxiliary boiler feed pump room.

Each system listed above has the following intended function for 10 CFR 54.4(a)(3).

- Support safe shutdown in the event of a fire in the auxiliary feed pump room (10 CFR 50.48).

Systems described elsewhere in the application have additional intended functions not related to the AFW pump room fire event. See the referenced section.

Systems not described elsewhere in the application are described below. These systems have additional intended functions not related to the AFW pump room fire event. These additional intended functions are listed with individual system descriptions.

Auxiliary Steam

The purpose of the auxiliary steam (AS) system is to provide auxiliary steam to unit heaters for room and area heating and to various plant components. Heating is provided to many areas, including the containment and the control room, and to some components like the RWST heating coil. The system includes components from Unit 1 and Unit 2. The heating function is not a safety function; however, the system includes several containment penetrations with safety-related components, and the RWST heating coil has a pressure boundary safety function.

For the AFW pump room fire event, auxiliary steam supports the condenser water box priming steam jet air ejectors and oil preheat in the lube oil system.

The AS system also has the following intended functions for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Provide pressure boundary function for the interface between the auxiliary steam system and the water in the refueling water storage tank.

The AS system also has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Conventional Closed Cooling

The purpose of the CCC system is to provide cooling water to various components, including condensate and heater drain pumps, main boiler feed pump pedestals, and station air compressors. The CCC system includes circulating pumps, heat exchangers (cooled by service water), head tank, distribution piping valves, instruments and controls. Cooling water from the CCC system is not required to support any system safety function.

The CCC system also has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Circulating Water

The purpose of the circulating water (CW) system is to provide cooling water to the condenser to condense the steam exiting the low pressure turbines and main boiler feed pump turbines. Hudson River water is used as the supply of the condenser circulating water. The six condenser circulating water pumps are located in the intake structure. The circulating water is piped to the condensers and is discharged back via the discharge canal into the river. The system includes the circulating water pumps, condenser inlet and outlet water boxes, piping, valves, instruments and controls.

The CW system also has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Fresh Water Cooling

The purpose of the fresh water cooling (FWC) system is to provide cooling to miscellaneous, nonsafety-related heat loads, including Unit 1 air compressors and house service boiler components. The system includes the fresh water cooling recirculating tank, fresh water circulating pumps, heat exchangers cooled by river water, and distribution piping and valves. There are no safety-related components in this system.

The FWC system also has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Instrument Air Closed Cooling

The purpose of the instrument air closed cooling (IACC) system is to provide a heat removal medium for the instrument air compressors and aftercoolers. The system consists of a separate closed loop cooling water system of two small pumps, valves, piping, and heat exchangers that supplies cooling water to the instrument air compressors and aftercoolers and rejects that heat to the service water system.

The IACC system also has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Lube Oil

The purpose of the lube oil (LO) system is to maintain and provide a supply of oil for lubrication and control of the main turbine and the main boiler feedwater pumps and turbines. The system includes the main lubricating/control oil reservoirs, pumps, coolers, piping, valves and indications. The system also includes components of the main turbine controls.

Two turbine control components are credited for turbine trip for Appendix R safe shutdown. The auto stop trip solenoid has only an active function for turbine trip. The auto stop oil turbine trip solenoid releases oil pressure to trip and does not need to maintain a pressure boundary. Neither of these components have a passive mechanical intended function.

The LO system also has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

River Water Service

The purpose of the river water service (RW) system is to provide cooling water from the Hudson River to the fresh water cooling system heat exchangers. This system consists primarily of Unit 1 equipment used to support Unit 2. The system provides backup to the service water system by supplying non-essential loads. This system includes four Class A pipe segments that support the service water system. These pipe segments are part of the service water supply and return from an instrument air cooling water heat exchanger.

The RW system also has the following intended function for 10 CFR 54.4(a)(1).

- Support service water system pressure boundary.

The RW system also has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Water Treatment Plant

The purpose of the water treatment plant (WTP) system is to provide demineralized water for various uses throughout the Indian Point site. The water treatment plant consists primarily of Unit 1 equipment located in the superheater building. The facility takes city water through a demineralization system to provide water to all three units. The system includes demineralization and deaeration equipment, distribution piping, valves instruments and controls. The system also includes the Unit 1 condensate storage tanks.

For the AFW pump room fire event, the source of water for make-up to the steam generators is the IP1 condensate storage tanks. The make-up path is from the IP1 condensate storage tanks to the IP2 hotwell dump and condensate transfer pump.

The WTP system also has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Wash Water

The purpose of the wash water (WW) system is to wash fish and debris from the traveling screens. Fish and debris are washed from the screens and returned to the river. The WW system includes the pumps, piping, strainers, valves instruments and controls for the screen wash function. Wash water components are not required to support the operation of the service water system.

UFSAR References

Auxiliary steam system, Unit 2 UFSAR Section 9.6.5

Circulating water system, Unit 2 UFSAR Section 10.2.4

River water service, Unit 1 UFSAR Section 3.7.4

Water treatment plant, Unit 1 UFSAR Section 3.7.2

Other systems have no UFSAR descriptions.

Components Subject to Aging Management Review

Auxiliary steam system components supporting the RWST pressure boundary are evaluated with the safety injection systems (Section 2.3.2.4). River water system components forming part of the service water system pressure boundary are evaluated with service water systems (Section 2.3.3.2). Containment penetrations are reviewed in Section 2.3.2.5. Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19).

For license renewal, the primary intended function of components associated with the AFW pump room fire event is to maintain system pressure boundary integrity. The heat exchangers have the function of heat transfer. The filters have the function of filtration.

Aging management of the systems required to supply feedwater to the steam generators during a fire in the AFW pump room is not based on an analysis of materials, environments and aging effects. The components in the systems required to supply feedwater to the steam generators during the short duration of the fire event are in service at the time the event occurs or their availability is checked daily. Required components are adequately separated from the AFW pump room. Therefore, integrity of the systems and components required to perform post-fire intended functions for at least one hour is continuously confirmed by normal plant operation.

During the event these systems and components must continue to perform their intended functions to supply feedwater to the steam generators for a minimum of one hour. Significant degradation that could threaten the performance of the intended functions will be apparent in the period immediately preceding the event and corrective action will be required to sustain continued operation. For the minimal one-hour period that these systems would be required to provide make-up to the steam generators, further aging degradation that would not have been apparent prior to the event is negligible. Therefore, no aging effects are identified.

The IP1 condensate storage tanks are only subject to intermittent service. Therefore, a daily check of tank level and intermittent usage of piping and valves from the IP1 CSTs to the IP2 condenser confirm availability. Significant degradation that could threaten the performance of the intended functions will be apparent in the period immediately preceding the event and corrective action will be required to sustain continued operation.

Since normal plant operation assures adequate pressure boundary integrity, the post-fire intended function to provide feedwater to the steam generators is assured. Therefore, no specific aging management program is required.

License Renewal Drawings

No LRA drawings are provided based on the intended function of supporting safe shutdown in the event of a fire in the auxiliary feed pump room. For those components evaluated with other systems, see the referenced sections for drawing information.

2.3.4.6 Condensate

Unit 2

The purpose of the condensate (COND) system is to transfer condensate and low pressure heater drains from the condenser hotwell through five stages of feedwater heating to the main feedwater pumps. Three condensate pumps, arranged in parallel, take suction from the bottom of the condenser hotwells. The pumps discharge into a common header that carries a portion of the condensate through three steam jet air ejector condensers, arranged in parallel, and through one gland steam condenser. The condensate passes through the tube sides of three parallel strings of two low-pressure feedwater heaters. The flow from these heaters is combined in a common line, and then divided to go to the remaining three strings of three low-pressure heaters. After the No.5 feedwater heater, the three condensate lines join into a common header. The heater drain pump discharge enters this header and then continues on to the suction of the main feedwater pumps.

The COND system includes most condensate system components from the condenser to the outlet of the main boiler feedwater pumps. The system includes the main condensers, the condensate and main boiler feedwater pumps, low pressure feedwater heaters, piping, valves, and instruments and controls.

The majority of the system is not safety-related; however, the air ejector discharge to containment penetration is included in this system code. Some system components support the pressure boundary of the AFW system flowpath from the condensate storage tank to the auxiliary feedwater pumps.

The COND system has the following intended function for 10 CFR 54.4(a)(1).

- Provide containment isolation capability for lines penetrating containment.
- Support the AFW system flowpath from the condensate storage tank to the auxiliary feedwater pumps.

The COND system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The COND system has the following intended function for 10 CFR 54.4(a)(3).

- Support safe shutdown in the event of a fire in the auxiliary feed pump room (10 CFR 50.48) (see Section 2.3.4.5).

Unit 3

The condensate system is comprised of components in several system codes, including COND, CP, CPA, CPD, CPS, and CXFR. System code CPA (condensate polisher air) is not within the scope of license renewal as components in this system are not required to support a system intended function. Remaining system codes are addressed below.

Following is a general description of the entire condensate system.

The purpose of the condensate system is to transfer condensate and low pressure heater drains from the condenser hotwell through the condensate polisher and five stages of feedwater heating to the suctions of the main feedwater pumps. The condensate system also provides the primary source of water to the auxiliary feedwater pumps.

As part of the main condensate flowpath, three condensate pumps, arranged in parallel, take suction from the bottom of the condenser hotwells and discharge into a common header to the condensate polisher system. From the polisher system, a portion of the condensate passes through three steam jet air ejector condensers, arranged in parallel, and through one gland steam condenser. The condensate passes through the tube sides of three parallel strings of two low-pressure feedwater heaters. The flow from these heaters is combined in a common line, then divided to go to the remaining three strings of three low-pressure heaters. After the No.5 feedwater heater, the three condensate lines join into a common header. The heater drain pump discharge enters this header and then continues on to the suction of the main feedwater pumps.

COND

The COND system code is a general code that includes miscellaneous condensate system components, mostly valves, including a large number of small valves supplying condensate as gland seal water to various secondary plant valves. Within the code, one valve has a safety function as part of the pressure boundary for the flowpath from the condensate storage tank to the auxiliary feedwater pumps.

The COND system has the following intended functions for 10 CFR 54.4(a)(1).

- Support the flowpath from the condensate storage tank to the auxiliary feedwater pumps.

The COND system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The COND system has no intended functions for 10 CFR 54.4(a)(3).

CP

The purpose of the condensate polishing (CP) system is to remove dissolved and suspended solids from the condensate in order to maintain the feedwater quality required for the steam generators. The polishers are installed within the existing condensate system between the condensate pumps and the first stage of feedwater heaters. The CP system consists of six service vessels, six condensate post filters, three condensate booster pumps, and piping, valves, instrumentation and controls.

The CP system has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

The CP system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

CPD

The purpose of the condensate pump discharge (CPD) system is to support sampling of the condensate pump discharge. The components in this system code include the small sampling piping and valves at the discharge of the condensate pumps.

The CPD system has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

The CPD system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

CPS

The purpose of the condensate pump suction (CPS) system is to supply water to the condensate pumps from the main condenser. The components in this system code include the expansion joints, piping and valves between the condenser and the condensate pumps.

The CPS system has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

The CPS system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

CXFR

The purpose of the condensate transfer (CXFR) system is to provide the means to transfer condensate from the condenser to the suction of the main boiler feedwater pumps and from the condensate storage tank to the auxiliary feedwater pumps. With the exception of the condensate polishers and their support equipment, this system code includes most condensate system components from the condensate pumps to the suction of the main boiler feedwater pumps. Also included are the condensate storage tank and piping and components to the auxiliary feedwater pump suction header. The system code includes the main condensers, the condensate and low pressure feedwater heaters, piping, valves, instruments and controls, and other condensate system components.

The CXFR system has the following intended functions for 10 CFR 54.4(a)(1).

- Provide condensate to the auxiliary feedwater system from the condensate storage tank (CST).
- Provide the capability to isolate various CST incoming and outgoing lines to ensure adequate inventory.

The CXFR system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

The CXFR system has the following intended functions for 10 CFR 54.4(a)(3).

- Provide capability to prevent CST draindown following an Appendix R event.
- Provide water to the auxiliary boiler feedwater pumps during a station blackout.

UFSAR References

Unit 2: Section 10.2.6

Unit 3: Section 10.2.6

Components Subject to Aging Management Review

Unit 2

COND system components that support safe shutdown in the event of a fire in the auxiliary feed pump room are evaluated in Section 2.3.4.5. Components that support the pressure boundary of the AFW system flowpath are evaluated with the auxiliary feedwater systems (Section 2.3.4.3). Containment penetration components are evaluated with containment penetrations (Section

2.3.2.5). Nonsafety-related components not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19).

Unit 3

The COND component forming part of the auxiliary feedwater pump suction flowpath is evaluated with the auxiliary feedwater systems (Section 2.3.4.3). The condensate storage tank portions of the CXFR system code support AFW system functions and are evaluated with the auxiliary feedwater systems (Section 2.3.4.3). Nonsafety-related components (COND, CP, CPD, CPS, and CXFR systems) not evaluated with other systems whose failure could prevent satisfactory accomplishment of safety functions are evaluated with miscellaneous systems in scope for (a)(2) (Section 2.3.3.19).

Because condensate system components are evaluated with other systems, including miscellaneous systems in scope for (a)(2), there are no tables associated with this section.

Table 2.3.4-1-IP2
Main Steam System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Silencer	Pressure boundary
Steam trap	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.4-1-IP3
Main Steam System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flow element	Pressure boundary
Piping	Pressure boundary
Silencer	Pressure boundary
Steam trap	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.4-2-IP2
Main Feedwater System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Piping	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.4-2-IP3
Main Feedwater System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Piping	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 2.3.4-3-IP2
Auxiliary Feedwater System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flex hose	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Orifice	Flow control Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Steam trap	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Turbine housing	Pressure boundary
Valve body	Flow control Pressure boundary

Table 2.3.4-3-IP3
Auxiliary Feedwater System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Flex hose	Pressure boundary
Flow element	Pressure boundary
Heat exchanger (shell)	Pressure boundary
Heat exchanger (tubes)	Heat transfer Pressure boundary
Orifice	Flow control Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Steam trap	Pressure boundary
Strainer	Filtration
Strainer housing	Pressure boundary
Tank	Pressure boundary
Thermowell	Pressure boundary
Tubing	Pressure boundary
Turbine housing	Pressure boundary
Valve body	Flow control Pressure boundary

Table 2.3.4-4-IP2
Steam Generator Blowdown System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Piping	Pressure boundary
Valve body	Pressure boundary

Table 2.3.4-4-IP3
Steam Generator Blowdown System
Components Subject to Aging Management Review

Component Type	Intended Function(s)
Bolting	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve body	Pressure boundary

2.4 SCOPING AND SCREENING RESULTS: STRUCTURES

Structures and structural components within the scope of license renewal are the containment buildings (Section 2.4.1), water control structures (Section 2.4.2), turbine buildings, auxiliary buildings, and other structures (Section 2.4.3), and bulk commodities (piping and conduit supports, electrical cabinets, tank foundations, etc.) (Section 2.4.4).

2.4.1 Containment Buildings

Description

The following description applies to the containment buildings for Unit 2 and Unit 3. The containment buildings are also known as vapor containments.

Each containment building completely encloses the entire reactor and the reactor coolant system and ensures that essentially no leakage of radioactive materials to the environment would result even if a design basis loss-of-coolant accident were to occur. The reactor containment structure is a seismic Class I, reinforced concrete vertical right cylinder with a flat base and hemispherical dome. A welded steel liner is attached to the inside face of the concrete shell to ensure a high degree of leaktightness. The liner includes accommodations for penetrations and personnel access. Covering the steel liner plate is an insulating material of urethane foam covered with gypsum board and a stainless steel jacket and backed with a fire retardant paper on the unexposed side. The containment liner is anchored to the concrete shell by means of stud anchors. The base mat is reinforced concrete with the bottom liner plate located on top of this mat. This bottom liner plate is covered with additional concrete, the top of which forms the floor of the containment. Internal structures consist of equipment supports, shielding, reactor cavity and canal for fuel transfer, manipulator crane, containment crane, and miscellaneous concrete and steel for floors and stairs. All internal structures are supported on the mat with the exception of equipment supports secured to the intermediate floors.

The containment buildings have the following intended functions for 10 CFR 54.4(a)(1), (a)(2) and (a)(3).

- Provide support, shelter and protection for safety-related equipment.
- Maintain integrity such that safety-related equipment is not affected. This function is also performed by nonsafety-related refueling equipment and cranes.
- Provide protection as credited in the Appendix R safe shutdown capability analysis (10 CFR 50.48).
- Maintain essential leaktight barrier.

UFSAR References

Unit 2: Sections 1.2.2, 1.11.2, 5.2.1

Unit 3: Sections 1.3.5, 5.2.1, 16.1.2

Components Subject to Aging Management Review

Structural commodities are structural members that support or protect plant equipment including system components, piping, and electrical raceways. Structural commodities that are unique to the reactor building and primary containment are included in this review. Those that are common to IPEC in-scope systems and structures (i.e., anchors, embedments, equipment supports, instrument panels, racks, cable trays, and conduits) are reviewed with the bulk commodities (Section 2.4.4).

Table 2.4-1 lists the component types that require aging management review.

Table 3.5.2-1 provides the results of the aging management review.

2.4.2 Water Control Structures

Description

The following structures are included in this evaluation.

- discharge canal and outfall structure
- intake structure (also known as screenwell structure) and intake structure enclosure building
- service water pipe chase
- service water valve pit

Discharge Canal and Outfall Structure

The discharge canal and outfall structure, located west of the Unit 2 and Unit 3 turbine buildings, extends from the Unit 1 turbine building and carries the service water system discharge to the river. Three Unit 3 backup service water pumps, which provide cooling water from the discharge canal in the unlikely event that the service water intake structure is damaged, are supported on a slab spanning the walls of the canal. The service water pipe chase, a concrete structure enclosing the service water line, spans across the discharge canal. The portion of the discharge canal wall that is adjacent to the service water pipe chase is seismic Class I and is part of the ultimate heat sink. The outfall structure is provided to enhance mixing of cooling water and river water in such a way as to minimize thermal impact in the river. The discharge port gates can be adjusted mechanically to control the discharge velocity of the fluid.

The discharge canal and outfall structure are seismic Class III. The canal portion consists of reinforced concrete walls and foundation. The outfall structure is steel sheet piling driven into the bedrock and consists of 12 submerged rectangular ports equipped with adjustable gates that are in line and parallel to the river axis. The ports, 4 feet high by 15 feet wide and spaced 21 feet apart (center to center), are submerged to a depth of 12 feet. The slab foundation for the backup service water pumps is a reinforced concrete slab supported by the concrete walls of the canal. The discharge canal contains no safety-related equipment and service water flow is not dependent on the discharge canal. The outfall structure does not support a license renewal function as defined by 10CFR54.4 and therefore is not in scope.

The discharge canal has the following intended functions for 10 CFR 54.4(a)(1), (a)(2) and (a)(3).

- Maintain ultimate heat sink.
- Provide structural support of nonsafety-related components such that safety functions are not affected.

Intake Structure

The Unit 1 intake structure (also known as the screenwell house) is a seismic Class III structure located adjacent to the wharf and west of the station on the riverbank. It houses electrical components required for the alternate safe shutdown system, which is credited in the Appendix R safe shutdown analysis. The lower portion contains the Unit 1 intake, which houses the river water pumps that support Unit 2 service water.

The structure is a reinforced concrete frame supported by a massive concrete substructure. Exterior walls of the intake structure are of concrete brick construction. The north and south ends of the structure are covered by a reinforced concrete roof slab.

The Unit 1 intake structure has no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The Unit 1 intake structure has the following intended function for 10 CFR 54.4(a)(3).

- Provide support, shelter and protection for equipment credited for regulations associated with fire protection (10 CFR 50.48).

The Unit 2 intake structure (also known as the screenwell structure) is located west of the site and is built below grade at the Hudson River bank. The structure is open to the river on the west side. The Unit 3 intake structure (also known as the screenwell structure) is located west of the containment structure. Each structure houses six circulating water pumps (each contained in a separate reinforced concrete compartment), six service water pumps (a service water bay enclosure protects the Unit 3 pumps), traveling and fixed screens, and screen wash equipment. A service water strainer pit is located on the east side of each structure. The pit houses service water strainers, screen wash piping, and the strainer control panel. Both the service water strainer pit and the service water bay enclosure are seismic Class I.

For both Unit 2 and Unit 3, the intake structure is a massive reinforced concrete structure, consisting of separate concrete cells. The base of the structure is founded on rock and the exterior walls of the structure are reinforced concrete. The service water strainer pit is a reinforced concrete structure with the west wall being common to the intake structure. The pit is covered with steel decking supported on I-beams. The service water bay enclosure consists of structural steel framing and grating.

The Unit 2 and Unit 3 intake structures have the following intended functions for 10 CFR 54.4(a)(1), (a)(2) and (a)(3).

- Provide support, shelter and protection for safety-related equipment (service water pumps).
- Maintain integrity such that the seismic Class I portion and the service water pumps are not affected.
- Maintain ultimate heat sink.

- Provide support, shelter and protection for equipment credited in the Appendix R safe shutdown capability analysis.

Intake Structure Enclosure Building

The intake structure enclosure building (also known as the screenwell structure) is located west of the containment structure and provides an upper separate enclosure structure for the Unit 3 intake structure. It provides environmental protection of circulating water and service water system components from the weather. Dampers located in the roof system provides for release of excess heat during normal operations. The intake structure enclosure consists of a single story steel-framed super-structure with exterior metal siding and ventilation panels.

The intake structure enclosure building has the following intended function for 10 CFR 54.4(a)(1).

- Maintain integrity such that the seismic Class I portion and the service water pumps are not affected.

The intake structure enclosure building has no intended function for 10 CFR 54.4(a)(2) or (a)(3).

Service Water Pipe Chase

The Unit 3 service water pipe chase provides protection of service water lines that span across the discharge canal. The structure provides protection of the service water valves and associated piping. The service water pipe chase is a reinforced concrete structure integrally attached to the discharge canal wall. The portion of the discharge canal wall that is adjacent to the service water pipe chase is seismic Class I.

This structure has the following intended functions for 10 CFR 54.4 (a)(1) and (a)(2).

- Maintain structural integrity such that service water intended function is not impacted.

This structure has no intended functions for 10 CFR 54.4(a)(3).

Service Water Valve Pit

A service water valve pit is provided for protection of service water components in the Unit 2 and Unit 3 intake structures. The pits are located at the west side of Unit 2 and 3 heater bay building. Unit 3 has an additional service water valve pit located on the north end of the Unit 3 heater bay building, which serves the back-up service water pumps. The service water valve pits are underground reinforced concrete structures covered by structural steel plate welded to I-beams at ground level. The additional service water valve pit for Unit 3 has a precast concrete roof.

This structure has the following intended functions for 10 CFR 54.4 (a)(1) and (a)(2).

- Maintain structural integrity such that service water intended function is not impacted.

This structure has no intended functions for 10 CFR 54.4(a)(3).

UFSAR References

Unit 2: Section 8.3 discusses alternate shutdown requirement (Unit 1 intake structure).

Components Subject to Aging Management Review

Structural commodities are structural members that support or protect plant equipment including system components, piping, and electrical raceways. Structural commodities that are unique to the water control structures are included in this review. Those that are common to IPEC in-scope systems and structures (i.e., anchors, embedments, equipment supports, instrument panels, racks, cable trays, and conduits) are reviewed with the bulk commodities (Section 2.4.4).

Table 2.4-2 lists the component types that require aging management review.

Table 3.5.2-2 provides the results of the aging management review.

2.4.3 Turbine Buildings, Auxiliary Buildings, and Other Structures

Description

The following structures are included in this evaluation.

- Appendix R Diesel Generator Foundation, Fuel Oil Tank Vault, Switchgear and Enclosure (IP3)
- Auxiliary Feedwater Pump Building (IP2/3)
- Boric Acid Evaporator Building (IP2)
- City Water Storage Tank Foundation and Meter House
- Condensate Storage Tanks Foundation (IP2/3)
- Containment Access Facility and Annex (IP3)
- Control Buildings (IP2/3)
- Diesel Generator Buildings (IP2/3)
- Electrical Tunnels (IP2/3)
- Emergency Lighting Poles and Foundations
- Fan Houses (IP2/3)
- Fire Pump House (IP2)/Fire Protection Pump House (IP3)
- Fire Water Storage Tank Foundation (IP2/3)
- Fuel Storage Buildings (IP2/3)
- Gas Turbine Generator No. 1, 2 and 3 Enclosure and Fuel Tank Foundation
- Maintenance and Outage Building Elevated Passageway (IP2)
- Manholes and Duct Banks
- New Station Security Building
- Nuclear Service Building (IP1)
- Power Conversion Equipment Building (IP3)
- Primary Auxiliary Buildings (IP2/3)
- Primary Water Storage Tanks Foundation (IP2/3)
- Radiation Monitoring Enclosure (IP2)
- Refueling Water Storage Tanks Foundation (IP2/3)
- Security Access and Office Building (IP3)
- Superheater Building (IP1)
- Superheater Stack (IP1)
- Transformer/Switchyard Support Structures
- Transmission Towers (SBO Recovery Path) and Foundations
- Turbine Building (IP1/2/3) and Heater Bay (IP2/3)
- Utility Tunnel
- Waste Holdup Tank Pit (IP2/3)

Appendix R Diesel Generator Foundation, Fuel Oil Tank Vault, Switchgear and Enclosure (IP3)

The Appendix R diesel generator, fuel oil tank vault and switchgear are located in separate but adjacent enclosures in the yard area, north of the auxiliary feedwater pump room. The purpose of the Appendix R diesel generator, fuel oil tank vault and switchgear is to support a sufficient power supply to allow the plant to be brought to cold shutdown in the event that there is a loss of off-site power coincident with a fire resulting in the loss of all three emergency diesel generators or their distribution systems.

The Appendix R diesel generator is supported on a reinforced concrete foundation and enclosed by a pre-fabricated metal structure. The fuel oil tank vault is a below-grade reinforced concrete structure supported on bedrock. The switchgear and its associated equipment is supported on a reinforced concrete foundation and enclosed in a separate pre-fabricated metal structure.

These structures have no intended functions for 10 CFR 54.4 (a)(1) or (a)(2).

These structures have the following intended function for 10 CFR 54.4(a)(3).

- Provide support, shelter and protection for components credited in the Appendix R safe shutdown capability analysis (10 CFR 50.48).

Auxiliary Feedwater Pump Building (IP2/3)

The Unit 2 auxiliary feedwater pump building (also known as auxiliary boiler feed pump building or auxiliary feed pump building) is located in the shield wall area between the shield wall and the Unit 2 containment building. It is a seismic Class I structure that provides protection for the Class I auxiliary feedwater pumps. The main steam lines are also located in this building and supported by the structural steel framing.

The Unit 2 auxiliary feedwater pump building is a multi-story reinforced concrete structure with a structural steel framed enclosure. A reinforced concrete shield wall is provided on one side in support of concrete floors and steel members. The structure also contains an additional concrete shield wall for protection of safety related equipment in the area.

The Unit 3 auxiliary feedwater pump building is located in the shield wall area between the shield wall and the Unit 3 Containment Building. It also includes the shield wall area enclosure. It is a seismic Class I structure that provides protection for the Class I auxiliary feedwater pumps and main steam lines located in this area.

The Unit 3 auxiliary feedwater pump building is a reinforced concrete and steel structure. The shield wall is a free-standing concrete wall with a structural steel framed enclosure. The concrete shield wall provides support for concrete floors and steel members interfacing this area.

Both structures have the following intended functions for 10 CFR 54.4(a)(1), (a)(2), or (a)(3).

- Provide support, shelter and protection for safety-related equipment.
- Maintain integrity such that safety-related equipment is not affected. The shield walls in this structure perform this function.
- Provide protection as credited in the Appendix R safe shutdown capability analysis (10 CFR 50.48) and SBO functions (10 CFR 50.63).

Boric Acid Evaporator Building (IP2)

The boric acid evaporator building is a seismic Class I reinforced concrete structure that is supported by the roof slab of the Unit 2 waste hold-up tank pit. The exterior walls are of concrete and concrete block construction. Portions of the concrete walls are removable. The roof over the concrete block portion is constructed of light-weight roofing over metal decking and over the concrete walls is a concrete slab.

There is no safe shutdown equipment in the boric acid evaporator building.

This structure has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

The structure has the following intended function for 10 CFR 54.4 (a)(2).

- Maintain structural integrity of nonsafety-related components such that intended functions of the waste hold-up tank pit are not affected.

City Water Storage Tank Foundation and Meter House

The city water storage tank and meter house provides a source of water for the auxiliary feedwater system for both Unit 2 and Unit 3 and supplies emergency water for safety injection, residual heat removal, and charging pumps. The purpose of the city water storage tank foundation is to support the safety function of the storage tank. The purpose of the meter house is to provide shelter and protection of the storage tank components. The city water storage tank is a freestanding, 1,500,000-gallon vertical-cylindrical carbon steel tank supported by a reinforced concrete spread footing foundation on rock. The meter house is a single-story concrete brick and steel structure with a concrete roof slab.

The city water storage tank foundation and meter house has no intended functions for 10 CFR 54.4(a)(1).

The city water storage tank foundation and meter house has the following intended function for 10 CFR 54.4(a)(2) and (a)(3).

- Provide support for the city water storage tank and associated components credited in the Appendix R safe shutdown capability analysis (10 CFR 50.48).

- Maintain integrity of nonsafety-related components such that safety functions supported by the city water tank are not affected.

Condensate Storage Tanks Foundation (IP2/3)

Two separate condensate storage tanks foundations support the condensate storage tanks for Unit 2 and 3. These tanks are supported on a reinforced concrete slab foundation.

The foundations have the following intended functions for 10 CFR 54.4(a)(1), (a)(2) and (a)(3).

- Provide support and protection for safety-related equipment and nonsafety-related equipment within the scope of license renewal. The condensate storage tanks foundations support equipment (condensate storage tanks) credited in the Appendix R safe shutdown analysis (10 CFR 50.48) and for station blackout (10 CFR 50.63).
- Maintain integrity of nonsafety-related structural components such that safety functions are not affected.

Containment Access Facility and Annex (IP3)

The containment access facility and annex is located adjacent to the primary auxiliary building (PAB). It is used as a handling area for contaminated material and personnel access to containment. The containment access facility and annex is Class III except for the structural steel portion interfacing with the PAB, which is seismic Class I. The containment access facility and annex consists of structural steel framing with insulated metal siding. This framing is supported on the roof floor slab of the PAB.

This structure has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

This structure has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related structural components such that safety functions are not affected. This is performed by the seismic Class I portion of the structure at the PAB interface.

Control Buildings (IP2/3)

The control buildings house the central control room, cable spreading room, and other safety-related equipment and components. The IP2 control building is adjacent to the IP2 turbine building on the west and the superheater building on the south.

The IP2 control building contains both the Unit 1 and Unit 2 control rooms. It is a multi-story Class I steel framed structure with the north and east exterior wall consisting of insulated metal-sandwich panels. Floor slabs are composite type construction, concrete over steel beam.

The IP3 control building is a multi-story Class I concrete structure with concrete and concrete brick exterior. It is adjacent to the Unit 3 turbine building on one end and the diesel generator building on the south. Both structures are founded on bedrock.

Both control buildings have the following intended functions for 10 CFR54.4 (a)(1), (a)(2) and (a)(3).

- Provide functional support as a habitable environment for the operators in the control room post-accident.
- Provide shelter and protection for safety-related equipment.
- Provide support, shelter and protection for control room building components credited in the Appendix R safe shutdown capability analysis (10 CFR 50.48) and SBO functions (10 CFR 50.63).

Diesel Generator Buildings (IP2/3)

The Unit 2 diesel generator building is seismic Class I consisting of a reinforced concrete foundation on bedrock and a prefabricated rigid steel superstructure with insulated metal siding on the exterior with a solid, corrugated metal roof. The diesel generators rest on reinforced concrete foundations supported by the structure's main slab. A concrete shield wall is located on the west side to serve as missile protection between the control panel and diesels.

The Unit 3 diesel generator building is a single-story reinforced concrete structure on a concrete slab supported on bedrock.

Each diesel generator building houses three safety-related diesel generators. Each diesel is supplied with separate underground storage vaults, integral to the building, for fuel oil tanks. Foundations for the fuel oil tanks are the same as the structure foundation.

The diesel generator buildings have the following intended functions for 10 CFR 54.4(a)(1), (a)(2)and (a)(3).

- Provide support and protection for safety-related equipment and nonsafety-related equipment within the scope of license renewal. The diesel generator building houses equipment (emergency diesel generators) credited in the Appendix R safe shutdown analysis and for fire protection (10 CFR 50.48).
- Maintain integrity of nonsafety-related structural components such that safety functions are not affected.

Electrical Tunnels (IP2/3)

The electrical tunnels are partially below-grade, seismic Class I reinforced concrete structures that contain electrical cable, conduit and cable trays used in support of plant operations.

The Unit 2 electrical tunnel runs eastward from the east side of the control building. It is attached to the south side of an east-west retaining wall. The elevation of the lower slab of the tunnel slopes from the control building up to the PAB. The tunnel then turns toward northward past the west side of the PAB and to the electrical penetration area adjacent to Unit 2 containment building.

The Unit 3 electrical tunnels run from the control building past the primary auxiliary building to the containment penetration vault. The electrical tunnels consist of two seismic Class I reinforced concrete conduits located one above the other. Both the upper and lower tunnels are eight feet wide by eight feet high.

The electrical tunnels have the following intended functions for 10 CFR 54.4(a)(1), (a)(2) and (a)(3).

- Provide support and protection for safety-related equipment and nonsafety-related equipment within the scope of license renewal. The electrical bays house equipment credited in the Appendix R safe shutdown analysis, and for fire protection (10 CFR 50.48).
- Maintain integrity of nonsafety-related structural components such that safety functions are not affected.

Emergency Lighting Poles and Foundations

Security lighting is located around the perimeter of the plant site. This pole-mounted lighting also provides emergency lighting in the event of an Appendix R fire and a loss of offsite power by illuminating exterior access and egress.

Each emergency light pole is a single-pole steel structure supported by a reinforced concrete foundation.

The structures have no intended functions for 10 CFR 54.4(a)(1) and (a)(2).

The structures have the following intended function for 10 CFR 54.4(a)(3).

- Maintain integrity such that the components credited for Appendix R fire protection (10 CFR 50.48) are not impacted.

Fan Houses (IP2/3)

Each fan house is a seismic Class I structure containing the piping penetration area. Safety-related valves are located in the piping penetration area, some of which may be used to achieve safe shutdown. Each fan house building is a multi-story reinforced concrete and masonry block wall structure founded on bedrock. A steel superstructure atop each building provides support for the roof framing system.

The Unit 2 fan house is located southeast of the Unit 2 containment structure and between the Unit 2 containment, the Unit 2 primary auxiliary building, and the Unit 2 fuel storage building. The building is isolated from the containment structure and the primary auxiliary building. The east wall is common with the western wall of the fuel storage building.

The Unit 3 fan house is located southeast of the Unit 3 containment structure and between the Unit 3 containment, the Unit 3 primary auxiliary building, containment access facility, and the Unit 3 fuel storage building. The fan house building is isolated from the containment structure and the primary auxiliary building. The east wall is common with the western wall of the fuel storage building and south wall is common to the containment access facility annex.

The fan houses have the following intended function for 10 CFR 54.4(a)(1) and (a)(3).

- Maintain structural integrity such that required safety functions are not affected.

These structures have no intended functions for 10 CFR 54.4(a)(2).

Fire Pump House (IP2)/Fire Protection Pump House (IP3)

The Unit 2 fire pump house (also known as diesel fire pump house) houses the main diesel firewater pump and provides protection of system components associated with the fire protection system. The structure is constructed of structural steel framing with exterior insulated metal siding and a composite metal roof. The foundation is a reinforced concrete slab on grade.

The Unit 3 fire protection pump house contains the electric-motor-driven fire pump, the diesel-driven fire pump, and associated equipment for ensuring an adequate source of firewater is available. The structure is a reinforced concrete and concrete block wall construction with a concrete roof slab. The foundation is a reinforced concrete slab on bedrock.

The structures have no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The structures have the following intended functions for 10 CFR 54.4(a)(3).

- Maintain integrity of nonsafety-related structural components credited in the Appendix R safe shutdown capability analysis (10 CFR 50.48).

Fire Water Storage Tank Foundation (IP2/3)

The Unit 2 fire water storage tank (also known as suction tank) foundation provides the main support for the 300,000-gallon fire water storage tank. Water for the dedicated diesel-driven fire pump for normal operations comes from the tank.

The Unit 3 fire water storage tank foundations provide the main support for two 350,000-gallon fire water storage tanks. The tanks and their associated piping, electrical and instrumentation systems serve as the source of fire protection system water and as the supply for the Unit 3 makeup water treatment.

The fire water tank foundations are constructed of reinforced concrete.

These structures have the following intended functions for 10 CFR 54.4(a)(3).

- Maintain structural integrity of the fire water storage tanks in support of equipment credited in the Appendix R safe shutdown capability analysis (10 CFR 50.48).

These structures have no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

Fuel Storage Buildings (IP2/3)

For Units 2 and 3, the fuel storage building is designed to handle and store both spent and new fuel and provides support for the spent fuel crane and other fuel handling equipment. Each structure is located adjacent to, but separate from, its respective containment building.

Each fuel storage building consists of structural steel framing with an exterior composed of insulated metal siding. The spent fuel pit located inside each structure is seismic Class I. The remaining portion of each building is seismic Class III. The internal structure of each is composed of a concrete spent fuel pit lined with stainless steel, concrete columns with infill masonry walls on the south and east faces, and a concrete wall on the west face. The top of the spent fuel pit wall forms the north wall of each area.

The fuel storage buildings have the following intended functions for 10 CFR 54.4(a)(1) and (a)(2).

- Maintain integrity of nonsafety-related components such that safety functions are not affected by maintaining pool water inventory (Units 2 and 3).

The fuel storage buildings have no intended functions for 10 CFR 54.4(a)(3).

Gas Turbine Generator No. 1, 2 and 3 Enclosure and Fuel Tank Foundation

The gas turbine generator No. 1 enclosure and tank foundation are seismic Class III structures providing shelter and protection from the elements for gas turbine No. 1 and its associated equipment. Gas turbine No. 1 is located adjacent to the Unit 1 turbine building and supports no license renewal function; however, the associated switchgear components and fuel supply tank provide support for the SBO/Appendix R diesel generator set.

The gas turbine No. 1 enclosure consists of structural steel framing with exterior metal siding on a reinforced concrete slab. The fuel tank foundation is a reinforced concrete spread footing which supports the fuel tank supplying the SBO/Appendix R diesel.

Gas turbine generator No. 1 enclosure and tank foundation have no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

Gas turbine generator No. 1 enclosure and tank foundation have the following intended function for 10 CFR 54.4(a)(3).

- Provide support, shelter and protection for equipment credited for station blackout (10 CFR 50.63) and Appendix R safe shutdown analysis (10 CFR 50.48).

The gas turbine generators No. 2 and 3 enclosure is a seismic Class III structure providing shelter and protection from the elements for the gas turbines and their associated equipment. The gas turbine No. 2 and 3 enclosure is located at the Buchanan substation. The enclosure houses gas turbine generators No. 2 and 3 and associated switchgear equipment. The switchgear and associated components within the structure support the site's Appendix R safe shutdown analysis. Gas turbine 2 and 3 fuel tank foundation supports the fuel tank, which provides an alternate source of fuel for the emergency diesel generators. These fuel tanks are shared by IP2 and IP3 and credited with providing minimum fuel oil inventory for the emergency diesel generators. If the EDGs require the reserves in these tanks, the contents can be transported by tanker truck.

The gas turbine enclosure consists of structural steel framing with exterior metal siding, on a reinforced concrete slab. Gas turbine 2 and 3 fuel tank foundation is a reinforced concrete spread footing.

The gas turbine 2 and 3 fuel tank foundation has the following intended functions for 10 CFR 54.4(a)(1).

- Provide support for equipment credited with a safety function.

The enclosure and foundation have no intended functions for 10 CFR 54.4(a)(2).

The gas turbine generators No. 2 and 3 enclosure has the following intended functions for 10 CFR 54.4(a)(3).

- Provide support, shelter and protection for equipment credited for station blackout (10 CFR 50.63) and Appendix R safe shutdown (10 CFR 50.48).

The gas turbine substation switchgear structures and foundation provides support equipment required to achieve and maintain hot shutdown in the event a fire prevents control from the central control room.

A reinforced concrete slab supports the gas turbine substation and switchgear support structures. Component equipment is anchored by welding or bolting to the embedments in the concrete slab.

The gas turbine substation switchgear structures and foundation have no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The gas turbine substation switchgear structures and foundation have the following intended functions for 10 CFR 54.4(a)(3).

- Provide support for equipment credited in support of Appendix R safe shutdown analysis (10 CFR 50.48) and station blackout (10 CFR 50.63).

Maintenance and Outage Building Elevated Passageway (IP2)

The maintenance and outage building and elevated passageway are seismic Class II structures used by maintenance and outage personnel. The structures are located southeast of the Unit 2 containment structure and across from the PAB and adjacent to the fuel storage building. The building includes two major floors and an elevated passageway for access to the PAB. A safety-related conduit has been routed through one end of the building near the bridge connecting the maintenance and outage building to the PAB.

The maintenance and outage building is a steel-framed two-story structure with reinforced concrete walls. The first floor is partially embedded into the grade and is on a rock foundation. The bridge is made of two vertical steel trusses, top and bottom horizontal bracing members, and a reinforced concrete floor slab supported by a metal deck and steel floor beams.

These structures have no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

These structures have the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity such that safety related components are not affected. This is addressed by the elevated passageway portion.

Manholes and Duct Banks

Manholes and duct banks are provided throughout the IPEC yard to allow underground routing of cables and piping. These structural components are constructed of reinforced and non-reinforced concrete.

These structures have the following intended functions for 10 CFR 54.4(a)(1) and (a)(2).

- Provide support and protection for safety-related equipment and nonsafety-related equipment within the scope of license renewal.
- Maintain integrity of nonsafety-related structural components such that safety functions are not affected.

These structures have no intended functions for 10 CFR 54.4(a)(3).

New Station Security Building

The new station security building located east of the Unit 1 containment structure provides offices for personnel and contains the security generator, which is credited as a source of backup power to the station security lighting system. For Unit 2, this lighting provides illumination for exterior access and egress in the event of an Appendix R fire and a loss of offsite power.

The new station security building is a single-story structure consisting of structural steel framing with exterior metal siding supported by a reinforced concrete foundation.

The structure has no intended functions for 10 CFR 54.4(a)(1) and (a)(2).

The structure has the following intended function for 10 CFR 54.4(a)(3).

- Maintain integrity such that the components credited for Unit 2 Appendix R fire protection (10 CFR 50.48) are not impacted.

Nuclear Service Building (IP1)

The nuclear service building is adjacent to but separated from the Unit 1 containment structure and provides protection for alternate safe shutdown system (ASSS) components in support of Unit 2. These ASSS components consist of cables in conduit for various systems: chemical and volume control, component cooling water, residual heat removal, and safety injection systems. The structure contains treatment and decontamination facilities along with examination rooms for site personnel. The nuclear services building is a seismic Class III multi-story reinforced concrete structure enclosed by three exterior concrete walls supported on a reinforced concrete mats with a concrete roof. The north and south concrete walls of the structural portion below grade are poured against the existing rock.

The nuclear service building has no intended function for 10 CFR 54.4(a)(1) or (a)(2).

The nuclear service building has the following intended function for 10 CFR 54.4(a)(3).

- Maintain integrity such that the components credited in safe shutdown analysis are not affected.

Power Conversion Equipment Building (IP3)

The power conversion equipment building houses power conversion system components. The power conversion equipment building is a single-story steel-framed structure with a reinforced concrete floor slab and composite roofing. The exterior wall is covered with metal siding with fixed louvers on one side. Steel floor beams span across the concrete walls of the discharge canal to support the entire structure.

There is no safe shutdown equipment in the power conversion building.

This structure has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

This structure has the following intended functions for 10 CFR 54.4(a)(2).

- Maintain structural integrity of nonsafety-related structural components such that safety function of the discharge canal is not affected.

Primary Auxiliary Buildings (IP2/3)

The Unit 2 primary auxiliary building is a seismic Class I structure. The PAB houses safety injection pumps, component cooling pumps, heat exchangers and residual heat removal pumps. The PAB is a reinforced concrete structure with steel framing and metal siding. Interior walls may be concrete or concrete block. Concrete block walls are generally multi-wythe functioning as removable shielding and closure walls. The structure has a reinforced concrete foundation supported on existing bedrock.

The Unit 3 primary auxiliary building houses the components required for recirculation such as component cooling pumps, heat exchangers, and safety injection and residual heat removal pumps. The primary auxiliary building is a free-standing three-story rectangular reinforced concrete structure located southeast of the containment structure. The structure is provided with floor slabs and structural steel for equipment and other supports. A basement is located under the western half of the building. The first floor on the eastern end of the structure is embedded in the ground on rock with the second story being at grade. Concrete caissons support portions of the structure.

These structures have the following intended functions for 10 CFR 54.4 (a)(1), (a)(2) and (a)(3).

- Provide support, shelter and protection for safety-related equipment.
- Provide support, shelter and protection for equipment credited in the Appendix R safe shutdown capability analysis.

These structures have no intended functions for 10 CFR 54.4(a)(2).

Primary Water Storage Tanks Foundation (IP2/3)

The Unit 2 and Unit 3 primary water storage tank foundations provide the main support for the respective 165,000 gallon primary water storage tank for each unit. The tanks supply demineralized water for the primary water makeup systems. Primary water storage tank foundations are seismic Class I reinforced concrete spread footings supporting the primary water storage tanks.

The Unit 2 primary water storage tank foundation has the following intended functions for 10 CFR 54.4(a)(1) and (a)(2).

- Maintain structural integrity such that the primary water storage tank intended function is not impacted.
- Provide functional support for the backup source of cooling water to the CCW system for cooling of the safety injection pumps and heat removal pumps.

The Unit 2 primary water storage tank foundation has no intended functions for 10 CFR 54.4(a)(3).

The Unit 3 primary water storage tank foundation has no intended functions for 10 CFR 54.4(a)(1).

The Unit 3 primary water storage tank foundation has the following intended functions for 10 CFR 54.4(a)(2) and (a)(3).

- Maintain structural integrity such that the primary water storage tank intended function is not impacted.
- Provide support for Appendix R intended function (10 CFR 50.48).

Radiation Monitoring Enclosure (IP2)

The radiation monitoring enclosure houses radiation monitors R46, R49 and R53. Monitors R46 and R53 monitor the service water return from all containment fan cooler units. The radiation monitoring enclosure is a three-sided steel-framed structure with metal siding. It shares a common reinforced concrete wall with the electrical tunnel.

This structure has no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

The structure has the following intended functions for 10 CFR 54.4(a)(2).

- Maintain structural integrity such that radiation monitors R46 and R53 intended function is not impacted.

Refueling Water Storage Tanks Foundation (IP2/3)

For both Unit 2 and Unit 3, the refueling water storage tank foundation provides the main support for the 350,000 gallon refueling water storage tank. The tank supplies borated water to the refueling canal, safety injection pumps, the residual heat removal pumps, and the containment spray pumps for the loss-of-coolant accident. The refueling water storage tank foundation is a seismic Class I reinforced concrete foundation supported on bedrock.

These structures have the following intended functions for 10 CFR 54.4(a)(1) and (a)(3).

- Maintain structural integrity such that the refueling water storage tank intended function is not impacted.

These structures have no intended functions for 10 CFR 54.4(a)(2).

Security Access and Office Building (IP3)

The security access and office building located west of the service admin complex provides offices for personnel and contains the security generator, which is credited as a source of backup power to the station security lighting system. For Unit 3, this lighting provides illumination for exterior access and egress in the event of an Appendix R fire and a loss of the site's offsite power.

The security access building is a multi-story structure consisting of structural steel framing with exterior wood siding supported by a reinforced concrete foundation.

The structure has no intended function for 10 CFR 54.4(a)(1) or (a)(2).

The structure has the following intended function for 10 CFR 54.4(a)(3), which is performed by the security access building.

- Maintain integrity such that the components credited for Unit 3 Appendix R fire protection (10 CFR 50.48) are not impacted.

Superheater Building (IP1)

The Unit 1 superheater building is adjacent to but physically separated from the control building. The superheater stack is located on top of the superheater building. The structure contains the technical support center, provides office area for personnel, supports alternate safe shutdown system (ASSS) components, and houses a safety-related battery room. The structure of the superheater building consists of steel framing on a reinforced concrete mat. The floors are comprised partly of metal grating and partly of reinforced concrete slabs. The exterior walls are masonry or metal siding. The superheater building was originally classified as seismic Class III, but it is utilized by Unit 2 in a safety function and is now classified as seismic Class I.

This structure has the following intended functions for 10 CFR 54.4(a)(1), (a)(2), and (a)(3).

- Provide shelter and protection for safety-related equipment. This function is performed by the seismic Class I portion of the building.
- Maintain integrity of the Unit 1 structure such that the Unit 2 structure is not affected.

Superheater Stack (IP1)

The superheater stack is located on top of the superheater building. The steel stack carries the exhaust from the superheaters and also supports a ventilation duct carrying the exhaust from the containment structure. The failure of the stack could result in damage to the Unit 2 control building, the emergency diesel generator building, and in-scope Unit 3 structures. To minimize this risk, the stack was shortened and its support structure reinforced to satisfy IP3 tornado protection criteria.

The stack is constructed of riveted steel plates of varying thicknesses and has an inner lining of granite. A carbon steel ventilation duct inside the stack rises and extends a distance above the top of the stack. The stack is support by structural steel framing and access is provided by metal grating platforms along the height of the stack.

This structure has the following intended functions for 10 CFR 54.4(a)(1) and (a)(2).

- Maintaining integrity such that safety-related equipment is not affected.

This structure has no intended functions for 10 CFR 54.4(a)(3).

Transformer/Switchyard Support Structures

The offsite power source required to support SBO recovery actions is the source fed through one of the station auxiliary transformers. Specifically, the path includes the 138 kV and 345 kV switchyard circuit breakers feeding either station auxiliary transformers.

The purpose of the transformer/switchyard support structures is to provide physical support to the station auxiliary transformers and the other switchyard components in the SBO recovery path. These support structures include the transformer foundations and support steel, transformer pothead foundations and support steel, and foundations for the associated switchyard breakers.

Based on NRC guidance in NUREG-1800 Section 2.5.2.1.1, systems and structures relied upon to restore offsite AC power (including the onsite portion of the offsite power sources) and onsite AC power are included within the license renewal scope for SBO (10 CFR 50.63). Therefore, the transformer support structures are within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(3).

The transformer/switchyard support structures have no intended functions for 10 CFR 54.4(a)(1) or (a)(2).

The transformer/switchyard support structures have the following intended function for 10 CFR 54.4(a)(3).

- Provide support for equipment credited for station blackout (10 CFR 50.63).

Transmission Towers (SBO Recovery Path) and Foundations

Transmission towers (SBO recovery path) and foundations perform a function that demonstrates compliance with the Commission's regulations for station blackout. IPEC transmission towers are of galvanized steel construction supported on reinforced concrete foundations.

These transmission towers are part of the path to restore off-site power, which, based on guidance in NUREG-1800 Section 2.5.2.1.1, is an intended function for the station blackout regulated event.

The transmission towers have no intended functions for (10 CFR 54.4(a)(1) or (a)(2).

The transmission towers have the following intended function for 10 CFR 54.4(a)(3).

- Provide support for recovery of off-site power for station blackout (10 CFR 50.63).

Turbine Building (IP1/2/3) and Heater Bay (IP2/3)

The Unit 1 turbine building is an extension of the Unit 2 turbine building and is integrally attached to the superheater building and the Unit 2 turbine building. The structure is classified as seismic Class III but was analyzed to ensure that there is no potential for gross structural collapse as a result of a design basis event. Equipment and components on the Unit 1 operating floor have been removed and the supporting systems for these components are not in service. The facility houses the station blackout/Appendix R diesel and two fire water pumps, along with their associated components relied upon in the site's safe shutdown analysis.

The building is constructed of heavy structural steel framing with steel supported reinforced concrete slabs forming the floor area. Crane rails located within Unit 1 extending the entire length of the structure also provide support for Unit 2. The building's exterior face is constructed of metal-sandwich panels and concrete brick.

The Unit 1 turbine building has no intended functions for 10 CFR 54.4(a)(1).

The Unit 1 turbine building has the following intended function for 10 CFR 54.4(a)(2) and (a)(3).

- Maintain integrity such that the seismic Class I control building is not affected.
- Provide structural support for components required to meet Appendix R safe shutdown analysis.

The Unit 2 turbine building and heater bay is an extension of the Unit 1 turbine building. The structure is similar to Unit 1 and is seismic Class III. Although the turbine building and heater bay are seismic Class III structures, the structure was analyzed to ensure that there is no potential for gross structural collapse as a result of a design basis event. The turbine building is integrally attached to the superheater building and the Unit 1 turbine building. The building houses the Unit 2 turbine generator, feedwater heaters, and their supporting systems, as well as cabling, switchgear, and other equipment associated with the station blackout/Appendix R diesel. The building is constructed of structural steel framing with steel supported reinforced concrete slabs forming the floor area. The foundation is on pier footings supported by bedrock. The building's exterior face is constructed of metal-sandwich panels and brick. The crane rail extends the entire length of the structure and is used in support of Unit 2.

The Unit 2 turbine building has no intended functions for (10 CFR 54.4(a)(1).

The Unit 2 turbine building has the following intended functions for 10 CFR 54.4(a)(2) and (a)(3).

- Maintain integrity such that the seismic Class I control building is not affected.
- Provide support for equipment credited for station blackout (10 CFR 50.63) and Appendix R safe shutdown (10 CFR 50.48).

The Unit 3 turbine building and heater bay is a seismic Class III structure and houses the turbine generator and associated auxiliaries. The structure's design is such that it will not affect Class I structures. The building consists of structural steel framing with insulated metal siding and composite metal roof decking. A 175-ton capacity main lift bridge crane provides service for the generator and related equipment. The structure is supported on pier and slab foundations supported on bedrock. The discharge structure canal runs below and connects with the common structure for Unit 2. The building provides the ability to secure doors and openings to minimize the possibility of fire to the adjacent seismic Class I structures.

The Unit 3 turbine building has no intended functions for 10 CFR 54.4(a)(1).

The Unit 3 turbine building has the following intended functions for 10 CFR 54.4(a)(2) and (a)(3).

- Maintain integrity such that the seismic Class I structures are not affected.
- Provide support for components credited in Appendix R analysis (10 CFR 50.48).

Utility Tunnel

The utility tunnel is a seismic Class III structure. The tunnel provides shelter and protection for the city water supply piping used for auxiliary feedwater backup water and other miscellaneous functions. The utility tunnel is a rectangular reinforced concrete structure founded on rock.

There is no safe shutdown equipment in utility tunnel.

This structure has the following intended function for 10 CFR 54.4(a)(1), (a)(2), and (a)(3).

- Provide protection for nonsafety equipment credited for mitigation of an accident or site transient.
- Maintain integrity such that the seismic Class I structures are not affected.

Waste Holdup Tank Pit (IP2/3)

The Unit 2 waste holdup tank pit (WHTP) is located adjacent to the refueling water tank and the top slab provides support for the boric acid evaporator building. The Unit 3 waste holdup tank pit is two structures, joined to form a single structure. It is located adjacent to the primary water storage tank and the radioactive machine shop. The WHTPs house liquid waste holdup tanks which serve as the collection point for liquid radwaste. A sump is provided to service the water tanks.

Both pit structures are reinforced concrete underground facilities supported on bedrock. The roof of the WHTP is a reinforced concrete slab placed on a steel deck and supported on steel beams. A second concrete slab is placed on top of the initial slab to provide shielding against radiation from the tank pit to the outside.

There is no safe shutdown equipment in the waste holdup tank pits.

The structures have no intended functions for 10 CFR 54.4(a)(1) or (a)(3).

The structures have the following intended functions for 10 CFR 54.4(a)(2).

- Provide functional support to nonsafety-related components whose failure could result in potential offsite releases.

UFSAR References

Auxiliary feedwater pump building: Unit 2 UFSAR Section 1.11.4.12

Electrical tunnels: Unit 2 UFSAR Section 7.2.4.1.4, Fig 7.2-24; Unit 3 UFSAR Section 8.4

Fan house: Unit 3 UFSAR Section 9.6.2.9 provides functional description.

Fuel storage buildings: Unit 2 UFSAR Sections 1.3.8 and 9.5.2 (discusses spent fuel storage pit); Section 1.11.6 (provides structural evaluation)

Liquid radwaste storage facility: Unit 3 UFSAR Section 11.1.2.1

Superheater building: Unit 2 UFSAR Section 1.11.6 (discusses seismic requirements)

Unit 2 turbine building: Unit 2 UFSAR Section 1.11.6 (discusses seismic evaluation for impact to Class I)

Unit 3 turbine building: Unit 3 UFSAR Section 9.6.2 (discusses 10 CFR 50.48 requirements)

Components Subject to Aging Management Review

Structural commodities are structural members that support or protect plant equipment including system components, piping, and electrical raceways. Structural commodities that are unique to the turbine building, control building complex, and yard structures are included in this review. Those that are common to IPEC in-scope systems and structures (i.e., anchors, embedments, component and piping supports, instrument panels, racks, cable trays, and conduits) are reviewed with the bulk commodities (Section 2.4.4).

Table 2.4-3 lists the component types that require aging management review.

Table 3.5.2-3 provides the results of the aging management review.

2.4.4 Bulk Commodities

Description

Bulk commodities subject to aging management review are structural components or commodities that perform or support intended functions of in-scope systems, structures and components (SSCs). Bulk commodities unique to a specific structure are included in the review for that structure (Sections 2.4.1 through 2.4.3). Bulk commodities common to IPEC in-scope SSCs (e.g., anchors (including rock bolts), embedments, pipe and equipment supports, instrument panels and racks, cable trays, and conduits) are addressed in this section.

Bulk commodities have the following intended functions for 10 CFR 54.4(a)(1), (a)(2), and (a)(3).

- Provide support, shelter and protection for safety-related equipment and nonsafety-related equipment within the scope of license renewal.

Insulation may have the specific intended functions of (1) controlling the heat load during design basis accidents in areas with safety-related equipment, (insulation, or Insulation) or (2) maintaining integrity such that falling insulation does not damage safety-related equipment (reflective metallic-type reactor vessel insulation) (support of nonsafety-related equipment, or Support for Criterion (a)(2) equipment).

UFSAR References

None

Components Subject to Aging Management Review

Insulation is subject to aging management review if it performs an intended function as described above.

Table 2.4-4 lists the component types that require aging management review.

Table 3.5.2-4 provides the results of the aging management review.

Table 2.4-1
Containment Building
Components Subject to Aging Management Review

Component	Intended Function[1]
Steel and Other Metals	
Bellows penetration	Pressure boundary Support for Criterion (a)(1) equipment
Jib cranes	Support for Criterion (a)(2) equipment
Electrical penetration sleeves	Pressure boundary Support for Criterion (a)(1) equipment
Equipment hatch	Shelter or protection Pressure boundary Support for Criterion (a)(1) equipment
Fuel transfer tube penetration	Pressure boundary Support for Criterion (a)(1) equipment
Liner plate and integral attachments	Pressure boundary Support for Criterion (a)(1) equipment
Liner plate insulation jacket	Shelter or protection Insulation
Manipulator crane, crane rails and girders	Support for Criterion (a)(2) equipment
Mechanical penetration sleeves	Pressure boundary Support for Criterion (a)(1) equipment
Monorails	Support for Criterion (a)(2) equipment
Personnel lock	Shelter or protection Pressure boundary Support for Criterion (a)(1) equipment
Polar crane, rails and girders	Support for Criterion (a)(1) equipment
Pressurizer support framing	Support for Criterion (a)(1) equipment
Reactor coolant pump framing	Support for Criterion (a)(1) equipment
Reactor vessel support framing (ring girder)	Support for Criterion (a)(1) equipment

Table 2.4-1
Containment Building
Components Subject to Aging Management Review
(Continued)

Component	Intended Function[1]
Reactor vessel support framing	Support for Criterion (a)(1) equipment
Refueling canal liner plate	Shelter or protection Support for Criterion (a)(1) equipment
Structural steel: beams, columns, plates, trusses	Missile barrier Shelter or protection Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment
Sump liner and penetrations	Pressure boundary Shelter or protection Support for Criterion (a)(1) equipment
Sump screens, strainer and flow barriers	Shelter or protection Support for Criterion (a)(1) equipment
Concrete	
Beams, columns, interior walls, slabs	Missile barrier Shelter or protection Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment
Biological shield - pressurizer	Missile barrier Shelter or protection Support for Criterion (a)(1) equipment
Cylinder wall below grade (exterior)	Flood barrier Pressure boundary Support for Criterion (a)(1) equipment
Dome, cylinder wall, basemat	Fire barrier Missile barrier Pressure boundary Support for Criterion (a)(1) equipment
Foundation, subfoundation	Flood barrier Pressure boundary Support for Criterion (a)(1) equipment

Table 2.4-1
Containment Building
Components Subject to Aging Management Review
(Continued)

Component	Intended Function[1]
Reactor vessel support (concrete portion)	Support for Criterion (a)(1) equipment
Refuel canal slab and walls	Shelter or protection Pressure boundary Support for Criterion (a)(1) equipment
Ring wall	Shelter or protection Missile barrier Support for Criterion (a)(1) equipment
Sumps	Pressure boundary Support for Criterion (a)(1) equipment
Other Materials	
Equipment hatch and personnel lock seals	Pressure boundary Support for Criterion (a)(1) equipment
Electrical penetration sealant	Pressure boundary Support for Criterion (a)(1) equipment
Lubrite sliding surfaces	Support for Criterion (a)(1) equipment
Moisture barrier	Shelter or protection Support for Criterion (a)(1) equipment

1. Intended functions are defined in Table 2.0-1.

Table 2.4-2
Water Control Structures
Components Subject to Aging Management Review

Component	Intended Function[1]
Steel and Other Metals	
Jib cranes	Support for Criterion (a)(2) equipment
Structural steel	Shelter or protection Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment
Concrete	
Beams, columns, floor slabs and walls (above grade)	Heat sink Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment
Beams, columns, floor slabs and walls (below grade)	Heat sink Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment
Exterior walls below grade	Heat sink Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment
Foundation	Heat sink Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment
Masonry wall	Support for Criterion (a)(3) equipment

1. Intended functions are defined in Table 2.0-1.

Table 2.4-3
Turbine Buildings, Auxiliary Buildings, and Other Structures Components Subject to Aging Management Review

Component	Intended Function[1]
Steel and Other Metals	
Control room ceiling support system	Support for Criterion (a)(2) equipment
Crane rails and girders	Support for Criterion (a)(2) equipment
Emergency lighting poles	Support for Criterion (a)(3) equipment
Fire protection panels	Fire barrier
Metal siding	Shelter or protection Fire barrier Support for Criterion (a)(3) equipment
Monorails	Support for Criterion (a)(2) equipment
New fuel storage racks	Shelter or protection Support for Criterion (a)(1) equipment
Roof decking	Fire barrier Support for Criterion (a)(3) equipment
Spent fuel pit bridge crane, rails and girders	Support for Criterion (a)(2) equipment
Spent fuel pool liner plate and gate	Shelter or protection Support for Criterion (a)(1) equipment
Spent fuel pool storage racks	Support for Criterion (a)(1) equipment
Structural steel: beams, columns, plates	Shelter or protection Missile barrier Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Superheater stack	Support for Criterion (a)(2) equipment
Transmission towers	Support for Criterion (a)(3) equipment

Table 2.4-3
Turbine Buildings, Auxiliary Buildings, and Other Structures Components Subject to Aging Management Review
(Continued)

Component	Intended Function[1]
Concrete	
Duct banks	Shelter or protection Support for Criterion (a)(1) equipment Support for Criterion (a)(3) equipment
Exterior walls	Shelter or protection Fire barrier Missile barrier Pressure boundary Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Exterior walls-below grade	Shelter or protection Fire barrier Missile barrier Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Floor slabs, interior walls, and ceilings	Shelter or protection Fire barrier Missile barrier Pressure boundary Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Foundations (transmission towers, buildings, transformers, tanks, circuit breakers, emergency lighting poles)	Shelter or protection Support for Criterion (a)(1) equipment Support for Criterion (a)(3) equipment
Manholes	Shelter or protection Support for Criterion (a)(1) equipment Support for Criterion (a)(3) equipment

Table 2.4-3
Turbine Buildings, Auxiliary Buildings, and Other Structures Components Subject to Aging Management Review
(Continued)

Component	Intended Function[1]
Masonry walls	Shelter or protection Fire barrier Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Roof slab	Shelter or protection Fire barrier Missile barrier Pressure boundary Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Shield wall	Missile barrier Shelter or protection Support for Criterion (a)(2) equipment

1. Intended functions are defined in Table 2.0-1.

Table 2.4-4
Bulk Commodities
Components Subject to Aging Management Review

Component	**Intended Function**[1]
Steel and Other Metals	
Anchorage / embedments	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Base plates	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Cable tray	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Cable trays support	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Component and piping supports for ASME Class 1, 2, 3 and MC	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Component and piping supports	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Conduits	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Conduit supports	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Damper framing	Fire barrier Support for Criterion (a)(3) equipment
Electrical and instrument panels and enclosures	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment

Table 2.4-4
Bulk Commodities
Components Subject to Aging Management Review
(Continued)

Component	Intended Function[1]
Fire doors	Fire barrier
Fire hose reels	Support for Criterion (a)(3) equipment
Flood, pressure and specialty doors	Shelter or protection Flood barrier Missile barrier Pressure boundary
HVAC duct supports	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Instrument line supports	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Instrument racks, frames and tubing trays	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Insulation jacket	Insulation Support for Criterion (a)(2) equipment
Manways, hatches and hatch covers	Shelter or protection Flood barrier Missile barrier Pressure boundary Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Missile shields	Shelter or protection Missile barrier
Penetration sleeves (mechanical/ electrical not penetrating containment boundary)	Flood barrier Support for Criterion (a)(1) equipment, Support for Criterion (a)(2) equipment

Table 2.4-4
Bulk Commodities
Components Subject to Aging Management Review
(Continued)

Component	Intended Function[1]
Pipe whip restraints	Shelter or protection Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment
Stairway, handrail, platform, grating, decking, and ladders	Support for Criterion (a)(2) equipment
Vents and louvers	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Bolted Connections	
Anchor bolts	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
ASME Class 1, 2, 3 and MC Supports bolting	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Structural bolting	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Concrete	
Equipment pads/foundations	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Fire proofing	Fire barrier
Manways, hatches and hatch covers	Fire barrier Flood barrier Pressure boundary Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment

Table 2.4-4
Bulk Commodities
Components Subject to Aging Management Review
(Continued)

Component	Intended Function[1]
Missile shields	Missile barrier
Support pedestals	Support for Criterion (a)(1) equipment Support for Criterion (a)(2) equipment Support for Criterion (a)(3) equipment
Other Materials	
Fire barrier penetration seal	Shelter or protection Fire barrier Pressure boundary
Fire stops	Fire barrier
Fire wrap	Fire barrier
Insulation	Insulation Support for Criterion (a)(2) equipment
Seals and gaskets (floors, doors, manways and hatches)	Pressure boundary Support for Criterion (a)(1) equipment
Water stops	Flood barrier

[1] Intended functions are defined in Table 2.0-1.

2.5 SCOPING AND SCREENING RESULTS: ELECTRICAL AND INSTRUMENTATION AND CONTROL SYSTEMS

Description

As stated in Section 2.1.1, plant electrical and instrument and control (I&C) systems are included in the scope of license renewal as are electrical and I&C components in mechanical systems. The default inclusion of plant electrical and I&C systems in the scope of license renewal reflects the method used for the integrated plant assessments (IPA) of electrical systems, which is different from the methods used for mechanical systems and structures.

The basic philosophy used in the electrical and I&C components IPA is that components are included in the review unless they are specifically screened out. When used with the plant spaces approach, this method eliminates the need for unique identification of every component and its specific location. This assures components are not improperly excluded from an aging management review.

The electrical and I&C IPA began by grouping the total population of components into commodity groups. The commodity groups include similar electrical and I&C components with common characteristics. Component level intended functions of the commodity groups were identified.

During the IPA, commodity groups and specific plant systems were eliminated from further review as the intended functions of commodity groups were examined.

In addition to the plant electrical systems, certain switchyard components required to restore offsite power following a station blackout were conservatively included within the scope of license renewal even though those components are not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for station blackout (SBO) (10 CFR 50.63). The evaluation boundaries of the offsite power system are described below.

The purpose of the offsite power system (Figure 2.5-2 and Figure 2.5-3) is to provide the electrical interconnection between IPEC and the offsite transmission network.

UFSAR References

Additional details for electrical commodities can be found in UFSAR Chapters 7 and 8 for both IP2 and IP3.

Evaluation Boundaries

Plant electrical and instrument and control systems are included in the scope of license renewal as are electrical and I&C components in mechanical systems.

The offsite power sources required to support SBO recovery actions are the offsite sources that supply the station auxiliary transformers. Specifically, the offsite power recovery path includes the station auxiliary transformers, the 138KV switchyard circuit breakers supplying the station auxiliary transformers, the circuit breaker-to-transformer and transformer-to-onsite electrical distribution interconnections, and the associated control circuits and structures.

Components Subject to AMR

As discussed in Section 2.1.2.3.1, IPEC electrical commodity groups correspond to two of the commodity groups identified in NEI 95-10. The two commodity groups are

- high-voltage insulators, and
- cables and connections, bus, electrical portions of electrical and I&C penetration assemblies, fuse holders outside of cabinets of active electrical SCs.

The commodity group cables, connections, bus, and electrical portions of I&C penetration assemblies is further divided into the following.

- cable connections (metallic parts)
- electrical cables and connections subject to 10 CFR 50.49 EQ requirements
- electrical cables and connections not subject to 10 CFR 50.49 EQ requirements
- electrical cables and connections not subject to 10 CFR 50.49 EQ requirements used in instrumentation circuits
- electrical connections not subject to 10 CFR 50.49 EQ requirements exposed to borated water leakage
- fuse holders – insulation material
- fuse holders – metallic clamp
- inaccessible medium-voltage (2 kV to 35 kV) cables (e.g., installed underground in conduit or direct buried) not subject to 10 CFR 50.49 EQ requirements
- metal enclosed bus – bus / connections
- metal enclosed bus – enclosure assemblies
- metal enclosed bus – insulation / insulators
- switchyard bus and connections
- transmission conductors and connections
- uninsulated ground conductors
- 138kV direct burial insulated transmission cables

Each of these commodity groups is subject to aging management review with the following exceptions.

- Electrical cables and connections subject to 10 CFR 50.49 EQ requirements are not subject to aging management review since the components are replaced based on qualified life.

- Fuse holders with metallic clamps are either part of a complex active assembly or part of circuits that perform no license renewal intended function.
- Uninsulated ground conductors limit equipment damage in the event of a circuit failure, but do not perform an intended function for license renewal.

Table 2.5-1 lists the component types that require aging management review.

Table 3.6.2-1 provides the results of the aging management review.

Table 2.5-1
Electrical and Instrumentation and Control Systems Components Subject to Aging Management Review

Structure and/or Component/Commodity	**Intended Function**[1]
Cable connections (metallic parts)	Conducts electricity
Electrical cables and connections not subject to 10 CFR 50.49 EQ requirements	Conducts electricity
Electrical cables not subject to 10 CFR 50.49 EQ requirements used in instrumentation circuits	Conducts electricity
Electrical connections not subject to 10 CFR 50.49 EQ requirements exposed to borated water leakage	Conducts electricity
Fuse holders (insulation material)	Conducts electricity
High voltage insulators for SBO recovery	Insulation (electrical)
Inaccessible medium-voltage (2KV to 35KV) cables not subject to 10 CFR 50.49 EQ requirements	Conducts electricity
Metal-enclosed bus (non-segregated) and connections for SBO recovery	Conducts electricity
Metal-enclosed bus (non-segregated), insulation/insulators for SBO recovery	Insulation (electrical)
Metal-enclosed bus (non-segregated) enclosure assemblies for SBO recovery	Support for Criterion (a)(3) equipment
Switchyard bus and connections for SBO recovery	Conducts electricity
Transmission conductors and connections for SBO recovery	Conducts electricity
138kV direct burial insulated transmission cables	Conducts electricity

1. Intended functions are defined in Table 2.0-1.

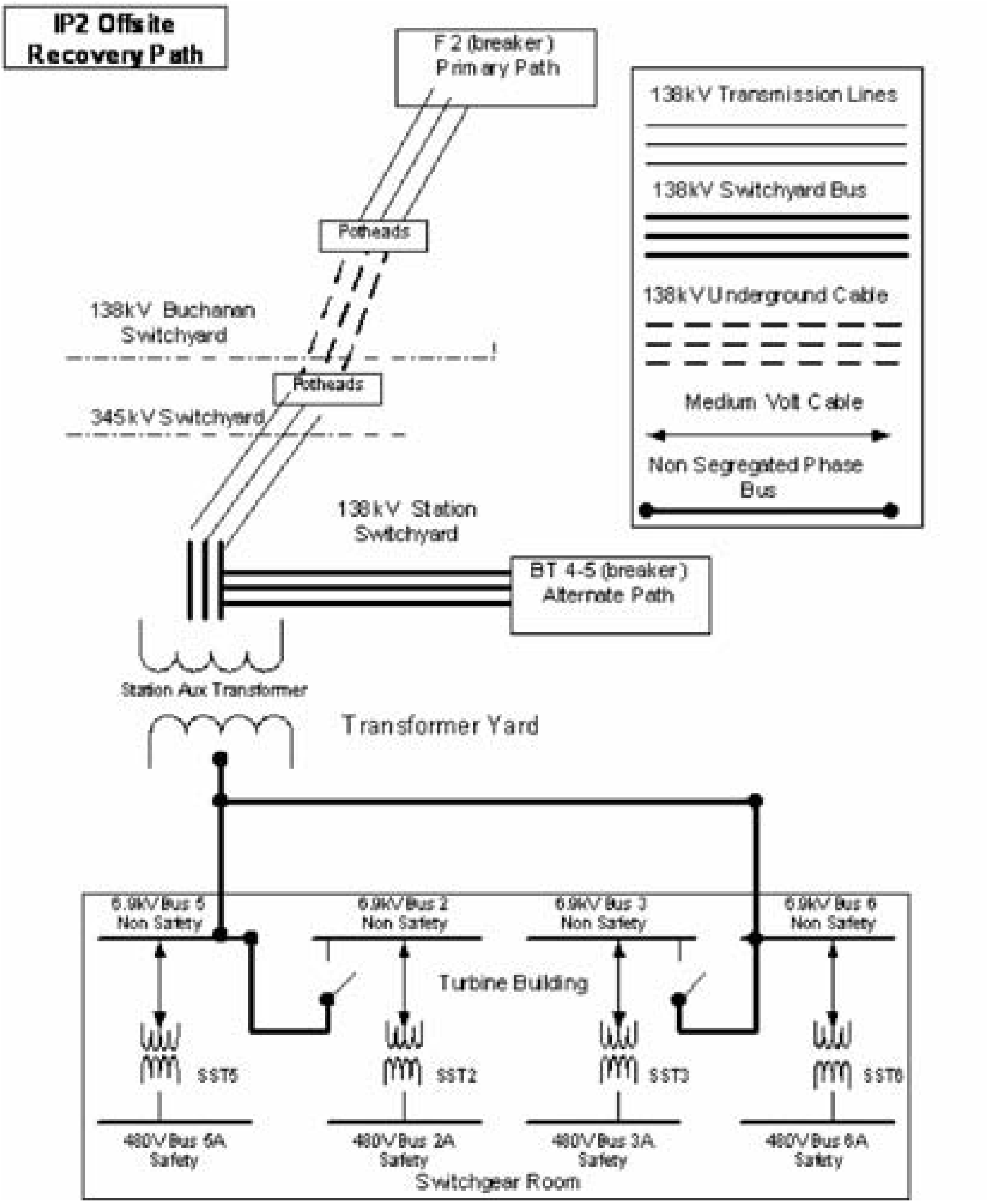

Figure 2.5-2
IP2 Offsite Power Scoping Diagram

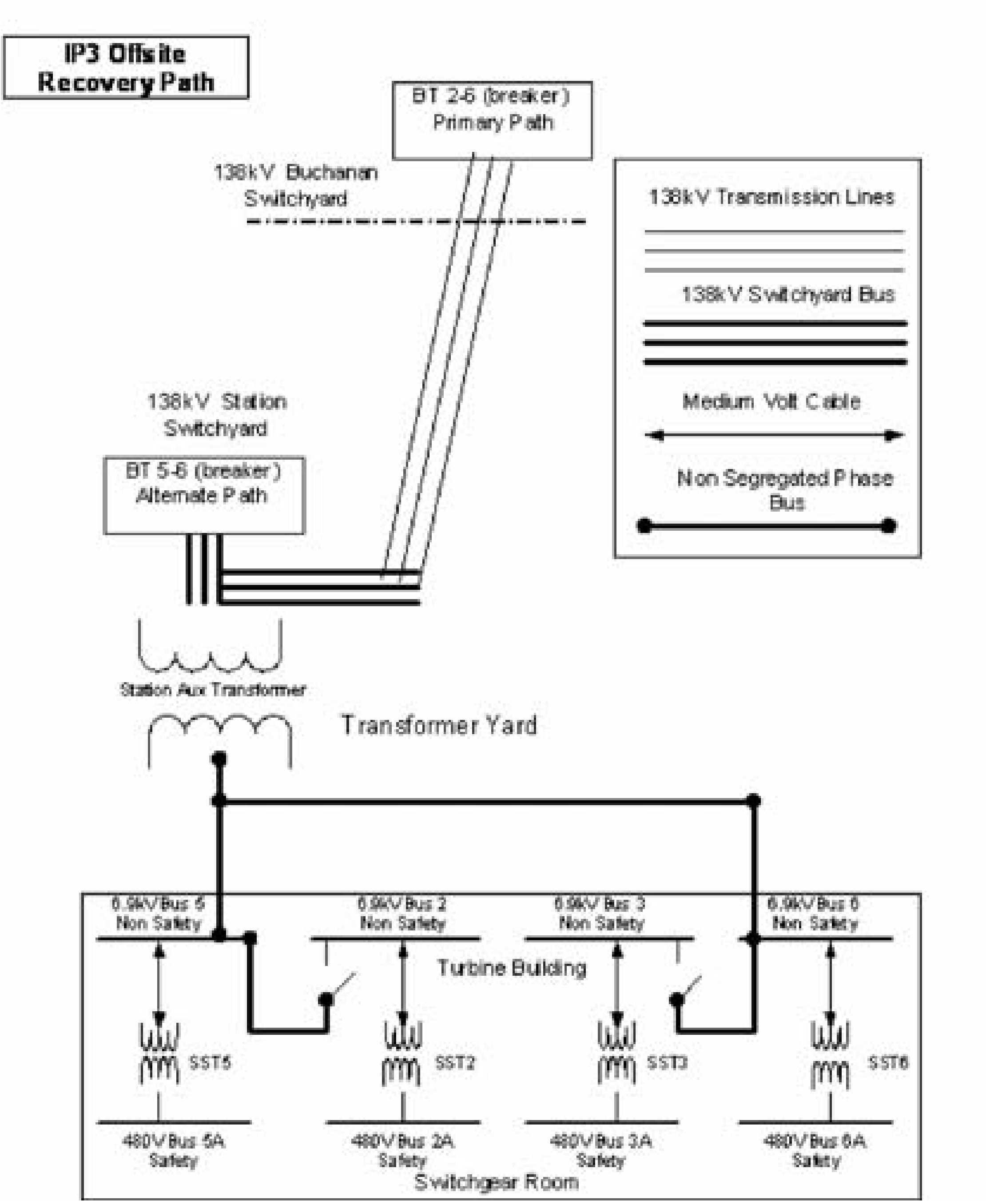

Figure 2.5-3
IP3 Offsite Power Scoping Diagram