Enclosure A

Davis-Besse Nuclear Power Station, Unit 1

Letter L-10-221

<u>License Renewal Application</u>

Enclosure B

Davis-Besse Nuclear Power Station, Unit 1

Letter L-10-221

<u>Ohio Coastal Management Program Consistency Certification Statement</u>

Ohio Coastal Management Program
Consistency Certification Statement

I, Barry S. Allen, do certify that the proposed activity complies with the enforceable policies of Ohio's approved coastal management program and will be conducted in a manner consistent with such program (16 U.S.C. § 1456 and O.R.C. §1506.03).

Address: Davis-Besse Nuclear Power Station, 5501 N. State Route 2

City: Oak Harbor State: OH Zip Code: 43449

Telephone Number: (419) 321 - 7676

Applicant's Signature: Barry S. Allen Date: 8/27/2010

Project Name/Description: Davis-Besse Nuclear Power Station License Renewal / Submittal of a License Renewal Application to the U.S. Nuclear Regulatory Commission to renew the Davis-Besse Facility Operating License for an additional 20 years beyond the original license expiration date in 2017

Please list all local, State, and Federal permits, licenses, leases, and/or other authorizations required for this project:

1) Please refer to the Davis-Besse License Renewal Application, Appendix E, "Applicant's Environmental Report — Operating License Renewal Stage," Attachment D, "Coastal Zone Management Consistency," Table D-2, "Environmental Authorizations for Davis-Besse Operation."
2)
3)
4)

Please submit an original copy of this document signed by the applicant (not an agent or representative) with your Federal permit application or submit to:

Federal Consistency Coordinator
Ohio Department of Natural Resources
Office of Coastal Management
105 West Shoreline Drive
Sandusky, Ohio 44870

PREFACE

The following describes the content of the Davis-Besse Nuclear Power Station (Davis-Besse) License Renewal Application (hereinafter referred to as "this application" or "the application"). Abbreviated names and acronyms used throughout the application are defined at the end of this preface. Regulatory documents such as NUREG-1801, "Generic Aging Lessons Learned (GALL) Report", and 10 CFR 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants" (the License Renewal Rule), are referred to by the document number, i.e., NUREG-1801 and 10 CFR 54, respectively. Note that the use of blue font in the text of the application indicates that a hyperlink is provided for ease of navigation.

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

Section 2 describes the process for identification of structures and components subject to aging management review in the Davis-Besse integrated plant assessment. The results of applying the scoping methodology are provided in Table 2.2-1, Table 2.2-2, and Table 2.2-3. These tables provide listings of the mechanical systems, the electrical and instrumentation and control systems, and the structures within the scope of license renewal, respectively. Section 2 also provides descriptions of the in-scope systems and structures and their intended functions with tables identifying the components requiring aging management review and their component intended functions.

Section 3 contains the aging management review results for those mechanical, electrical, and structural components determined to be subject to aging management review. Section 3 is divided into six sections that address the areas of: (3.1) Reactor Vessel, Internals, and Reactor Coolant System, (3.2) Engineered Safety Features, (3.3) Auxiliary Systems, (3.4) Steam and Power Conversion Systems, (3.5) Containment, Structures, and Component Supports, and (3.6) Electrical and Instrumentation and Control Systems. 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 industry guidance for format and content of applications that rely on NUREG-1800, "Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants", Revision 1, (the SRP-LR). The tables include comparisons with the evaluations documented in NUREG-1801, Revision 1.

Section 4 addresses time-limited aging analyses, as defined by 10 CFR 54.3. The review includes the identification of the component or subject of each time-limited aging analysis, and an explanation of the time-dependent aspects of the associated calculation or analysis. In compliance with 10 CFR 54.21(c), Section 4 demonstrates that either: (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 functions will be adequately managed for the period of extended operation.

In compliance with 10 CFR 54.21(d), Appendix A, Updated Safety Analysis Report Supplement, provides a summary description of the programs and activities credited 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 included. Appendix A also contains a listing of commitments associated with license renewal, including those related to aging management programs and time-limited aging analyses.

Appendix B, Aging Management Programs, describes the programs and activities that are credited for aging management. The programs and activities assure that the effects of aging will be managed such that the components subject to aging management review will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation. Appendix B also addresses programs that are credited in the disposition of time-limited aging analyses.

The information contained in Section 2, Section 3, and Appendix B fulfills the requirements of 10 CFR 54.21(a).

Appendix C is not used.

Appendix D, Technical Specification Changes, 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, Applicant's Environmental Report – Operating License Renewal Stage, provides the environmental review associated with the period of extended operation. The information in Appendix E fulfills the requirements in 10 CFR 54.23.

In accordance with 10 CFR 54.21(b), this application will be updated annually during the NRC review process.

ACRONYMS AND ABBREVIATIONS

Acronym or Abbreviation	Description
ABS	Air Break Switch
AC	Alternating Current
A/C	Air Conditioning
ACAR	Aluminum Conductor Aluminum Reinforced
ACB	Air Circuit Breaker
ACI	American Concrete Institute
ACSR	Aluminum Conductor Steel Reinforced
AEM	Aging Effect / Mechanism
AFW	Auxiliary Feedwater
AMP	Aging Management Program
AMR	Aging Management Review
ANSI	American National Standards Institute
APCSB	Auxiliary Power Conversion Systems Branch
ART	Adjusted Reference Temperature
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATWS	Anticipated Transients Without Scram
BAMT	Boric Acid Mix Tank
B&W	Babcock & Wilcox
BTP	Branch Technical Position
BWR	Boiling Water Reactor
BWST	Borated Water Storage Tank
C (°C)	Degrees Celsius
CASS	Cast Austenitic Stainless Steel
CCW	Component Cooling Water
CD	Cooldown
CEA	Control Element Assembly
CFR	Code of Federal Regulations
CLB	Current Licensing Basis
CRD	Control Rod Drive
CRDC	Control Rod Drive Cooling
CRDM	Control Rod Drive Mechanism
CREVS	Control Room Emergency Ventilation System
CRGT	Control Rod Guide Tube
CSA	Core Support Assembly

ACRONYMS AND ABBREVIATIONS

Acronym or Abbreviation	Description
CST	Condensate Storage Tank
CTS	Current Technical Specifications
Cu	Copper
CUF	Cumulative Usage Factor
CWRT	Clean Waste Receiving Tank
DBA	Design Basis Accident
DBAB	Davis-Besse Administration Building
DC	Direct Current
DFP	Fire Protection Diesel System
DH	Decay Heat Removal System
DHR	Decay Heat Removal and Low Pressure Injection
DMW	Dissimilar Metal Weld
DO	Dissolved Oxygen
DOR	Division of Operating Reactors
DOT	Department of Transportation
DWDT	Detergent Waste Drain Tank
EAF	Environmentally Assisted Fatigue
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EFPY	Effective Full Power Years
EMA	Equivalent Margin Analysis
EOC	End of Cycle
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
EQ	Environmental Qualification
ESF	Engineered Safety Features
F (°F)	Degrees Fahrenheit
FAC	Flow Accelerated Corrosion
F_{en}	Environmentally Assisted Fatigue Correction Factor
FENOC	FirstEnergy Nuclear Operating Company
FERC	Federal Energy Regulatory Commission
FP	Fire Protection
FSAR	Final Safety Analysis Report
ft-lb	Foot-Pound
FWST	Fire Water Storage Tank
GALL	Generic Aging Lessons Learned (the GALL Report is NUREG-1801)
GL	Generic Letter
GSI	Generic Safety Issue

ACRONYMS AND ABBREVIATIONS

Acronym or Abbreviation	Description
HAZ	Heat-Affected Zone
HELB	High Energy Line Break
HEPA	High Efficiency Particulate Air
HPI	High Pressure Injection
HLCWT	High Level Cooling Water Tank
HPSI	High Pressure Safety Injection
HU	Heatup
HVAC	Heating, Ventilation, and Air Conditioning
H&V	Heating and Ventilation
IASCC	Irradiation Assisted Stress Corrosion Cracking
I&C	Instrumentation and Control
ID	Inside Diameter
ID.	Identification
IEEE	Institute of Electrical and Electronic Engineers
IGA	Intergranular Attack
IGSCC	Intergranular Stress Corrosion Cracking
IN	Information Notice
INPO	Institute of Nuclear Power Operations
IR	Insulation Resistance
ISG	Interim Staff Guidance
ISI	Inservice Inspection
ITS	Improved Technical Specifications
ksi	Kilo-pounds per square inch
kV	Kilovolt
kVA	Kilovolt Ampere
LAQT	Low Alloy Quenched and Tempered
LAS	Low Alloy Steel
LBB	Leak-Before-Break
lbs	Pounds
LCB	Lower Core Barrel
LER	Licensee Event Report
LLCWT	Low Level Cooling Water Tank
LO	Lubricating Oil
LOCA	Loss of Coolant Accident
LPI	Low Pressure Injection
LR-ISG	Interim Staff Guidance Associated with License Renewal
LRA	License Renewal Application
LTOP	Low-Temperature Overpressure Protection

ACRONYMS AND ABBREVIATIONS

Acronym or Abbreviation	Description
LTS	Lower Internals Assembly to Thermal Shield
MCM	Thousand Circular Mils (wire gauge)
MDFP	Motor-Driven Feedwater Pump
MEAP	Material, Environment, Aging Effect and Program
MeV	Million Electron Volts
MIC	Microbiologically Influenced Corrosion
mil	One One-Thousandth of an Inch (1/1000 or 0.001 inches)
MIRVSP	Master Integrated Reactor Vessel Surveillance Program
ml	Milliliters
MRP	Materials Reliability Program (EPRI)
MRPM	Maintenance Rule Program Manual
MS	Main Steam
MSIP	Mechanical Stress Improvement Process
MSIV	Main Steam Isolation Valve
MSR	Moisture Separator Reheater
MU	Makeup and Purification System
MUR	Measurement Uncertainty Recapture (power uprate)
MWDT	Miscellaneous Waste Drain Tank
MWMT	Miscellaneous Waste Monitor Tank
MWt	Megawatts-thermal
MWe	Megawatts-electric
NA or N/A	Not Applicable
NBA	Nickel Based Alloy
NBF	Nozzle Belt Forging
NEI	Nuclear Energy Institute
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
Ni	Nickel
NN	Nitrogen System
NPS	Nominal Pipe Size
NPSH	Net Positive Suction Head
NRC	Nuclear Regulatory Commission
NSAS	Nonsafety-affecting-safety
NSR	Nonsafety-related
NSSS	Nuclear Steam Supply System
NUREG	Designation of publications prepared by the NRC staff
OD	Outside Diameter
OE	Operating Experience

ACRONYMS AND ABBREVIATIONS

Acronym or Abbreviation	Description
OTSG	Once-Through Steam Generator
PCSP	Permanent Canal Seal Plate
P&IDs	Piping and Instrumentation Diagrams
PASS	Post-Accident Sampling System
pH	Concentration of Hydrogen Ions
ppm	Parts Per Million
psi	Pounds Per Square Inch
psig	Pounds Per Square Inch Gauge
P-T	Pressure-Temperature
PTLR	Pressure and Temperature Limits Report
PTS	Pressurized Thermal Shock
PWR	Pressurized Water Reactor
PWROG	Pressurized Water Reactor Owners Group
PWSCC	Primary Water Stress Corrosion Cracking
Q	Davis-Besse quality class designation for safety-related
QAPM	Quality Assurance Program Manual
RAIs	Requests for Additional Information
RC	Reactor Coolant
RCCA	Rod Control Cluster Assemblies
RCPB	Reactor Coolant Pressure Boundary
RCS	Reactor Coolant System
RCRA	Resource Conservation and Recovery Act of 1976
RG	Regulatory Guide
RPV	Reactor Pressure Vessel
RT_{NDT}	Reference Temperature for Nil-Ductility Transition
RT_{PTS}	Reference Temperature for Pressurized Thermal Shock
RV	Reactor Vessel
RVI	Reactor Vessel Internals
RVID2	Reactor Vessel Integrity Database
SAMA	Severe Accident Mitigation Alternatives
SAP	Davis-Besse configuration control database
SBO	Station Blackout
SBODG	Station Blackout Diesel Generator
SCC	Stress Corrosion Cracking
SER	Safety Evaluation Report
SFAS	Safety Features Actuation System
SPDSS	Station Plumbing, Drains, and Sumps System

ACRONYMS AND ABBREVIATIONS

Acronym or Abbreviation	Description
SRP-LR	Standard Review Plan for License Renewal (the SRP-LR is NUREG-1800)
SS	Stainless Steel
SSCs	Systems, Structures, and Components (10 CFR 54.4(a))
SUFP	Startup Feed Pump
SW	Service Water
TLAA	Time-Limited Aging Analysis
TPCW	Turbine Plant Cooling Water
UCB	Upper Core Barrel
UCC	Underclad Cracking
U_{en}	Adjusted Cumulative Usage Factor
U.S.	United States
USAR	Updated Safety Analysis Report
USE	Upper Shelf Energy
USI	Unresolved Safety Issue
UT	Ultrasonic Testing
UTS	Upper Thermal Shield
UV	Ultraviolet
VAC	Volts alternating current
VDC	Volts direct current
WANO	World Association of Nuclear Operators
Zn	Zinc

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FIGURES

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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 license for Davis-Besse Nuclear Power Station, Unit 1 (Davis-Besse). The current facility operating license (NPF-3) expires at midnight on April 22, 2017. This application also seeks renewal of the source material, special nuclear material, and by-product material licenses under 10 CFR Parts 30, 40, and 70 that are subsumed in or combined with the facility operating license.

This application is organized in accordance with Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," Revision 1, and is consistent with guidance provided by Nuclear Energy Institute (NEI) 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule," Revision 6. In addition, a summary of those Nuclear Regulatory Commission (NRC) Interim Staff Guidance (LR-ISG) documents that remain open is presented in the application.

This application is intended to provide sufficient information for the NRC to complete its technical and environmental reviews pursuant to 10 CFR 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," and 10 CFR 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," respectively.

This application is designed to allow the NRC to make the findings required by 10 CFR 54.29, "Standards for issuance of a renewed license," in support of the issuance of a renewed facility operating license for Davis-Besse.

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1.1 GENERAL INFORMATION

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

1.1.1 NAME OF APPLICANT

FirstEnergy Nuclear Operating Company (Davis-Besse Licensee, Operator and Applicant).

FirstEnergy Nuclear Operating Company makes this application acting on its own behalf and as agent for FirstEnergy Nuclear Generation Corp.

FirstEnergy Nuclear Generation Corp. (Davis-Besse Owner and Licensee).

1.1.2 ADDRESS OF APPLICANT

FirstEnergy Nuclear Operating Company
76 South Main Street
Akron, OH 44308

FirstEnergy Nuclear Generation Corp.
76 South Main Street
Akron, OH 44308

1.1.3 DESCRIPTION OF BUSINESS OF APPLICANT

FirstEnergy Nuclear Operating Company is engaged primarily in the business of operating nuclear generation facilities under the supervision and direction of the owner of the facilities.

FirstEnergy Nuclear Generation Corp. owns nuclear generation assets and sells the output of those assets, including from Davis-Besse, to FirstEnergy Solutions Corp.

1.1.4 ORGANIZATION AND MANAGEMENT OF APPLICANT

FirstEnergy Nuclear Operating Company is a wholly owned direct subsidiary of FirstEnergy Corp., a public utility holding company. The shares of common stock of FirstEnergy Corp. are publicly traded on the New York Stock Exchange and are widely held. The principal offices for FirstEnergy Nuclear Operating Company and FirstEnergy Corp. are located in Akron, Ohio. FirstEnergy Nuclear Operating Company and FirstEnergy Corp. are incorporated in the state of Ohio, and qualified to do business in the state of Pennsylvania.

FirstEnergy Nuclear Generation Corp. is a wholly owned direct subsidiary of FirstEnergy Solutions Corp., and a wholly owned second-tier subsidiary of FirstEnergy Corp. FirstEnergy Solutions Corp. is a wholly owned direct subsidiary of FirstEnergy Corp. The principal offices for FirstEnergy Nuclear Generation Corp. and FirstEnergy Solutions Corp. are located in Akron, Ohio. FirstEnergy Nuclear Generation Corp. and FirstEnergy Solutions Corp. are incorporated in the state of Ohio, and qualified to do business in the state of Pennsylvania. FirstEnergy Solutions Corp. is also qualified to do business in Delaware, Washington D.C., Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, New York, Oklahoma, Virginia, and West Virginia.

FirstEnergy Corp., FirstEnergy Solutions Corp., FirstEnergy Nuclear Generation Corp., and FirstEnergy Nuclear Operating Company are not owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government.

The names and business addresses of the directors and principal officers of FirstEnergy Nuclear Operating Company and FirstEnergy Nuclear Generation Corp. are listed in the following tables. All persons are citizens of the United States.

FirstEnergy Nuclear Operating Company

Directors

Anthony J. Alexander	James H. Lash
William T. Cottle	Gary R. Leidich
Address (common to all above): 76 South Main Street; Akron, OH 44308	

Principal Officers

Name & Title	Address
Anthony J. Alexander Chief Executive Officer	76 South Main Street Akron, OH 44308
James H. Lash President and Chief Nuclear Officer	76 South Main Street Akron, OH 44308
Mark T. Clark Executive Vice President and Chief Financial Officer	76 South Main Street Akron, OH 44308
Leila L. Vespoli Executive Vice President and General Counsel	76 South Main Street Akron, OH 44308
Peter P. Sena III Senior Vice President and Chief Operating Officer	76 South Main Street Akron, OH 44308
Danny L. Pace Senior Vice President, Fleet Engineering	76 South Main Street Akron, OH 44308
Barry S. Allen Vice President, Davis-Besse	Davis-Besse Nuclear Power Station 5501 N. State Route 2 Oak Harbor, OH 43449
Mark B. Bezilla Vice President, Perry	Perry Nuclear Plant 10 Center Road Perry, OH 44081

FirstEnergy Nuclear Operating Company

Principal Officers (continued)

Name & Title	Address
Paul A. Harden Vice President, Beaver Valley	Beaver Valley Power Station P.O. Box 4 Shippingport, PA 15077
Donald A. Moul Vice President, Nuclear Support	76 South Main Street Akron, OH 44308
James F. Pearson Vice President and Treasurer	76 South Main Street Akron, OH 44308
Harvey L. Wagner Vice President and Controller	76 South Main Street Akron, OH 44308
Rhonda S. Ferguson Vice President and Corporate Secretary	76 South Main Street Akron, OH 44308

FirstEnergy Nuclear Generation Corp.

Directors

Anthony J. Alexander	Gary R. Leidich
James H. Lash	---
Address (common to all above): 76 South Main Street; Akron, OH 44308	

Principal Officers

Name & Title	Address
James H. Lash President and Chief Nuclear Officer	76 South Main Street Akron, OH 44308
Mark T. Clark Executive Vice President and Chief Financial Officer	76 South Main Street Akron, OH 44308
Leila L. Vespoli Executive Vice President and General Counsel	76 South Main Street Akron, OH 44308
Peter P. Sena III Senior Vice President and Chief Operating Officer	76 South Main Street Akron, OH 44308
Danny L. Pace Senior Vice President, Fleet Engineering	76 South Main Street Akron, OH 44308
James F. Pearson Vice President and Treasurer	76 South Main Street Akron, OH 44308
Harvey L. Wagner Vice President and Controller	76 South Main Street Akron, OH 44308
Rhonda S. Ferguson Vice President and Corporate Secretary	76 South Main Street Akron, OH 44308

1.1.5 Class and Period of License Sought

FirstEnergy Nuclear Operating Company requests renewal of the Class 103 facility operating license for Davis-Besse (facility operating license NPF-3) for a period of 20 years beyond the expiration of the current license term. License renewal would extend the facility operating license from midnight on April 22, 2017, to midnight on April 22, 2037. The facility would continue to be known as Davis-Besse Nuclear Power Station, Unit 1, and would continue to generate electric power during the period of extended operation.

This application also includes a request for renewal of the source material, special nuclear material, and by-product material licenses under 10 CFR Parts 30, 40, and 70 that are subsumed in or combined with the current facility operating license.

1.1.6 Alteration Schedule

FirstEnergy Nuclear Operating Company does 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 Davis-Besse rates and services are as follows:

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

U.S. Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

Public Utilities Commission of Ohio
180 East Broad Street
Columbus, OH 43215

1.1.8 LOCAL NEWS PUBLICATIONS

The news and trade publications which circulate in the area surrounding Davis-Besse, 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, are listed below.

Newsroom
Sandusky Register
314 West Market Street
Sandusky, OH 44870-5071

Newsroom
Port Clinton News Herald
115 West Second Street
P.O. Box 550
Port Clinton, OH 43452

Newsroom
The Advertiser-Tribune
320 Nelson Street
P.O. Box 778
Tiffin, OH 44883

Newsroom
The Blade
541 North Superior Street
Toledo, OH 43660

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 renewed license." The current Indemnity Agreement (No. B-79) for Davis-Besse 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). Item 3 of the Attachment to the indemnity agreement, as revised by Amendment No. 1, lists Davis-Besse facility operating license number NPF-3. FirstEnergy Nuclear Operating Company has reviewed the original indemnity agreement and Amendments 1 through 7. Neither Article VII nor Item 3 of the attachment specifies an expiration date for license number NPF-3. Therefore, no changes to the indemnity agreement are deemed necessary as part of this application. Should the license number be changed by NRC upon issuance of the renewed license, FirstEnergy Nuclear Operating Company requests that NRC amend the indemnity agreement to include conforming changes to Item 3 of the attachment and other affected sections of the agreement.

1.1.10 RESTRICTED DATA AGREEMENT

This application does not contain restricted data or national security information, and FirstEnergy Nuclear Operating Company does not expect that any activity under the renewed license for Davis-Besse will involve such information. However, if such information were to become involved, FirstEnergy Nuclear Operating Company agrees 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 10 CFR Part 25 or 10 CFR Part 95.

1.2 PLANT DESCRIPTION

Davis-Besse Unit 1 is located on the southwestern shore of Lake Erie in Ottawa County in northwestern Ohio. The site consists of 954 acres of which approximately 733 acres is marshland which is leased to the U.S. Government as a national wildlife refuge. A narrow strip of marshland on the southern boundary of the site separates the site from the Toussaint River except for a small segment of the site which extends to the river. The nearest large population center is Toledo, Ohio, located about 20 miles west of the plant. Smaller population centers near the site are Fremont, to the south, and Sandusky, to the southeast. The land area surrounding the site is generally agricultural with no major industry in the vicinity.

The station has a pressurized water reactor nuclear steam supply system furnished by the Babcock & Wilcox Company. The Bechtel Corporation and its affiliate, the Bechtel Company, provided architect-engineering services for the station design, and construction management services for the construction. The licensed core power level is 2817 megawatts-thermal (MWt). The gross electrical output of the plant is 908 megawatts-electric (MWe).

The Updated Safety Analysis Report (USAR) identifies the major structures as the Auxiliary Building, Circulating Water Pump House, Containment Structure, Cooling Tower, Diesel Fuel Tank, Dry Fuel Storage Facility, Fire Water Storage Tank, Flammable Liquids Warehouse, Intake Structure, Low Level Radwaste Storage Facility, Meteorological Tower, Office Building, Personnel Shop Facility, Primary Access Facility, Relay House, Station Blackout Diesel Generator Building, Switchyard, Training Building, Turbine Building, Water Treatment Building, Wet Wash Facility, and 69-kV Substation.

Descriptions of the majority of the Davis-Besse systems and structures can be found in the USAR. Additional descriptive information about the Davis-Besse systems and structures is provided in Section 2 of this application.

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1.3 GENERAL REFERENCES

1.3-1 10 CFR 50, *Domestic Licensing of Production and Utilization Facilities.*

1.3-2 10 CFR 51, *Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions.*

1.3-3 10 CFR 54, *Requirements for Renewal of Operating Licenses for Nuclear Power Plants.*

1.3-4 NUREG-1800, *Standard Review Plan for Review for License Renewal Applications for Nuclear Power Plants*, U.S. Nuclear Regulatory Commission, Revision 1.

1.3-5 NUREG-1801, *Generic Aging Lessons Learned (GALL) Report, Volumes 1 and 2*, U.S. Nuclear Regulatory Commission, Revision 1.

1.3-6 Regulatory Guide 1.188, *Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses*, U.S. Nuclear Regulatory Commission, Revision 1.

1.3-7 NEI 95-10, *Industry Guidelines for Implementing the Requirements of 10 CFR 54 – The License Renewal Rule*, Nuclear Energy Institute, Revision 6.

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

This section describes the process for identification of structures and components subject to aging management review in the Davis-Besse integrated plant assessment. 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 methodology is described in Section 2.1. This methodology is implemented in accordance with NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule," Revision 6. The results of the assessment to identify systems and structures within the scope of license renewal (plant-level scoping) are provided in Section 2.2. The results of the identification of the structures and components subject to aging management review (screening) are contained in the following sections:

- Section 2.3 for mechanical systems
- Section 2.4 for structures
- Section 2.5 for electrical and instrumentation and control systems

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

Table 2.0-1
Intended Functions: Abbreviations and Definitions

Intended Function	Abbreviation	Definition
Absorb Neutrons	ABN	Provide neutron absorption
Conduct Electricity	not abbreviated	Provide electrical connection to specified sections of an electrical circuit to deliver voltage, current, or signals
Direct Flow	DF	Provide spray shield or curbs for directing flow
Expansion or Separation	EXP	Provide for thermal expansion or seismic separation
Filtration	not abbreviated	Provide filtration to remove undesired contamination
Fire Barrier	FB	Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
Flood Barrier	FLB	Provide flood protection barrier (internal or external flooding event)
Flow Control	not abbreviated	Control or distribute flow as designed for balance or to promote mixing
Gaseous Release Path	RP	Provide path for release of filtered and unfiltered gaseous discharge
Heat Sink	HS	Provide heat sink during station blackout or design basis accidents (includes source of cooling water for plant shutdown)
Heat Transfer	not abbreviated	Provide heat transfer capability
HELB Shielding	HELB	Provide shielding against high energy line breaks (HELB)
Insulation (and Support)	not abbreviated	Insulate and support an electrical conductor
Missile Barrier	MB	Provide missile barrier (internally or externally generated)
Pipe Whip Restraint	PW	Provide pipe whip restraint

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

Intended Function	Abbreviation	Definition
Pressure Boundary	not abbreviated	Provide pressure retaining boundary so that sufficient flow at adequate pressure is delivered, or provide fission product barrier for containment pressure boundary, or provide containment isolation for fission product retention (*mechanical definition*)
Pressure Relief	PR	Provide over-pressure protection (*structural definition*)
Shelter or Protection	EN	Provide shelter or protection to safety-related equipment
Shielding	SHD	Provide shielding against radiation
Spray	not abbreviated	Introduce air, gas, or steam into a liquid (e.g., quencher, sparger), or liquid into air, gas, or steam (e.g., spray head or array, sprinkler), providing a defined flow pattern or flow distribution
Structural Integrity	not abbreviated	Maintain structural and pressure boundary integrity to prevent adverse physical interaction with safety-related SSCs such that the safety-related SSCs might fail to perform their intended functions
Structural Pressure Barrier	SPB	Provide pressure boundary or essentially leak tight barrier to protect public health and safety in the event of postulated design basis events (*structural definition*)
Support	not abbreviated	Provide structural integrity (e.g., reactor vessel support or internal subcomponents that do not have a pressure boundary function)
Support for Criterion (a)(1) Equipment	SSR	Provide structural or functional support to safety-related equipment
Support for Criterion (a)(2) Equipment	SNS	Provide structural or functional support to nonsafety-related equipment whose failure could prevent satisfactory accomplishment of required safety functions (includes Seismic II over I considerations)
Support for Criterion (a)(3) Equipment	SRE	Provide structural or functional support required to meet the Commission's regulations for the regulated events in 10 CFR 54.4(a)(3)
Throttling	not abbreviated	Provide flow restriction for measuring flow or for control to limit or balance flow

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

Intended Function	Abbreviation	Definition
Water Removal	not abbreviated	Remove water from an air, gas, or ventilation environment to protect or improve the performance of downstream components

2.1 SCOPING AND SCREENING METHODOLOGY

The following sections describe the methodology used for the license renewal scoping (Section 2.1.1) and screening (Section 2.1.2) processes. A discussion of NRC Interim Staff Guidance (ISG) as it applies to the Davis-Besse license renewal process is contained in Section 2.1.3. Section 2.1.4 contains a review of NRC Generic Safety Issues related to the Davis-Besse license renewal process. Conclusions related to the scoping and screening methodology are provided in Section 2.1.5 and related references are listed in Section 2.1.6.

2.1.1 SCOPING METHODOLOGY

The License Renewal Rule (10 CFR Part 54) defines the scope of license renewal using three criteria. 10 CFR 54.4(a) requires systems, structures, and components (SSCs) 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 any of the functions identified in paragraphs (a)(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).

In addition, 10 CFR 54.4(b) states:

The intended functions that these systems, structures, and components must be shown to fulfill in § 54.21 are those functions that are the bases for including them within the scope of license renewal as specified in paragraphs (a)(1) – (3) of this section.

NEI 95-10 (Reference 2.1-1) provides industry guidance for determining which plant SSCs are in the scope of license renewal. The process to determine the SSCs in the scope of license renewal for Davis-Besse followed the recommendations of NEI 95-10.

The NRC endorsed NEI 95-10 in Section C.2 of Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses" (Reference 2.1-2):

> *Revision 6 of NEI 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 — The License Renewal Rule," dated June 2005, provides methods that the NRC staff considers acceptable for complying with the requirements of 10 CFR Part 54 for preparing a license renewal application.*

Consistent with NEI 95-10, the Davis-Besse license renewal project scoping process established a listing of plant systems and structures, determined the functions they perform, and then determined which functions meet one or more of the three criteria of 10 CFR 54.4(a). Functions that meet one or more of the criteria are intended functions for license renewal. The systems or structures that perform those functions are included in the scope of license renewal.

The Davis-Besse scoping process included a review of current licensing basis and design basis information sources. The following types of controlled plant documents were consulted to support inclusion of systems and structures in the scope of license renewal and for documenting the system and structure descriptions and functions:

- Davis-Besse Updated Safety Analysis Report (USAR),
- Davis-Besse Safety Evaluation Reports,
- Davis-Besse docketed information sources,
- Design Criteria Manual,
- Maintenance Rule Program Manual (MRPM),
- System description documents,
- Plant Engineering Drawings – site plan drawings, plant general arrangement drawings, piping and instrument diagrams, controlled vendor drawings, isometric drawings, civil drawings, electrical drawings, etc.,
- Piping calculations,
- Plant Procedures,
- Other controlled information sources.

Design basis event information was also reviewed during the scoping process. Design basis events are defined in 10 CFR 50.49(b)(1)(ii) as conditions of normal operation, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed. The Davis-Besse USAR identifies the design basis events for the station, including normal operational transients and anticipated operational occurrences; design basis accidents; and, design external events and natural phenomena, such as earthquakes, floods, and tornadoes. The USAR review identified the design basis events and confirmed that the Davis-Besse license renewal scoping process had evaluated the associated plant systems and structures consistent with the criteria of 10 CFR 54.4(a)(1).

The listing of Davis-Besse mechanical and electrical systems was developed from

- the MRPM,
- the USAR, and
- system description documents.

The listing of Davis-Besse structures was developed from

- the MRPM,
- the USAR, and
- architectural arrangement and civil drawings.

The information contained in the MRPM was a key input for the identification of system and structure functions because of the similarities in scoping requirements between the Maintenance Rule (10 CFR 50.65) and the License Renewal Rule (10 CFR 54.4).

The scoping process employed a combination of the following information sources to determine the system and structure license renewal intended functions:

- MRPM information,
- USAR information,
- system description documents,
- piping and instrument diagrams,
- electrical drawings,
- docketed correspondence, and
- other pertinent controlled references.

Each Davis-Besse system and structure was evaluated against the criteria in 10 CFR 54.4(a) as described in the following sections. Additionally, since structural scoping was performed independent of mechanical and electrical scoping, a review of mechanical and electrical scoping was performed to provide added assurance that structures that support or shelter in-scope mechanical and electrical components are included within the scope of license renewal.

- Section 2.1.1.1 describes the evaluation of the safety-related scoping criteria, 10 CFR 54.4(a)(1).
- Section 2.1.1.2 describes the evaluation of the nonsafety-affecting-safety scoping criteria, 10 CFR 54.4(a)(2).
- Section 2.1.1.3 describes the evaluation of the regulated events scoping criteria, 10 CFR 54.4(a)(3).

The results of the scoping evaluations for plant systems and structures are presented in Section 2.2.

2.1.1.1 Safety-Related Scoping Criteria

In accordance with 10 CFR 54.4(a)(1), SSCs relied upon to remain functional during and following design basis events were evaluated as safety-related and are included within the scope of license renewal.

The Davis-Besse definition of safety-related reads as follows:

A classification of any structure, system, or component that is necessary to ensure:

a) The integrity of the reactor coolant pressure boundary,
b) The capability to shut down the reactor and maintain it in a safe shutdown condition or
c) The capability to prevent or mitigate the consequences of the plant conditions that could result in potential off-site exposures that are comparable to the guideline exposures of the Code of Federal Regulations, Title 10, "Energy", Part 100, "Reactor Site Criteria".

Comparison of the Davis-Besse safety-related definition to the scoping criteria of the License Renewal Rule demonstrates that it fully encompasses the systems and equipment that meet the criteria of 10 CFR 54.4(a)(1).

The Davis-Besse definition of safety-related differs in item c) from the definition in 10 CFR 50.49 (b)(1), as referenced in 10 CFR Part 54. Neither 10 CFR 50.34(a)(1) nor 10 CFR 50.67(b)(2) are applicable to Davis-Besse, since 10 CFR 50.34(a)(1) pertains to preliminary safety analysis reports associated with construction permits, and 10 CFR 50.67(b)(2) pertains to the use of an alternate source term, which Davis-Besse has not credited for any analysis.

Nuclear safety-related SSCs are relied upon to remain functional during design basis events. For Davis-Besse, SSCs that are determined to be nuclear safety-related are designated as quality class "Q." In accordance with Davis-Besse component quality classification, the terms "nuclear safety-related" and "Q" are synonymous with safety-related.

Davis-Besse quality group classifications comply with Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants" (see USAR Section 3.2.2). USAR Table 3.2-2 provides a listing of major components and identifies the quality group classification for each component of those fluid systems that are required to prevent or mitigate the consequences of accidents or malfunctions within the reactor coolant pressure boundary, or to permit safe shutdown of the reactor and maintenance of safe shutdown conditions.

The Quality Classification List is a master controlling document that identifies SSCs that have been classified as safety-related ("Q") or augmented quality. Augmented quality is defined as a classification assigned to any item which is not safety-related, but performs one or more functions that meets mandates for the application of quality assurance in the Code of Federal Regulations or in Davis-Besse commitments to regulatory authorities. The Quality Classification List is comprised of two sections: Section I identifies structures, systems, and generic components that have been classified as safety-related or augmented quality; Section II is a component-level listing that is maintained and generated by the Davis-Besse configuration control database (i.e., SAP), and identifies, by component identification number (labeled as 'functional locations' in SAP), the quality classifications assigned to each component.

The piping and instrument diagrams for mechanical systems delineate, with the symbol "Q," the boundaries of safety-related components, i.e., components that meet the scoping criteria of 10 CFR 54.4(a)(1).

The USAR, Quality Classification List, and piping and instrument diagrams were reviewed to ensure that all systems that contain safety-related components were included in the scope of license renewal.

SSCs that perform intended functions that meet the safety-related criteria of 10 CFR 54.4(a)(1) are identified in Sections 2.3, 2.4, and 2.5.

2.1.1.2 Nonsafety-Affecting-Safety Scoping Criteria

In accordance with 10 CFR 54.4(a)(2), nonsafety-related SSCs whose failure could prevent satisfactory accomplishment of a safety function as defined in 10 CFR 54.4(a)(1), referred to as nonsafety-affecting-safety (NSAS), are within the scope of license renewal. It is necessary to consider the impact of failures of nonsafety-related SSCs as either functional or spatial to provide reasonable assurance that all such systems are identified. Appendix F of NEI 95-10 contains guidance on scoping for NSAS. As explained below, the Davis-Besse methodology is consistent with the NEI 95-10 guidance.

For license renewal considerations, a functional NSAS failure is the failure of a nonsafety-related SSC to perform its normal function, which adversely affects the successful accomplishment of a safety function.

A spatial NSAS failure is the loss of structural or pressure boundary integrity of a nonsafety-related SSC that is connected to or located near (in physical proximity to) a safety-related SSC, which adversely affects the successful accomplishment of a safety function of the safety-related SSC.

The evaluation of functional failures and spatial failures with respect to license renewal is described further in the respective sections below.

2.1.1.2.1 Functional Failures of Nonsafety-Related SSCs

Where nonsafety-related equipment is required, as documented in the current licensing basis, to remain functional in support of a safety function, the supporting systems satisfy the NSAS license renewal scoping criterion of 10 CFR 54.4(a)(2).

Engineering and licensing documents were reviewed to determine the appropriate systems and structures in this category. The applicable sections of the USAR, MRPM, and system description documents provided the system and structure functional information to address these considerations.

The SSCs that perform intended functions credited in the current licensing basis that meet the NSAS criteria of 10 CFR 54.4(a)(2) were included within the scope of license renewal and are identified in Sections 2.3, 2.4, and 2.5.

2.1.1.2.2 Spatial Failures of Nonsafety-Related SSCs

Nonsafety-related systems and nonsafety-related portions of safety-related systems also satisfy the NSAS scoping criterion if there is a potential for spatial interactions with safety-related SSCs. That is, the degradation and failure of a nonsafety-related component that is directly connected (attached) to or located in the same space (i.e., same building or area) as that of safety-related systems and components creates the potential for interaction between the SSCs due to physical impact (including pipe whip and jet impingement), harsh environment, flooding, spray, or leakage that could adversely impact the safety-related functions of a safety-related SSC.

Certain mitigative features, such as missile barriers, flood barriers, and spray shields, are credited in the current licensing basis for the protection of safety-related SSCs from spatial interaction. These protective features were included in the scope of license renewal in accordance with Section 2.1.1.2.1 and were evaluated as structural components. In addition, the preventive option described in Appendix F of NEI 95-10 was used to determine the scope of license renewal with respect to the protection of safety-related SSCs from spatial interactions that are not addressed in the current licensing basis. The identification of nonsafety-related systems and portions of systems that are in the scope of license renewal under 10 CFR 54.4(a)(2) due to a potential for spatial interactions with safety-related equipment required an evaluation based on equipment location and the consequences of a nonsafety-related component failure in that location, rather than on equipment function itself. A "spaces" approach was used that focused on an entire structure (e.g., Auxiliary Building) rather than being limited to specific areas inside a structure. In this manner, all fluid-containing components (e.g., liquid or steam) and components associated with safety-related to nonsafety-related interfaces were evaluated for potential spatial interactions, with no rooms, areas or area-to-area transitions overlooked. The only exception to the use of the "spaces" approach was for the nonsafety-related top level of the safety-related Intake Structure, a room that contains no safety-related components.

Nonsafety-related structural components (such as hangers, supports, conduit, cable trays, barriers, and other protective features) were included in the scope of license renewal if they are located in, or are a part of, a plant structure that contains systems or components that satisfied the license renewal scoping criteria (and distinction between safety-related and nonsafety-related structural components was not necessary). Nonsafety-related mechanical systems and components were included in the scope of license renewal, due to the potential for spatial failures, if they are attached to or located in the same building or area as safety-related systems and components, unless justification was provided to assure that failures would not impact a safety function. Consistent with the related discussions in NEI 95-10 Appendix F, failure of non-attached nonsafety-related mechanical components that do not contain a fluid (e.g., liquid or steam) will not result in spatial interaction as there is no fluid to leak, spray, or impinge on safety-related SSCs and system pressure is such that there is no jet force that could cause significant movement of the failed component. This conclusion was confirmed by review of Davis-Besse and industry operating experience.

USAR Section 3.2.1.1 addresses compliance with Regulatory Guide 1.29, "Seismic Design Classification." With respect to nonsafety-related piping that is attached to safety-related piping, the boundaries of Seismic Class I design requirements may extend to the first seismic restraint beyond the safety-related boundary. These seismic restraints are considered "equivalent anchors", and are depicted on the piping and instrument diagrams by the symbol "S/I". If an "S/I" boundary is not shown on the piping and instrument diagram for a particular safety-nonsafety interface, then the safety-related (Q) boundary is the seismic boundary, and the piping beyond the safety-related (Q) boundary (attached nonsafety-related piping) is not within the scope of license renewal.

FirstEnergy Nuclear Operating Company did not exclude components from the scope of license renewal based on duration of exposure to conditions resulting from the failure of a nonsafety-related mechanical component (such as leakage or spray). Fluid-filled nonsafety-related mechanical components that satisfy the NSAS criteria for spatial considerations were determined by a review of system description documents; piping and instrument diagrams; and component data contained in the Davis-Besse configuration control database that identifies component classification and location.

SSCs that perform intended functions for spatial considerations that meet the NSAS criteria of 10 CFR 54.4(a)(2) are identified in Sections 2.3 and 2.4.

2.1.1.3 Regulated Events Scoping Criteria

In accordance with 10 CFR 54.4(a)(3), SSCs that are relied upon (credited) in safety analyses or plant evaluations to perform a function that demonstrates compliance with NRC regulations for the following events are within the scope of license renewal:

- 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).

Engineering and current licensing basis documents provide the technical basis for the SSCs that are required for compliance with the above regulated events. SSCs required for compliance with these NRC regulated events were identified through a combined review of the pertinent current licensing basis documents and engineering documents, including the USAR, Fire Hazards Analysis Report, the station blackout NRC Safety Evaluation Report, and other applicable docketed correspondence between FirstEnergy Nuclear Operating Company (and its predecessors, including Toledo Edison) and the NRC.

However, as a starting point for license renewal regulated event scoping, FirstEnergy Nuclear Operating Company reviewed the augmented quality classification in the Davis-Besse configuration control database. The augmented quality classification is used for components that require quality augmentation either as a result of NRC requirements or as committed to by FirstEnergy Nuclear Operating Company, but otherwise have no safety-related function. Augmented quality components include components required for fire protection, environmental qualification, anticipated transients without scram, and station blackout. There is no augmented quality designation for pressurized thermal shock.

The evaluation methodology for each regulated event is described further below.

SSCs that perform intended functions that meet the regulated event criteria of 10 CFR 54.4(a)(3) are identified in Sections 2.3, 2.4, and 2.5.

2.1.1.3.1 Fire Protection (10 CFR 50.48)

The current licensing basis for the Davis-Besse Fire Protection program is described in the Fire Hazards Analysis Report.

Davis-Besse was licensed before January 1, 1979; therefore, in accordance with 10 CFR 50.48(b), the requirements of 10 CFR Part 50 Appendix R apply. However, because Davis-Besse is in compliance with Branch Technical Position APCSB 9.5-1, the plant is exempt from the provisions of Appendix R, except for Sections III.G/L, III.J, and III.O.

The Fire Hazards Analysis Report describes the fire protection features which ensure the capability to achieve and maintain the cold safe shutdown of the plant and demonstrates compliance with the requirements of Appendix A to Branch Technical Position (BTP) APCSB 9.5-1; 10 CFR 50 Appendix R Sections III.G/L, III.J, and III.O; 10 CFR 50.48 (Fire Protection); and General Design Criterion 3 of Appendix A to 10 CFR Part 50. The Fire Hazards Analysis Report includes a description of post-fire safe shutdown (to demonstrate compliance with Appendix R), a description of fire protection systems (including requirements for compliance), and a fire hazards analysis (demonstrates that a single postulated fire will not affect the ability of the unit to be brought to and maintained in a cold shutdown condition).

In addition, the Davis-Besse system description document for fire protection addresses the design and licensing basis considerations for the Fire Protection System.

The Davis-Besse current licensing basis for fire protection was reviewed to identify those SSCs required for compliance with 10 CFR 50.48 and the corresponding intended functions. This review identified the features required for fire protection of safety-related equipment, and system functions that are included in, or provide necessary support for, the safe shutdown paths credited for compliance with Appendix R. The SSCs that perform an intended function for fire protection were included in the scope of license renewal.

2.1.1.3.2 Environmental Qualification (10 CFR 50.49)

Electrical components relied upon in safety analyses or in plant evaluations to remain functional when exposed to harsh environments, in accordance with 10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety," are within the scope of license renewal in accordance with 10 CFR 54.4(a)(3). The components in the environmental qualification program include both safety-related and nonsafety-related electrical components required for accident mitigation, post-accident monitoring, and safe shutdown.

Environmental qualification applies to electrical components which are installed in mechanical systems, such as instruments or valve operators in a fluid system, as well as to electrical components installed in electrical and instrumentation and control systems. Because the license renewal evaluation is being conducted on a discipline basis, environmental qualification is addressed by each discipline separately, as necessary. For the structural review, environmental qualification does not apply because the structures themselves have no electrical application.

The primary function of environmental qualification is to ensure that electrical systems and components located in a harsh environment are qualified to operate in that environment to perform the safety functions of accident mitigation, post-accident monitoring, and safe shutdown. Based on a review of the Davis-Besse current licensing basis for environmental qualification, the intended functions for each system supporting the 10 CFR 50.49 requirements were determined, and the SSCs that perform an intended function for environmental qualification were included in the scope of license renewal.

2.1.1.3.3 Pressurized Thermal Shock (10 CFR 50.61)

Systems relied on in safety analyses or plant evaluation to perform a function that demonstrates compliance with 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," are within the scope of license renewal per 10 CFR 54.4(a)(3). 10 CFR 50.61 contains requirements for utilities to minimize the effects of pressurized thermal shock to the reactor vessel. This concern exists during periods in which cold water may be injected into the reactor vessel at relatively high system pressures (e.g., safety system injection after an accident). The NRC definition of pressurized thermal shock from 10 CFR 50.61 is:

> *"Pressurized Thermal Shock Event" means an event or transient in pressurized water reactors (PWRs) causing severe overcooling (thermal shock) concurrent with or followed by significant pressure in the reactor vessel.*

The requirements in 10 CFR 50.61 identify specific operational limits pertaining to the belt-line region of the reactor vessel which must not be exceeded for pressurized thermal shock. As pertains to the reactor vessel, plant conditions are managed to ensure that the reference temperature for nil-ductility transition remains within the operational limits.

The identification of mechanical systems, other than the Reactor Pressure Vessel, that are relied upon to demonstrate compliance with 10 CFR 50.61 requires a review of docketed licensing correspondence and related technical reports. USAR Section 5 discusses compliance with 10 CFR 50.61 for Davis-Besse.

Review of docketed licensing correspondence and related technical reports did not identify any systems or structures, other than the Reactor Pressure Vessel, that are credited with mitigation of pressurized thermal shock.

Therefore, the Reactor Coolant System is the only system, and the reactor vessel is the only component, within the scope of license renewal for pressurized thermal shock. Pressurized thermal shock is evaluated as a time-limited aging analysis in Section 4.

2.1.1.3.4 Anticipated Transients Without Scram (10 CFR 50.62)

Anticipated transients without scram (ATWS) are not design basis events, but are anticipated operational occurrences accompanied by a failure of the reactor trip portion of the Reactor Protection 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 ATWS events. The ATWS transients of concern for Babcock & Wilcox plants are a complete loss of main feedwater and a loss of offsite power leading to a loss of main feedwater.

In February 1989 and in June 1989, Toledo Edison (previous owner/operator of Davis-Besse) submitted proposed plant-specific designs to comply with the requirements of the ATWS Rule for Davis-Besse. In September 1989, the NRC issued its Safety Evaluation Report (Reference 2.1-3), and concluded that the proposed designs were in compliance with the ATWS Rule and, therefore, acceptable.

The plant-specific designs for Davis-Besse consist of two elements: (1) the Steam and Feedwater Rupture Control System, and (2) the Diverse Scram System. The Steam and Feedwater Rupture Control System actuates the Auxiliary Feedwater System and initiates a turbine trip on low steam generator level (indicative of a loss of main feedwater) or a loss of four reactor coolant pumps (indicative of a loss of offsite power). The Diverse Scram System, a subsystem of the Reactor Protection/Trip System, provides a diverse means of removing power from the electronic trip circuits to drop the control rods into the reactor core. Both of these ATWS mitigation systems are electrical and instrumentation and control systems that do not include mechanical components. The Steam and Feedwater Rupture Control System and the Diverse Scram System were included in the scope of license renewal as electrical and instrumentation and control systems.

2.1.1.3.5 Station Blackout (10 CFR 50.63)

In accordance with 10 CFR 50.63, "Loss of All Alternating Current Power", each light-water-cooled nuclear power plant is required to be able to withstand and recover from a station blackout (SBO). An SBO is defined as the loss of offsite and onsite alternating current (AC) electric power to the essential and non-essential switchgear buses. It does not include the loss of AC power fed from inverters powered by station batteries. Nuclear power plants are required to be capable of withstanding an SBO event and maintaining adequate reactor core cooling and appropriate containment integrity for an established coping period.

The NRC review and acceptance of the Davis-Besse SBO coping assessment submittal is documented in a Safety Evaluation Report (Reference 2.1-4), with the conclusion that, with the addition of an alternate AC power source consisting of the SBO diesel generator, Davis-Besse conforms with the SBO Rule.

Plant equipment (i.e., systems and instrumentation) necessary to cope with SBO, recover from SBO, and ensure containment integrity and core cooling was identified and investigated to assure that items necessary for the equipment to function would be available for at least four hours; this is the equipment relied upon for compliance with 10 CFR 50.63.

An additional consideration for license renewal, based on NRC guidance, was that the systems and structures relied upon to restore offsite AC power (including the plant system portion of the offsite power system) and onsite AC power for an SBO event would be included within the license renewal scope. This guidance is provided in NUREG-1800 (Reference 2.1-5) and NRC Interim Staff Guidance (ISG) letter LR-ISG-02 (Reference 2.1-6), which was later incorporated into Section 2.5.2.1.1 of NUREG-1800, Revision 1.

SSCs required for compliance with 10 CFR 50.63, as well as the corresponding intended functions, were determined through a review of the current licensing bases, with consideration of the requirements of the License Renewal Rule and the guidance provided in NUREG-1800 and LR-ISG-02, and included in the scope of license renewal. The Davis-Besse evaluation boundary for SBO is addressed in Section 2.5.6.2.

2.1.1.4 Scoping Boundary Determination

For each system and structure within the scope of license renewal, identification of components subject to aging management review begins by determining the system and structure evaluation boundaries. The evaluation boundaries identify the components that are in the scope of license renewal and define those portions of the system or structure that are necessary to ensure that the intended functions of the system are performed. Components needed to support each of the system or structure intended functions identified in the scoping process are included within the evaluation boundaries. Components that do not support a system or structure intended function are outside the evaluation boundaries and need not be considered further. However, all safety-related components are considered to be in the scope of license renewal in accordance with 10 CFR 54.4(a)(1), and are included within the evaluation boundaries, even if they do not directly support a system or structure intended function. Components within the evaluation boundaries may be determined to be not subject to aging management review, as described in Section 2.1.2 below.

Components were primarily evaluated within their plant-assigned (i.e., parent) system. Some mechanical system components were scoped for license renewal within a system other than their parent system where necessary for clarity or to make the aging management review process more efficient. For example, Class 1 portions of engineered safety features systems were moved into the Reactor Coolant System to ensure that reactor coolant pressure boundary components were addressed consistently. Another example is the auxiliary feedwater pump turbines, which were moved into the main steam system to make the aging management review process more efficient. System assignments are clearly depicted on the drawings by the use of flags with system identifications. Components were not transferred to another system to prevent the original system from being in-scope.

2.1.1.4.1 Mechanical Systems

For mechanical systems, the evaluation boundaries are illustrated on piping and instrument diagrams by highlighting the flow paths that are required for the system to perform the intended functions that satisfy the license renewal scoping criteria described in Sections 2.1.1.1, 2.1.1.2, and 2.1.1.3 above. Light blue highlighting indicates portions of systems that are Safety Class 1 and in-scope based on the criteria of 10 CFR 54.4(a)(1). Light green highlighting indicates portions of systems that are non-Class 1 and in-scope based on the criteria of 10 CFR 54.4(a)(1), the functional considerations of 10 CFR 54.4(a)(2), or required compliance with a regulated event under 10 CFR 54.4(a)(3). Magenta highlighting indicates portions of systems that are in-scope based on the spatial considerations of 10 CFR 54.4(a)(2).

2.1.1.4.2 Structures

The evaluation boundary of an in-scope structure is the structure itself and the structural commodities within that structure, unless noted otherwise.

2.1.1.4.3 Electrical and Instrumentation and Control Systems

The philosophy of scoping for electrical systems is that all plant electrical and instrumentation and control systems are included within the scope of license renewal unless they are specifically scoped out.

Mechanical systems for which the only license renewal function involves electrical and instrumentation and control components are included within the electrical evaluation boundary.

The scoping of electrical and instrumentation and control systems includes electrical components within mechanical systems that are required for a complete evaluation of the mechanical system.

Evaluation boundaries are not illustrated for electrical and instrumentation and control systems based on the scoping philosophy. Evaluation boundaries are depicted, however, relative to the electrical and instrumentation and control systems and components required to establish the station blackout scoping boundary (see Section 2.5.6.2).

2.1.2 SCREENING METHODOLOGY

Screening is the process for determining the structures and components that are subject to aging management review (AMR). The requirement for screening is found in 10 CFR 54.21(a), which states:

(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.

(3) For each structure and component identified in paragraph (a)(1) of this section, demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation.

NUREG-1800 and NEI 95-10, Appendix B were used as the basis for the identification of passive structures and components. Most passive structures and components are long-lived. Although the requirements for the integrated plant assessment are the same for systems and structures, in practice the screening process differed for each of the mechanical, structural, and electrical disciplines. The screening processes for each discipline met the requirements of 10 CFR 54.21(a), and 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 AMR. Section 2.3 presents the results of the screening process for mechanical systems.

2.1.2.1.1 Identifying Mechanical Components Subject to Aging Management Review

Within the evaluation boundaries, passive, long-lived components that perform or support a system intended function are subject to AMR.

In making the determination that a component is passive (i.e., the component intended function is performed without moving parts or a change in configuration or properties), it was not necessary to consider the piece-parts of the component, with the exception of certain Class 1 components. For example, in the case of pumps, valves, fans and dampers, the pump casings, valve bodies, and fan and damper housings may perform the component intended function of maintaining system pressure boundary integrity and therefore, were subject to AMR, whereas the pump impeller, valve discs and stems, and fan and damper blades are moving parts and were not subject to AMR. A list of typical passive components is contained in NEI 95-10, Appendix B (Reference 2.1-1).

A determination was made as to whether a component was long-lived or short-lived (i.e., subject to replacement based on a qualified life or specified time period). Long-lived components are subject to AMR. Components that were determined to be short-lived and subject to replacement programs are not subject to AMR. Replacement programs may be based on vendor recommendations, plant experience, or other means that establish a specific service life, qualified life, or replacement frequency under a controlled program, such as preventive maintenance activities. The specific replacement program for a component was identified to justify excluding the component from AMR. Components subject to refurbishment or replacement solely on the basis of condition (e.g., the component is replaced only if significant degradation is observed during a periodic inspection), were considered long-lived and required an AMR. The associated condition monitoring program was considered an aging management program to be credited for license renewal.

Consumables were also considered in the process for determining components subject to AMR. Consumables are, by definition, not long-lived components, and include such things as packing, gaskets, component seals, o-rings, oil, grease, component filters (media), system filters (media), fire extinguishers, fire hoses, and air packs. Table 4.1-2 of NEI 95-10 provides a method to disposition consumables (refer to Section 2.1.2.4).

<u>Grouping of Mechanical Components into Component Types</u>

Most of the components that are subject to AMR were grouped into component types with similar characteristics to streamline the AMR process. For example, it was not necessary to perform an AMR on each and every valve within the system evaluation boundaries. Rather, the valves were grouped together according to their materials of fabrication or construction and the environment to which they are exposed. In this way, the AMR was conducted once for carbon steel valve bodies exposed to raw water, for example, and the results were applied to all carbon steel valve bodies within the system evaluation boundaries that were determined to be exposed to raw water.

Components and component types within the system evaluation boundaries were reviewed against the list contained in NEI 95-10, Appendix B, and those that were both passive and long-lived were identified as subject to AMR. Major plant components such as pumps, tanks, and heat exchangers that have unique design features or functions were identified separately, and may have included a component identification number (functional location); whereas others, such as piping, valves, instrumentation, etc., were grouped by component type. The component types listed in Chapter IX of NUREG-1801 were also considered (Reference 2.1-7).

2.1.2.1.2 Mechanical Component Intended Functions

The component intended function was considered to be the specific simple function, such as "maintain pressure boundary integrity," that supported the broader system intended function, such as "provide core cooling flow." Passive, long-lived components and component types subject to AMR were determined to perform a limited number of component intended functions. The primary component intended function identified for mechanical components was to maintain pressure boundary integrity. For heat exchanger tubes, the function of heat transfer may also have been assigned. A limited number of components have unique functions identified, such as filtration, flow control, or throttling.

Table 2.0-1 provides definitions of intended functions identified in this application, including those used for mechanical components.

2.1.2.2 Screening of Structures

For each structure or building within the scope of license renewal, the screening process identified those structural components and commodities that are subject to AMR. Section 2.4 presents the results of the screening process for structures.

2.1.2.2.1 Identifying Structural Components Subject to Aging Management Review

In accordance with the License Renewal Rule, an in-scope structure (e.g., the Auxiliary Building) contains inherently passive long-lived structural components and commodities. Those structural components and commodities that were determined to perform an intended function were identified as subject to AMR.

The screening process for structural components and commodities involved a review of design and licensing basis documents (e.g., USAR, Design Criteria Manual, drawings) to identify specific structural components and commodities that made up the structure. In most cases, structural components and commodities have no unique identifiers like those given to mechanical components. Therefore, grouping structural components and commodities based on materials of construction first, then subdividing them based on component design and functions, provided a practical means of categorizing them for AMR.

Once the structural component and commodity groups were identified within an in-scope structure (e.g., steel, concrete, fire barriers, elastomers), subdividing the groups into discrete structural component types based on design (e.g., walls, floors and ceilings, fire doors, flood curbs, equipment supports, penetrations, foundations, personnel airlocks) was useful because some component types may have performed different intended functions.

Evaluation Boundaries for Structural Component and Commodity Groups

Structural components and commodities that are attached to a structure or reside within a structure were categorized as: (1) component supports, or (2) other structural members.

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 excludes integral attachments to the same. Component support examination boundaries for non-ASME in-scope components included the structural component and the associated attachment to the building structure (e.g., structural component supports for heating, ventilation, and air-conditioning ducts include duct support members, baseplate, and anchorage).

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

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

2.1.2.2.2 Structural Commodity Intended Functions

Structural component and commodity groups were evaluated to determine their intended functions. Unlike mechanical equipment for which both system-level and component-level intended functions were defined, the intended functions for structures were based on a simple set of functions that were applied to both the structure and to its components. The FirstEnergy Nuclear Operating Company process for determining the intended functions of structures, structural components, and structural commodities for license renewal followed the NEI 95-10 guidelines.

Table 2.0-1 provides definitions of intended functions identified in this application, including those used for structural commodities.

2.1.2.3 Screening of Electrical and Instrumentation and Control Systems

For each electrical and instrumentation and control system within the scope of license renewal, the screening process identified those electrical components and commodities that are subject to AMR. Electrical components in mechanical systems that were determined to be within the scope of license renewal were addressed under the electrical screening process. Section 2.5 presents the results of the screening process for electrical and instrumentation and control systems.

2.1.2.3.1 Identifying Electrical Commodities Subject to Aging Management Review

The philosophy of the electrical component screening process was that electrical components were included in the review unless they were scoped out at the system level or screened out by commodity group at the component level. The screening of electrical components was performed on a commodity basis. The electrical components were grouped by component type and evaluated in their respective commodity groups. The evaluation determined the materials of construction and service conditions (operating environment) of the equipment.

The grouping by commodity was performed because it would have been unworkable and unnecessary to list each and every electrical component separately (every cable, light bulb, insulator, etc.). The commodity grouping allowed for further subdivision based upon materials of construction, so that components with the same materials were evaluated together. The list of electrical component commodity groups generated was descriptive enough for the identification of the components within the group, and provided useful classification to support the electrical component AMR.

The electrical screening process was based on application of the listing in NEI 95-10, Appendix B, of component commodity groups that were identified as active and those which were listed as passive. Active components were excluded from AMR. The electrical screening process also set aside the components that are addressed by the environmental qualification program, which are evaluated as time-limited aging analysis in Section 4.4. The remaining electrical components (i.e., commodity groups) are subject to AMR.

2.1.2.3.2 Electrical Commodity Intended Functions

Electrical commodities were evaluated to determine their intended functions. The intended functions for electrical commodities were identified based on guidance provided in NEI 95-10.

Table 2.0-1 provides definitions of intended functions identified in this application, including those used for electrical commodities.

2.1.2.4 Treatment of Consumables

Consumables, as defined in Section 4.1 of NEI 95-10 and addressed in NUREG-1800 Table 2.1-3, comprise the following four categories: (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. Each category, as it applies to Davis-Besse license renewal, is discussed below. The discussion of structural sealants also addresses mechanical sealants, based on similarities in function and application. The discussion of system filters, fire extinguishers, fire hoses, and air packs also addresses compressed gas cylinders, based on a similar justification to that used for fire extinguishers.

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

Packing, gaskets, component seals, and o-rings are treated as sub-components of pressure-retaining components (e.g., valves) and were evaluated based on guidelines described in Table 2.1-3 of NUREG-1800. These sub-components are not relied upon by ANSI B31.1 or ASME Section III for maintaining system pressure boundary. The sub-components provide leak-proof seals when components are mechanically joined together, but are not required to support the intended function of the parent component. Furthermore, these subcomponents are typically replaced as condition (e.g., leakage) warrants as a standard practice. As such, packing, gaskets, component seals, and o-rings are classified as consumables and are not subject to AMR.

2.1.2.4.2 Structural Sealants

Structural sealants perform an intended function without moving parts or change in configuration and are not typically replaced. Therefore, structural sealants were determined to be subject to AMR based on their application, and are evaluated as bulk commodities.

Mechanical sealants used in heating, ventilation, and air-conditioning systems or other systems that circulate or process ambient air similarly perform an intended function and are not typically replaced. Therefore, mechanical sealants in heating, ventilation, and air-conditioning and other air circulation systems were determined to be subject to AMR based on their application, and are evaluated within their respective systems.

2.1.2.4.3 Oil, Grease, and Component Filters

Oil, grease, and component filter media are sub-components of in-scope equipment and are, by definition, short-lived because either: (1) a program for periodic replacement exists, or (2) a monitoring program (e.g., predictive analysis activities, condition monitoring) exists that replaces these consumables, based on established performance criteria, when their condition begins to degrade, but before there is a loss of intended function. Examples of component filter media are fuel oil and lubricating oil filters. Therefore, oil, grease, and component filters are classified as consumables and are not subject to AMR.

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

System filter media, fire extinguishers, fire hoses, air packs, and compressed gas cylinders are consumables, and are routinely tested, periodically inspected and replaced when necessary, and are not subject to AMR. System filters are monitored during testing and operation, and are either replaced periodically or on condition. Fire hoses and fire extinguishers are inspected and hydrostatically tested periodically and must be replaced if they do not pass the test or inspection. Breathing air apparatus and air cylinders are inspected and tested periodically and must be replaced if they do not pass the test or inspection. Fire protection procedures specify the replacement criterion of these components that are routinely checked by tests or inspections to assure operability. Criteria for inspection and replacement are based on accepted industry standards (e.g., Branch Technical Position BTP-APCSB 9.5-1, National Fire Protection Association (NFPA) NFPA-10 for fire extinguishers, NFPA-1962 for fire hoses, and the Code of Federal Regulations 29 CFR 1910.134, Section 6.2.1 for air packs). Therefore, while these consumables are within the scope of license renewal, they are short-lived, and are not subject to AMR.

2.1.2.5 Treatment of Stored Equipment

Equipment that is stored on-site for installation in response to a design basis event was evaluated as within the scope of license renewal. The USAR, the Fire Hazards Analysis Report, site procedures, and system description documents were reviewed to identify stored equipment by performing keyword searches. Keyword searches of abnormal operating procedures were specifically performed to determine whether there is stored or staged equipment that is relied upon (credited) in response to design basis events. Identified equipment was evaluated and determined to be short-lived based on periodic testing and inspections.

There is no stored or staged long-lived equipment that is relied upon (credited) for design basis event mitigation. Therefore, there is no stored equipment subject to AMR.

2.1.2.6 Treatment of Insulation

Insulation is addressed in license renewal guidance documents, including NEI 95-10 (Reference 2.1-1), NUREG-1800 (Reference 2.1-5), and NUREG-1801 (Reference 2.1-7), almost exclusively in relation to electrical components (in terms of insulation for electrical cables, electrical connections, and electrical bus bar).

For electrical components, the insulation serves a specific function of preventing unwanted loss of electrical current and conductivity. The thermal considerations of the insulation for electrical components, if any, are secondary.

Insulation for mechanical and structural components is concerned with thermal characteristics and is associated with piping and other components that contain high or low temperature liquids or steam, and with items like the insulation around the reactor vessel (to protect adjacent concrete from temperature affects).

Insulating materials for mechanical components are nonsafety-related and typically are not required for the intended function of the systems and components to which they are affixed (Reference 2.1-5, Table 2.3-1). Thermal insulation may be: a) credited with a specific function (such as in room heat-up analyses and for structural fire barriers), or b) affixed to mechanical components and have the potential to fall on, block, or obstruct safety-related components. As such, insulating materials that function to limit heat transfer, perform a fire barrier function, or that must maintain their integrity to prevent interactions with safety-related components are within the scope of license renewal.

Because insulating materials affixed to mechanical and structural components share material and environment properties and were common to multiple SSCs rather than being associated with a specific system, they were addressed as bulk commodities in the structural evaluations.

Insulation for electrical components, and for mechanical and structural applications, was determined to be passive and long-lived. Therefore, insulating materials that serve an intended function are subject to AMR.

2.1.3 INTERIM STAFF GUIDANCE ASSOCIATED WITH LICENSE RENEWAL

Interim Staff Guidance (LR-ISG) documents for license renewal serve as a means for the NRC staff to issue changes and clarifications to license renewal guidance documents issued by the NRC between formal revisions, and to address emergent issues. Changes are generally made with input from license renewal stakeholders. License renewal guidance documents issued by the NRC include NUREG-1800, NUREG-1801, and Regulatory Guide 1.188. LR-ISGs may exist in either a draft or approved status. LR-ISGs typically address technical issues, but may address process issues as well.

There are two types of LR-ISGs: clarification ISGs and compliance ISGs. Clarification ISGs provide additional guidance intended to reduce unnecessary requests for additional information (RAIs) and inform applicants when more information is needed on an issue already addressed in NRC guidance documents for license renewal. Clarification ISGs do not create new staff positions not already addressed by previous applicants. Compliance ISGs involve compliance with previously issued NRC regulations.

As recommended by NEI 95-10, Section 1.4, LR-ISGs that remain open and have not been incorporated into license renewal guidance documents should be considered by applicants for license renewal. The current status of LR-ISGs, as well as a description of the process, is available on the NRC Reactor License Renewal Guidance Document web page. As described in an NRC letter dated February 6, 2007 (Reference 2.1-8), ISGs through 2005 have either been incorporated into NRC guidance documents for license renewal, have been otherwise closed, or remain open.

The LR-ISGs that remain open as of June 2010 are discussed below.

<u>LR-ISG-19B – Cracking of Nickel-Alloy Components in the Reactor Coolant Pressure Boundary</u>

The NRC staff has prepared a draft aging management program, XI.M11-B, "Cracking of Nickel-Alloy Components in the Reactor Coolant Pressure Boundary." This ISG has been deferred, and the program will be included in the update of NUREG-1801 and will not become a final LR-ISG.

FirstEnergy Nuclear Operating Company has committed to a plant-specific aging management program for Davis-Besse, the "Nickel-Alloy Management Program," to address this issue (see Appendix B).

LR-ISG-2006-01 – Plant-Specific Aging Management Program for Inaccessible Areas of Boiling Water Reactor Mark 1 Steel Containment Drywell Shell

Plants with a boiling water reactor (BWR) Mark I steel containment are to provide a plant-specific aging management program that addresses the potential loss of material due to corrosion in the inaccessible areas of their Mark I steel containment drywell shell for the period of extended operation.

This LR-ISG is not applicable to Davis-Besse, which is a pressurized water reactor (PWR).

LR-ISG-2006-03 – Staff Guidance for Preparing Severe Accident Mitigation Alternatives Analyses

This LR-ISG endorses the use of industry guidance document NEI 05-01 (Revision A), issued in November 2005, when preparing severe accident mitigation alternatives (SAMA) analyses for license renewal. The LR-ISG clarifies the staff's expectation with respect to SAMA information submitted with the LRA.

NEI 05-01 was used as guidance in the development of SAMA analyses submitted as part of the Davis-Besse License Renewal Application (see Appendix E).

LR-ISG-2007-01 – License Renewal Interim Staff Guidance Process, Revision 1

This LR-ISG issued a revised process for guiding the development and implementation of LR-ISGs. The revised process superseded the previous process entitled, "Process for Interim Staff Guidance," which the NRC staff issued on December 12, 2003.

The LR-ISG process communicates interim changes to NRC license renewal guidance documents. Revision 1 of this LR-ISG (issued August 7, 2009) extended the LR-ISG process to certain environmental review guidance documents, added a new backfitting discussion section to LR-ISGs, and updated references to NRC license renewal guidance documents. The process has since been superseded by the "License Renewal Interim Staff Guidance Process," Revision 2, issued June 14, 2010.

This LR-ISG does not affect the development of the Davis-Besse License Renewal Application.

LR-ISG-2007-02 – Changes to Generic Aging Lessons Learned (GALL) Report Aging Management Program (AMP) XI.E6, "Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements"

This LR-ISG addresses acceptable approaches for managing the effects of aging for certain electrical cable connections within the scope of license renewal. The methodology allows for a one-time inspection of a representative sample of electrical cable connections (to be performed prior to the period of extended operation). If a resistance measurement (via thermography or contact resistance testing, for example) cannot be practically performed (or cannot be done for safety reasons), then a visual inspection may be utilized. However, a visual inspection cannot be a one-time inspection and a periodic program is needed.

FirstEnergy Nuclear Operating Company has committed to a one-time inspection, consistent with LR-ISG-2007-02, for Davis-Besse, the "Electrical Cable Connections Not Subject to 10 CFR 50.49 EQ Requirements Inspection," to address this issue (see Appendix B).

LR-ISG-2009-01 – Aging Management of Spent Fuel Pool Neutron-Absorbing Materials other than Boraflex

This LR-ISG details an acceptable approach for managing the effects of aging during the period of extended operation for neutron-absorbing material in spent fuel pools within the scope of license renewal. NUREG-1801 Section XI.M22 describes adequate aging management program characteristics for Boraflex monitoring, and this material is excluded from this LR-ISG. Other materials, such as Boral, Metamic, boron steel, and Carborundum are addressed.

The staff has determined that each applicant needs to demonstrate that, for each type of neutron-absorber material used in the spent fuel pool, degradation has not occurred in a manner that could adversely impact the material's intended function. A plant-specific aging management program should be submitted that addresses the aging effects relative to reduction in neutron-absorbing capacity, change in dimensions, and loss of material, due to the effects of the spent fuel pool environment.

FirstEnergy Nuclear Operating Company has committed to a plant-specific aging management program, consistent with LR-ISG-2009-01, for Davis-Besse, the "Boral® Monitoring Program," to address this issue (see Appendix B).

2.1.4 GENERIC SAFETY ISSUES

Generic resolution of a generic safety issue (GSI) or unresolved safety issue (USI) is not necessary for the issuance of a renewed license. GSIs and USIs that do not contain issues related to the license renewal aging management review or time-limited aging evaluation need not be reviewed. Unresolved safety issues, and high and medium priority issues described in Appendix B of NUREG-0933, "Resolution of Generic Safety Issues" (Reference 2.1-9), that involve aging effects for structures and components subject to aging management review or time-limited aging analyses are specifically addressed. Per NEI 95-10 (Section 1.5), the version of NUREG-0933 that is current on the date six (6) months before the submittal date of the license renewal application is used to identify such issues. Branch Technical Position RLSB-2, Generic Safety Issues Related to Aging, contained in Appendix A.3 of NUREG-1800, provides additional guidance on treatment of GSIs.

Review of NUREG-0933 Appendix B identified no outstanding USIs. There are no GSIs identified as medium-priority. The following GSIs are identified as high-priority:

- GSI-163, Multiple Steam Generator Tube Leakage

  GSI-163 involves the potential for multiple steam generator tube leaks during a main steam line break that cannot be isolated. This GSI is event-driven (i.e., initiated by a main steam line break) and is not related to aging. However, steam generator tubes are part of the reactor coolant pressure boundary and are the subject of an aging management review and time-limited aging analysis evaluation as documented in Section 3.1.2.1.4 and Section 4.3.2. Aging management of steam generator tubes is addressed within the current licensing basis of the plant and will continue to be addressed during the period of extended operation by the Steam Generator Tube Integrity Program discussed in Section B.2.38.

- GSI-191, Assessment of Debris Accumulation on PWR Sump Performance (Revision 1)

  GSI-191 involves the potential for blockage of containment sump strainers that filter debris from cooling water supplied to the safety injection and containment spray pumps following a postulated LOCA. The issue is based on containment strainer design and on the identification of new potential sources of debris that may block the sump strainers. The issues identified in GSI-191 and related NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors," are not aging-related issues, and, therefore, are not a license renewal concern for Davis-Besse. Also, the issues are not related to the 40-year term of the current operating license, and, therefore, are not time-limited aging analyses. At Davis-Besse, a new emergency sump strainer was designed and installed in the

Cycle 13 refueling outage (February 30, 2002 to March 2004). FirstEnergy Nuclear Operating Company evaluated the containment emergency sump and strainer for license renewal in the Containment structure evaluation in Section 2.4.1.

These GSIs are applicable to Davis-Besse, a pressurized water reactor (PWR). However, these GSIs do not involve either aging effects for structures or components subject to aging management review or time-limited aging analyses. Therefore, these GSIs need no further evaluation for license renewal.

There are no GSIs that require further evaluation in this License Renewal Application.

2.1.5 CONCLUSION

The methodology described in Sections 2.1.1 and 2.1.2 was used to identify the SSCs that are within the scope of license renewal and to identify those structures and components that are subject to 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 FOR SECTION 2.1

2.1-1 NEI 95-10, *Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule*, Nuclear Energy Institute, Revision 6.

2.1-2 Regulatory Guide 1.188, *Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses*, U. S. Nuclear Regulatory Commission, Revision 1.

2.1-3 EXT-89-07488 (Log No. 3077), Thomas V. Wambach (NRC) to Donald C. Shelton (Toledo Edison), *Evaluation of the Davis-Besse Nuclear Power Station Compliance with 10 CFR 50.62 Requirements for Reduction of Risk from Anticipated Transients without SCRAM (ATWS) (TAC 59086)*, September 29, 1989.

2.1-4 EXT-91-01364 (Log No. 3421), Dominic C. Dilanni (NRC) to Donald C. Shelton (Toledo Edison, Davis-Besse), *Safety Evaluation of the Davis-Besse Nuclear Power Station, Unit No. 1, Station Blackout Rule 10 CFR 50.63 (TAC No. 68536)*, March 7, 1991.

2.1-5 NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants,* U. S. Nuclear Regulatory Commission, Revision 1.

2.1-6 NRC LR-ISG-02, *Staff Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout (SBO) Rule (10 CFR 50.63) for License Renewal (10 CFR 54(a)(3))*, April 1, 2002 [historical].

2.1-7 NUREG-1801, *Generic Aging Lessons Learned (GALL) Report*, U. S. Nuclear Regulatory Commission, Revision 1.

2.1-8 NRC letter, P.T. Kuo, Director, Division of License Renewal, Office of Nuclear Regulatory Research, to A. Marion, NEI, *Summary of the 2001-2005 Interim Staff Guidance for License Renewal*, February 6, 2007.

2.1-9 NUREG-0933, Supplement 32, *Resolution of Generic Safety Issues*, U. S. Nuclear Regulatory Commission, July 2008.

2.2 PLANT-LEVEL SCOPING RESULTS

The Davis-Besse license renewal review methodology consisted of three distinct processes: scoping, screening, and aging management review. This section provides the results of the scoping process described in Section 2.1.1.

Table 2.2-1, Table 2.2-2, and Table 2.2-3 provide the results of applying the license renewal scoping criteria to the mechanical systems, electrical and instrumentation and control (I&C) systems, and structures, respectively. If a system or structure, in whole or in part, met one or more of the license renewal scoping criteria, the system or structure was evaluated as within the scope of license renewal for Davis-Besse. The tables include a reference to the section of the application that discusses the screening results for each system and structure determined to be within the scope of license renewal.

Table 2.2-1
License Renewal Scoping Results for Mechanical Systems

System Name	In-Scope	Screening Results Section
Auxiliary Building HVAC Systems	Yes	2.3.3.1
Auxiliary Building Chilled Water System	Yes	2.3.3.2
Auxiliary Feedwater System	Yes	2.3.4.1
Auxiliary Steam and Station Heating System	Yes	2.3.3.3
Boron Recovery System	Yes	2.3.3.4
Chemical Addition System	Yes	2.3.3.5
Chlorination System	No	
Circulating Water System	Yes	2.3.3.6
Component Cooling Water System	Yes	2.3.3.7
Condensate System	No	
Condensate Storage System	Yes	2.3.4.2
Condenser Vacuum System	No	
Containment Air Cooling and Recirculation System	Yes	2.3.2.1
Containment Hydrogen Control System	Yes	2.3.3.8
Containment Purge System	Yes	2.3.3.9
Containment Spray System	Yes	2.3.2.2
Containment Vacuum Relief System	Yes	2.3.3.10
Control Rod Drive System	No	
Core Flooding System	Yes	2.3.2.3
Demineralized Water Storage System	Yes	2.3.3.11
Demineralizer System	No	
Decay Heat Removal and Low Pressure Injection System	Yes	2.3.2.4
Electro-Hydraulic Control System	No	
Emergency Diesel Generators System	Yes	2.3.3.12
Emergency Ventilation System	Yes	2.3.3.13

Table 2.2-1
License Renewal Scoping Results for Mechanical Systems (continued)

System Name	In-Scope	Screening Results Section
Extraction Steam System	No	
Fire Protection System	Yes	2.3.3.14
Fuel Oil System	Yes	2.3.3.15
Gaseous Radwaste System	Yes	2.3.3.16
High Pressure Injection System	Yes	2.3.2.5
Instrument Air System	Yes	2.3.3.17
Main Feedwater System	Yes	2.3.4.3
Main Generator and Auxiliaries System	No	
Main Steam System	Yes	2.3.4.4
Main Turbine and Auxiliaries System	No	
Makeup and Purification System	Yes	2.3.3.18
Makeup Water Treatment System	Yes	2.3.3.19
Miscellaneous Building HVAC System	Yes	2.3.3.20
Miscellaneous Liquid Radwaste System	Yes	2.3.3.21
Miscellaneous Mechanical System	No	
Nitrogen Gas System	Yes	2.3.3.22
Primary Hydrogen Makeup System	No	
Process and Area Radiation Monitoring System	Yes	2.3.3.23
Reactor Coolant Vent and Drain System	Yes	2.3.3.24
Reactor Coolant System	Yes	2.3.1.3
Reactor Pressure Vessel	Yes	2.3.1.1
Reactor Vessel Internals	Yes	2.3.1.2
Sampling System	Yes	2.3.3.25
Service Water System	Yes	2.3.3.26
Spent Fuel Pool Cooling and Cleanup System	Yes	2.3.3.27
Spent Resin Transfer System	Yes	2.3.3.28
Station Air System	Yes	2.3.3.29
Station Blackout Diesel Generator System	Yes	2.3.3.30

Table 2.2-1
License Renewal Scoping Results for Mechanical Systems (continued)

System Name	In-Scope	Screening Results Section
Station Plumbing, Drains, and Sumps System	Yes	2.3.3.31
Steam Generators	Yes	2.3.1.4
Turbine Building HVAC System	No	
Turbine Plant Cooling Water System	Yes	2.3.3.32

Table 2.2-2
License Renewal Scoping Results for Electrical and I&C Systems

System Name	In-Scope	Screening Results Section
Administration - Power Structure Maintenance System	No	
Annunciators and Miscellaneous Power System	No	
Batteries and DC Power Supplies (125/250 VDC) System	Yes	2.5
Instrument AC System (including 240/120 VAC Essential System)	Yes	2.5
480 VAC System (including 480 VAC substations and 480 VAC motor control centers)	Yes	2.5
4160 VAC System	Yes	2.5
345-kV Switchyard System	Yes	2.5
Startup Transformers / 13.8-kV Buses System	Yes	2.5
Central Welding System	No	
Communications System	Yes	2.5
Containment System (electrical penetrations)	Yes	2.5
Containment Leak Detection System	No	
Control Rod Drive System (power supplies)	Yes	2.5
Environmental Equipment System	No	
Fire Protection System (fire detection)	Yes	2.5
Incore Monitoring System	Yes	2.5
Integrated Control System	No	
Main Generator and Auxiliaries System	No	
Main Turbine and Auxiliaries System (see Table 2.2-1 for the Electro-Hydraulic Control System)	No	
Main and Auxiliary Transformers System	No	
Miscellaneous Electrical Systems	No	
Miscellaneous Subsystems	No	
Nuclear Instrumentation System	Yes	2.5
Non-Nuclear Instrumentation System	Yes	2.5

Table 2.2-2
License Renewal Scoping Results for Electrical and I&C Systems (continued)

System Name	In-Scope	Screening Results Section
Piping Protection (cathodic and freeze protection) System	Yes	2.5
Plant Computer and Monitoring System	No	
Personnel Processing Facility [also known as Primary Access Facility] (electrical systems)	No	
Process and Area Radiation Monitoring System	Yes	2.5
Protective Relays System	No	
Reactor Coolant Pump Maintenance Tools System	No	
Reactor Protection/Trip System	Yes	2.5
Safety Features Actuation System	Yes	2.5
Station AC/DC Lighting System	Yes	2.5
Steam and Feedwater Rupture Control System	Yes	2.5

Table 2.2-3
License Renewal Scoping Results for Structures

Structure Name	In-Scope	Screening Results / Section
1,000-kVA Transformer Foundation	No	Provides support to the 1,000-kVA Transformer
69-kV Substation Foundation	No	Provides support to the 69-kV Substation which feeds loads that are not in the scope of license renewal
Acid Supply Pump House	No	Also known as the Acid Supply System (Cooling Tower); abandoned in place
Auxiliary Building (including control room, diesel generator rooms, and spent fuel storage area)	Yes	2.4.2
Beach House	No	Utilized to comply with environmental regulations
Beach House Transformer Vault	No	Houses the Beach House transformer which supplies power to the Beach House and other nonsafety-related loads
Borated Water Storage Tank Foundation (including trench)	Yes	2.4.12
Bridge (over Cooling Tower Return Canal)	No	Used as a roadway for crossing over the Cooling Tower Return Canal
Borated Water Storage Tank Level Transmitter Building	Yes	2.4.4
Carbon Dioxide Storage Tank Pad	No	Provides support to the carbon dioxide gas storage unit
Chlorination Pipe Trench	No	Concrete trench routed outside between the Intake Structure and the Circulating Water Screen Structure and covered with gratings and checkered plates
Chlorine Detector Building	No	Also known as the Chlorine Detector Enclosure; abandoned in place
Chlorine Unloading Facility	No	Abandoned in place

Table 2.2-3
License Renewal Scoping Results for Structures (continued)

Structure Name	In-Scope	Screening Results / Section
Circulating Water Pump House	No	Also known as the Circ Water System Pump House; houses a 30-ton traveling bridge crane, four circulating water pumps and piping that supply water to the turbine steam condensers
Circulating Water Screen Structure	No	Also known as the Screen Structure; houses screens to prohibit any large debris from entering the Circulating Water System
Collection Box	No	Reinforced concrete vault with manway access utilized to comply with environmental regulations
Containment (including Containment Vessel, Shield Building, and Containment internal structures)	Yes	2.4.1
Cooling Tower	No	Hyperbolically shaped concrete shell supported on a concrete foundation; located such that complete collapse in the most unfavorable direction would not endanger critical station structures
Cooling Tower Return Canal	No	Also known as the Open Channel; carries circulating water from the Cooling Tower basin to the Circulating Water Screen Structure
Davis-Besse Administration Building (DBAB) and Annex	No	Also known as the Administration Office Building or the DBAB; houses the Technical Support Center, Emergency Operation Facility, radiation testing lab, site emergency operation center, records management, and administrative offices
Davis-Besse Administration Building Power Structure	No	Also known as the Emergency Control Center or Emergency Planning Facility Power Structure; provides backup power to support the emergency response facilities
Demineralized Water Storage Tank Foundation	No	Supports the Demineralized Water Storage Tank, which is not in-scope for license renewal

Table 2.2-3
License Renewal Scoping Results for Structures (continued)

Structure Name	In-Scope	Screening Results / Section
Diesel Oil Pump House	Yes	2.4.12
Diesel Oil Storage Tank Foundation	Yes	2.4.12
Dry Fuel Storage Facility	No	Provides temporary on-site spent fuel dry storage; licensed and operated in accordance with 10 CFR Part 72
Emergency Diesel Generator Fuel Oil Storage Tanks Foundation	Yes	2.4.12
Fire Hydrant Hose Houses and Foundations	Yes	2.4.12
Fire Walls between Bus-Tie Transformers, between Bus-Tie and Startup Transformer 01, and between Auxiliary and Main Transformers	Yes	2.4.12
Fire Water Storage Tank Foundation	Yes	2.4.12
Fire Water Storage Tank Pump House	No	Also known as the Construction Water Treatment Building or Service Building No. 5; used to fill the Fire Water Storage Tank with treated water by means of the station water treatment system. Provides a water filling function which sets up the initial condition for the Fire Water Storage Tank.
Flammable Liquids Warehouse	No	Also known as the Flammable Liquids Building; provides storage for flammable liquids
Flow Test Box	No	Concrete valve vault with manway access that contains valves associated with discharge piping
Forebay (including retaining walls)	Yes	2.4.3

Table 2.2-3
License Renewal Scoping Results for Structures (continued)

Structure Name	In-Scope	Screening Results / Section
Fuel Storage Tanks Foundations	No	Support the fuel storage tanks; the 1,000 gallon diesel fuel storage tank and 2,000 gallon gasoline storage tank are located in a concrete retaining structure designed to contain the total volume of both tanks
Gate House	No	Utilized for site security purposes
Hydrogen Trailer Area	No	Concrete slab that supports the hydrogen supply which is permanently piped into the Turbine Building
Intake Canal	No	Dredged at the lake end and terminated with a diked closure at the original shoreline. The collapse of the intake pipe or complete closure of the canal was analyzed. The stored water in the forebay is adequate for safe shutdown.
Intake Crib	No	Submerged structure located approximately 3,100 feet offshore in Lake Erie which conveys water to the shore by an intake pipe. The intake crib air bubbler is abandoned in place.
Intake Crib Air Piping Manhole	No	Abandoned in place
Intake Structure	Yes	2.4.3
Low Level Radwaste Storage Facility	No	Also known as the Low Level Radwaste Building; provides temporary storage of low level radwaste
Lube Oil Delivery Fill Box	No	Concrete below-grade valve box with a cast iron cover providing shelter and support to the lube oil fill and disposal piping
Main and Auxiliary Transformer Foundations	No	Provide support for the main and auxiliary transformer which are not in-scope for license renewal

Table 2.2-3
License Renewal Scoping Results for Structures (continued)

Structure Name	In-Scope	Screening Results / Section
Meteorological Tower	No	A 100-meter tall free-standing tower with backup meteorological systems installed on the tower and associated equipment housed in a climate controlled shelter
Microwave Tower	No	A 10-meter tall free-standing tower with backup meteorological systems installed on the tower and associated equipment housed in a climate controlled shelter
Miscellaneous Diesel Generator Building	Yes	2.4.5
Nitrogen Storage Building	Yes	2.4.12
Nonsafety-related Utility Manholes, Sumps, Oil Interceptors, Catch Basins and Oil Collection Tanks, Lift Stations, Cleanouts, Connection Boxes, and Holding Tanks	No	Associated with environmental consideration of waste oil treatment and retention; located throughout the yard
Office Building (Condensate Storage Tanks)	Yes	2.4.6
Operations Support Center	No	Located inside the Personnel Shop Facility
Primary Access Facility	No	Also known as the Personnel Processing Facility; utilized for site security purposes
Personnel Shop Facility	No	Houses offices and shop facilities
Personnel Shop Facility Passageway (Missile Shield Area)	Yes	2.4.7
Ponds (including Ponds A through D, Dewatering Pond, Grout Waste Hole, and ponds west of Cooling Tower)	No	Located on the Davis-Besse site; ponds are borrow pits used to provide fill material during site construction. Dewatering Pond was used for the dewatering of groundwater during construction. Grout Waste Hole is a waste dump area for unused grout.

Table 2.2-3
License Renewal Scoping Results for Structures (continued)

Structure Name	In-Scope	Screening Results / Section
Primary Water Storage Tank Foundation	No	Abandoned in place
Propane Tanks Foundations	No	Provide physical support to the propane tanks
Pump House (construction water)	No	Abandoned in place
Pump House (near State Highway 2)	No	Protects a marsh pump used to control water level in the marsh near the Cooling Tower
Resource and Recovery Act (RCRA) (Hazardous Waste) Storage Area and Building	No	Provides storage of hazardous waste and waste oil drums
Red Barn	No	Abandoned in place
Salt Barn	No	Provides storage for de-icing salt
Satellite Tower	No	Free-standing tower that is part of the Communications System
Screen Wash Catch Basin	No	Utilized to comply with environmental regulations
Seismograph Detector Housing	No	Houses the seismograph detector; reinforced cube-like structure installed below grade with a steel cover plate
Service Buildings 2, 3, 4, and 6	No	Houses site personnel, offices, and warehouse parts
Service Building 4 Substation Foundation	No	Provides support for the Service Building 4 Substation
Service Water Discharge Structure	Yes	2.4.3
Service Water Pipe Tunnel and Valve Rooms	Yes	2.4.8
Settling Basins 1, 2, and 3	No	Utilized to comply with environmental regulations

Table 2.2-3
License Renewal Scoping Results for Structures (continued)

Structure Name	In-Scope	Screening Results / Section
Sewage Treatment Plant No. 1	No	Abandoned in place (located west of the Settling Basins)
Sewage Treatment Plant No. 2	No	Processes waste water (located east of Pond "B")
Spare Transformer Foundation	No	Provides support to the spare start-up transformer
Staging Warehouse	No	Located on the first two floors of the eastern half of the Office Building; facilitates maintenance and operations
Station Blackout Component Foundations and Structures in the Yard and Switchyard (Startup Transformers 01 and 02, Bus-Tie Transformers, 345-kV Switchyard circuit breakers ACB34560, ACB34561, ACB34562, ACB34563, ACB34564, air break switch ABS34625, Relay House, and "J" and "K" Buses)	Yes	2.4.12
Station Blackout Diesel Generator Building (including Transformer X-3051 and radiator skid foundations)	Yes	2.4.9
Station Service Transformer Foundations	No	Provide support to the Station Service Transformers
Storage Tank Area	No	Houses the caustic, acid, neutralizing water, and sodium hypochlorite storage tanks
Storm Sewer Monitoring Building	No	Utilized to comply with environmental regulations
Substation 1, Substation 2, and Substation LM3 Foundations	No	Also known as the Outage Support Substation (Substation 1) and Service Building Transformer DF6 (Substation 2); support the substations
Technical Support Center	No	Located inside the Davis-Besse Administration Building

Table 2.2-3
License Renewal Scoping Results for Structures (continued)

Structure Name	In-Scope	Screening Results / Section
Training Building	No	Also known as the Training Center or Construction Office Building; houses the simulator room, administrative facilities, training facilities, and laboratories
Training Weld Shop	No	Also known as the Recharge System Water Treatment Building; houses training facilities for welders
Transformer Oil Collection Tank Vault	No	Below grade concrete structure with manhole access that provides for oil collection
Turbine Building	Yes	2.4.10
Warehouse No. 2	No	Provides storage of spare parts
Water Treatment Building	Yes	2.4.11
Wave Protection Dikes	Yes	2.4.12
Welcome Center	No	Utilized as a welcome center for the site
Wet Wash Facility	No	Contains decontamination equipment

2.3 Scoping and Screening Results: Mechanical Systems

The determination of mechanical systems within the scope of license renewal is made through the application of the process described in Section 2.1. The results of the mechanical systems plant-level scoping review are presented in Section 2.2.

Section 2.1 also provides the methodology for determining the components within the scope of 10 CFR 54.4 that meet the requirements of 10 CFR 54.21(a)(1). The components that meet these screening requirements are identified in this section.

The screening results for mechanical systems consist of lists of components and component types that require aging management review (AMR). Brief descriptions of mechanical systems within the scope of license renewal are provided as background information. Mechanical system intended functions are described for in-scope systems.

The screening results are provided below in four sections:

- Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators (Section 2.3.1),
- Engineered Safety Features Systems (Section 2.3.2),
- Auxiliary Systems (Section 2.3.3), and
- Steam and Power Conversion Systems (Section 2.3.4).

Supports for all in-scope piping are evaluated as structural commodities in Section 2.4.13.

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2.3.1 REACTOR VESSEL, INTERNALS, REACTOR COOLANT SYSTEM AND REACTOR COOLANT PRESSURE BOUNDARY, AND STEAM GENERATORS

The following systems are addressed in this section:

- Reactor Pressure Vessel (Section 2.3.1.1)
- Reactor Vessel Internals (Section 2.3.1.2)
- Reactor Coolant System and Reactor Coolant Pressure Boundary (Section 2.3.1.3)
- Steam Generators (Section 2.3.1.4)

2.3.1.1 Reactor Pressure Vessel

System Description

The reactor pressure vessel was fabricated by Babcock & Wilcox. The reactor pressure vessel is a vertical, cylindrical pressure vessel of welded construction. The vessel was designed, fabricated, tested, and inspected as a Class A vessel in accordance with ASME Code, Section III, "Nuclear Vessels," 1968 Edition with Addenda through Summer 1968. Design of the reactor pressure vessel and its support system meets Seismic Category I equipment requirements.

The main subcomponents of the reactor pressure vessel are listed, and then discussed in order, below.

- Vessel Shell and Heads
- Nozzles and Safe Ends
- Control Rod Drive (CRD) Nozzles
- Incore Instrument Nozzles
- Reactor Vessel Internal Attachments
- Reactor Vessel Supports
- Reactor Vessel External Attachments
- Reactor Vessel Insulation
- Pressure Boundary Bolting

Vessel Shell and Heads

The reactor pressure vessel is made of a cylindrical shell, bottom head, and top head. The upper head and the upper shell each have a forged flange welded to them for vessel closure.

The reactor pressure vessel closure head (flange) is fastened to the reactor pressure vessel shell flange by threaded studs and nuts. The lower end of each stud is installed in a threaded hole in the vessel shell flange. A nut and washer are installed on the upper end of each stud. The vessel flanges are sealed with two concentric gaskets.

The upper shell assembly forms the top third of the reactor pressure vessel. It consists of the upper shell flange, which provides the seating surface for the vessel closure head, and a cylindrical section that contains the inlet, outlet, and core flood nozzles.

The upper shell flange is a clad low-alloy steel ring forging. The top horizontal flange surface contains a stainless steel clad mating surface with two concentric grooves for the two O-ring gaskets used to seal the closure head to the vessel. In addition, there are 60 threaded holes for the closure studs. At two locations a small leakage path was machined to come down from between the two concentric O-rings and exit the outer side of the flange. One location is a blind flange and the other location is used as the leakage monitoring path. This drain arrangement permits testing and monitoring for leakage past the inner O-ring seal. The inner surface of the flange contains a shelf from which the reactor pressure vessel internals are suspended. This shelf supports the weight of the reactor pressure vessel internals and the core. A seal ledge ring, which is used to support the seal plate, is welded on the outside of the vessel flange.

The shell assembly consists of the upper and lower shells, which are joined with a circumferential weld. The interior surface of the shell assembly is clad with austenitic stainless steel weld deposit. The core guide lugs are welded to the cladding along the bottom of the inner surface of the lower shell assembly. These lugs provide a passive restraint to prevent core drop.

The lower vessel head is of a semi-hemispherical shape; i.e., its radius of curvature is larger than the vessel radius. The lower vessel head is made from two pieces:

- the transition forging, a ring forging for the upper portion; and
- the bottom head, a formed plate for the center concave region.

A full penetration circumferential weld seam joins the two sections. The interior surface of the lower vessel head is clad with austenitic stainless steel weld deposit. The bottom head is a concave disc that is penetrated by the 52 incore instrument nozzles attached from the inside with partial penetration welds.

The closure head assembly consists of a clad low-alloy steel upper dome (similar to the bottom head) and a forged flange. The closure head flange is machined to accept 60 closure head studs, which are used to fasten the closure head to the reactor pressure vessel. The closure head contains 69 penetrations for the CRD nozzles (housings).

The lower horizontal flange surface has two concentric grooves to accommodate the O-rings and their fastening hardware. Three lifting lugs and the lower control rod drive mechanism (CRDM) service support skirt are welded to the top of the closure head.

<u>Nozzles and Safe Ends</u>

The reactor pressure vessel has eight nozzles: four inlet nozzles, two outlet nozzles, and two core flooding nozzles. Reactor coolant flows through the two outlet nozzles to the steam generators, and re-enters the reactor pressure vessel through the four inlet nozzles. Two smaller core flooding nozzles between the reactor coolant nozzles serve as inlets for decay heat cooling and emergency cooling water injection (core flooding and low-pressure injection engineered safety functions).

CRD Nozzles

The closure head contains 69 penetrations for the CRDM nozzles. The CRDMs are aligned and supported by the CRD nozzles. CRDMs are attached to 61 of these nozzles. One of the remaining nozzles is used for a continuous vent line back to the inlet plenum of Steam Generator 2 and the remaining seven unused nozzles have blind flanges attached. Of those seven, four have small vent orifices and bellows (vent) valves attached.

The CRDM service structure provides an air flow cooling path for the CRDMs, supports accessory equipment required for the CRDMs and limits horizontal motion of the CRDMs. The service structure is permanently attached to the closure head. The upper platform of the service structure provides a work area for servicing the CRDMs and supports the electrical cables and component cooling water piping required by the CRDMs. The service structure is seismic Category I to the extent required to support the Control Rod Drive Mechanisms. The purpose of this requirement is to ensure the CRDM housings are sufficiently restrained in the lateral direction so that trip of the control rods is possible after an earthquake.

Incore Instrument Nozzles

The bottom head of the vessel is penetrated by 52 incore instrument nozzles. The incore instrument nozzles are joined by field-welds to pipes that terminate in bolted sealing flanges located in a shielded area at a higher elevation in the containment vessel.

Reactor Vessel Internal Attachments

The only reactor pressure vessel interior attachments at Davis-Besse are the core guide lugs. Twelve core guide lugs are welded at equal distances around the bottom inside surface of the lower shell course. The guide lugs provide a secondary core support by limiting the downward displacement of the core and core support structure in the event of failure of a core support component.

Reactor Vessel Supports

The reactor pressure vessel is supported by four pads which are integrally forged on the reactor coolant inlet nozzles. Each support pad bears on a support shoe which rests on the vessel support structure. The support shoe is a structural member that transmits the support loads to the supporting structure, the primary shield. The supports restrain seismic and dead weight lateral, vertical and rotational movement of the reactor pressure vessel and still allow thermal growth by permitting radial sliding at each support.

Reactor Vessel External Attachments

There are multiple external attachments to the reactor pressure vessel, including the top head lifting lugs, insulation support pads, vessel handling lugs, and the CRDM support skirt.

Reactor Vessel Insulation

Metal reflective insulation is used on the exterior of the reactor pressure vessel from the closure flange down to and including the exterior of the bottom head dome. Removable metal reflective insulation panels enclose the top head closure flange and studs. Metal reflective insulation is used on the closure head dome.

Pressure Boundary Bolting

The bolting materials and bolted closures within the scope of this report include the closure stud assemblies that secure the closure head to the vessel flange and the CRD nozzle nut ring assemblies used with CRD flange bolts to secure the CRDMs, continuous vent header, or vented and un-vented blanking flanges to the CRD nozzles.

Reason for Scope Determination

The reactor pressure vessel performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Forms a barrier against the release of reactor coolant and radioactive material to the environment (maintains reactor coolant pressure boundary integrity)
- Provides support for the core and attached reactor coolant system piping, and maintain core in coolable configuration under all operating conditions
- Provides shielding to attenuate radiation generated in the core
- Controls primary coolant distribution to the core as required for design heat removal capability
- Provides support and alignment for control rod drive mechanisms, control rods, and incore detectors

There are no nonsafety-related (NSR) components within the reactor pressure vessel. Therefore, the reactor pressure vessel does not satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The reactor pressure vessel contains components relied upon in safety analyses or plant evaluations to form a barrier against the release of reactor coolant and radioactive material to the environment (reactor pressure vessel beltline materials only), which satisfies the scoping criteria of pressurized thermal shock (10 CFR 50.61), as specified in 10 CFR 54.4(a)(3).

USAR References

Updated Final Safety Analysis Report (USAR) Section 5.4.2 describes the reactor pressure vessel.

License Renewal Drawings

There are no license renewal drawings that depict the evaluation boundaries for the reactor pressure vessel components within the scope of license renewal. As the reactor pressure vessel is a single component, there is no piping and instrumentation diagram (P&ID) that displays the subcomponents in sufficient detail to highlight them for scoping boundaries.

Components Subject to AMR

Table 2.3.1-1 lists the component types that are subject to AMR and their intended functions.

Table 3.1.2-1, Aging Management Review Results – Reactor Pressure Vessel, provides the results of the AMR.

The reactor pressure vessel insulation, CRDM service structure, and vessel support assembly are not required for reactor pressure vessel functions and are evaluated as structural components in Section 2.4.1.

The reactor pressure vessel flange leak detection piping is evaluated in Section 2.3.1.3.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components of the reactor pressure vessel are in the scope of license renewal, but are not subject to AMR:

- O-rings and gaskets
- Top Head Lifting Lugs
- Vessel Insulation Support Pads
- Vessel Handling Lugs

The internal attachments provide support to their respective components and all of the internal attachments are subject to AMR. External attachments are subject to AMR if they are load bearing attachments connected to pressure retaining portions of the vessel. The lifting lugs, insulation support pads, and vessel handling lugs do not bear significant weight during power operation and are not subject to AMR. In addition, o-rings and gaskets are not designed for the life of the plant and are periodically replaced.

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

Component Type	Intended Function (as defined in Table 2.0-1)
Bottom Head	Pressure boundary
Closure Studs, Nuts, and Washers	Pressure boundary
Core Flooding Nozzle Safe Ends	Pressure boundary
Core Flooding Nozzles	Pressure boundary
Core Guide Lugs	Support
CRD Bolts	Pressure boundary
CRD Flanges	Pressure boundary
CRD Nut Rings	Pressure boundary
CRD Nozzles	Pressure boundary
Incore Instrument Nozzles	Pressure boundary
Inlet Nozzles	Pressure boundary
Outlet Nozzles	Pressure boundary
Shell (Beltline Plates)	Pressure boundary
Shell (Beltline Welds)	Pressure boundary
Shell (Closure Flange)	Pressure boundary
Shell (Shell Rings)	Pressure boundary
Upper Head (Closure Flange)	Pressure boundary
Upper Head (Dome)	Pressure boundary

2.3.1.2 Reactor Vessel Internals

System Description

Reactor internal components include the core support assembly and the plenum assembly. The core support assembly includes the core barrel assembly, core support shield assembly, flow distributor assembly, incore instrument guide tube assemblies, thermal shield assembly, lower grid assembly, surveillance specimen holder tubes, and vent valve assemblies. The plenum assembly includes the control rod guide tube assemblies, the plenum cover assembly, the plenum cylinder assembly, and the upper grid assembly. A general assembly drawing of the important reactor internal components is shown in USAR Figure 4.2-4.

The reactor internals are designed to support the core, to maintain fuel assembly alignment, to limit fuel assembly movement, and to maintain control rod assembly guide tube alignment between fuel assemblies and control rod drives. They also direct the flow of reactor coolant, provide gamma and neutron shielding, provide guides for incore instrumentation between the reactor pressure vessel lower head and the fuel assemblies, support the surveillance specimen assemblies in the annulus between the thermal shield and the reactor pressure vessel wall, and support the internal vent valves. These vent valves provide an emergency steam release path from the upper plenum region above the core to the upper downcomer region in the event of a cold leg break. All reactor internal components can be removed from the reactor pressure vessel to allow inspection of the internals and the reactor pressure vessel internal surface.

Reason for Scope Determination

The reactor vessel internals perform the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide support for the core and maintain core in coolable configuration under all operating conditions
- Provide shielding to attenuate radiation generated in the core
- Control primary coolant distribution to the core as required for design heat removal capability
- Provide support and alignment for control rod drive mechanisms, control rods, and incore detectors

There are no NSR components within the Reactor Vessel Internals. Therefore, the Reactor Vessel Internals do not satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The reactor vessel internals are not relied upon to demonstrate compliance with, nor satisfy the 10 CFR 54.4(a)(3) scoping criteria for, any regulated event.

USAR References

USAR Section 4.2.2 describes the reactor vessel internals.

License Renewal Drawings

There are no license renewal drawings that depict the evaluation boundaries for the reactor vessel internals components within the scope of license renewal because there is no piping and instrumentation diagram (P&ID) that displays the subcomponents in sufficient detail to highlight them for scoping boundaries.

Components Subject to AMR

Table 2.3.1-2 lists the component types that are subject to AMR and their intended functions.

Table 3.1.2-2, Aging Management Review Results – Reactor Vessel Internals, provides the results of the AMR.

The surveillance specimen holder tube assemblies do not provide any safety function. Consequently this component does not perform an intended function and is not subject to AMR.

The fuel assemblies and control rod assemblies, and incore neutron detectors are not subject to AMR as they are short-lived components whose lifetime will not be affected by the period of extended operation.

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

Component Type	Intended Function (as defined in Table 2.0-1)
Core Support Assembly	
Core Support Shield Assembly	Support
Core Barrel Assembly	Support
Lower Grid Assembly	Support
Flow Distributor Assembly	Flow control Support
Thermal Shield Assembly	Shielding Support
Incore Guide Tube Assembly	Support
Vent Valve Assembly	Support
Plenum Assembly	
Cover Assembly	Support
Control Rod Guide Tube Assembly	Support
Cylinder Assembly	Support
Upper Grid Assembly	Support

2.3.1.3 Reactor Coolant System and Reactor Coolant Pressure Boundary

System Description

The Reactor Coolant System (RCS) consists of the reactor pressure vessel, two vertical once-through steam generators, four shaft-sealed reactor coolant pumps, an electrically heated pressurizer, and interconnecting piping. The system, located entirely within the Containment Vessel (with the exception of the pressurizer sampling line, which extends into the Auxiliary Building), is arranged in two heat transport loops, each with two reactor coolant pumps and one steam generator. Reactor coolant is transported through piping connecting the reactor pressure vessel to the steam generators and flows downward through the steam generator tubes transferring heat to the steam and water on the shell side of the steam generator. In each loop the reactor coolant is returned to the reactor through two lines, each containing a reactor coolant (RC) pump. In addition to serving as a heat transport medium, the coolant also serves as a neutron moderator and reflector and as a solvent for the soluble poison (boron in the form of boric acid) utilized in chemical shim reactivity control. The reactor pressure vessel is discussed in detail in Section 2.3.1.1. The reactor pressure vessel internals are discussed in detail in Section 2.3.1.2.

In addition to the RCS, the Reactor Coolant Pressure Boundary (RCPB) includes the class 1 (Code Group A) portions of the Core Flooding System, Decay Heat Removal and Low Pressure Injection System, High Pressure Injection (HPI) System, Makeup and Purification (MU) System, Nitrogen (NN) System, and Sampling System. Also included are the reactor pressure vessel flange leak detection piping and the Incore Monitoring System piping. The non-Class 1 in-scope portions of the listed systems are discussed in Sections 2.3.2 and 2.3.3.

Reason for Scope Determination

The RCS performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Transfer heat from the reactor core to the steam generators during steady-state operation and for any design transient without exceeding core thermal limits
- Transfer heat from the reactor core to containment during a loss of steam generator cooling with high system pressure utilizing makeup/high pressure injection core cooling
- Remove decay heat from the core via redundant components and features using controls from inside or outside the control room
- Provide containment isolation
- Form a barrier against the release of reactor coolant and radioactive material to the environment (maintains RCPB integrity) – includes portions of other systems

- Provide natural circulation cooldown from normal operating temperature and pressure to conditions that permit operation of the Decay Heat Removal and Low Pressure Injection System

The RCS does not contain any NSR components that are identified in the current licensing basis (CLB) as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The RCS does, however, contain NSR components that are attached to or located near safety-related systems, structures and components (SSCs), whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of one or more of the functions identified in 10 CFR 54.4(a)(1). Therefore, the RCS satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The RCS is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48), Environmental Qualification (10 CFR 50.49) and Station Blackout (10 CFR 50.63) regulated events.

USAR References

USAR Section 5.1 describes the RCS and the RCPB.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M030A, LR-M030B, LR-M031A, LR-M033A, LR-M033B, LR-M040A, LR-M040D, LR-M042C

Components Subject to AMR

Table 2.3.1-3 lists the component types that are subject to AMR and their intended functions.

Table 3.1.2-3, Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The pressurizer immersion heaters accomplish their intended function through a change of configuration and therefore are considered active components that are not subject to AMR.

- Pump seals, bearings and motors – The seals, bearings and motors for the RC pumps include the mechanical seals and bearings in the flow-path of the cooling and seal water. These seals and bearings, and the motors, perform their function with moving parts and are, therefore, also excluded in 10 CFR 54.21(a)(1)(i). As such, the pump seals, bearings, and motors (including the lubricating oil subcomponents and the motor enclosure air cooler) are not subject to AMR.

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

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
CRDM Motor Tube Assembly	Pressure boundary
Drain Pan	Pressure boundary
Flexible Connection	Pressure boundary
Flow Element	Pressure boundary Throttling
Orifice < 4 inches	Pressure boundary Throttling
Piping	Pressure boundary
Piping – Cold Leg and Hot Leg	Pressure boundary
Piping – Dissimilar Metal Weld (DMW)	Pressure boundary
Piping < 4 inches	Pressure boundary Structural integrity
Piping < 4 inches – RV flange leakage	Pressure boundary
Piping < 4 inches – Incore Monitoring	Pressure boundary
Piping >= 4 inches	Pressure boundary
Pressurizer Heater Belt Forgings	Pressure boundary
Pressurizer Heater Bundle Assembly	Pressure boundary
Pressurizer Heater Bundle Cover Plate	Pressure boundary
Pressurizer Manway Cover	Pressure boundary
Pressurizer Manway Forging	Pressure boundary
Pressurizer Manway Insert	Pressure boundary
Pressurizer Relief Nozzle Safe End	Pressure boundary
Pressurizer Relief, Spray, and Surge Nozzle	Pressure boundary
Pressurizer Relief, Spray, and Surge Nozzle Weld	Pressure boundary
Pressurizer Shell and Heads	Pressure boundary
Pressurizer Spray Nozzle Safe End	Pressure boundary

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

Component Type	Intended Function (as defined in Table 2.0-1)
Pressurizer Spray Nozzle Weld	Pressure boundary
Pressurizer Support Plate Assembly	Support
Pressurizer Surge and Spray Nozzle Thermal Sleeve	Pressure boundary
Pressurizer Surge Nozzle Safe End	Pressure boundary
Pressurizer Surge Nozzle Weld	Pressure boundary
Pressurizer Vent, Sampling, Level Sensing, and Thermowell Nozzle and Weld	Pressure boundary
RC Pump Case and Cover	Pressure boundary
RC Pump Driver Mount	Pressure boundary
RC Pump Seal Cooling Heat Exchanger Tube (Inner)	Heat transfer Pressure boundary
RC Pump Seal Cooling Heat Exchanger Tube (Outer)	Heat transfer Pressure boundary
Tank (DB-T156-1 and DB-T156-2)	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary
Valve Body < 4 inches	Pressure boundary Structural integrity
Valve Body >= 4 inches	Pressure boundary

2.3.1.4 Steam Generators

System Description

The steam generator is a vertical, straight-tube-and-shell heat exchanger that produces superheated steam at approximately a constant pressure over the power range. Reactor coolant water enters the steam generator at the upper primary head, flows down the Inconel tubes while transferring heat to the secondary shell-side fluid, and leaves through the lower primary head. Steam is generated on the shell side.

The high-pressure parts of the unit are the hemispherical heads, the tubesheets, and the straight Inconel tubes between the tubesheets. The reactor coolant side has access ports (manways and inspection openings), and a drain nozzle for the bottom head. The reactor coolant side of the unit is vented by a vent connection on the reactor coolant inlet pipe to each unit.

The shell, the outside of the tubes, and the tubesheets form the boundaries of the steam-producing section of the vessel. Within the shell, the tube bundle is surrounded by a baffle (shroud) which separates the feedwater inlet (lower annulus between the shell and the baffle) and steam outlet (upper annulus between the shell and the baffle) from the boiling (tube) region. Tube supports hold the tubes in a uniform pattern along their length. Vents, drains, instrumentation nozzles, and access ports (manways, handholes, and inspection openings) are provided on the shell side of the unit.

Reactor coolant enters the steam generator through a nozzle in the upper head, flows down inside the tubes, and exits through two outlet nozzles in the lower head and flows to the reactor coolant pumps and back to the reactor. The main feedwater (MFW) enters each steam generator through a divided circular header and 32 feedwater nozzles. The feedwater nozzles spray the water down into an annulus between the shell and the baffle (shroud). During upset or emergency conditions, feedwater may be added through auxiliary feedwater (AFW) nozzles which are located high in the steam generator and discharge directly into the tube bundle.

The unit is supported by a skirt attached to the bottom head which rests on a sliding support and provides the required freedom of movement to accommodate thermal expansion of the RCS.

There are several external attachments to the shell. The external attachments include shell thermocouples, grounding plates, and main feedwater header support plates and gussets.

Tube repair hardware includes multiple types of plugs, sleeves, and stabilizers.

Reason for Scope Determination

The steam generators perform the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide a pressure boundary between the reactor coolant and the secondary side fluid to confine fission products and activation products within the RCS
- Provide normal and auxiliary feedwater flow paths and heat transfer capability for both normal and emergency cooldown
- Provide containment integrity by maintaining the steam generator tube and tubesheet integrity whenever containment integrity is required in all modes

The steam generators do not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The steam generators do, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of one or more of the functions identified in 10 CFR 54.4(a)(1). Therefore, the steam generators satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The steam generators are relied upon to demonstrate compliance with, and satisfy the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 5.5.2 describes the steam generators.

License Renewal Drawings

There are no license renewal drawings that depict the evaluation boundaries for the steam generator components within the scope of license renewal. There is no piping and instrumentation diagram (P&ID) that displays the subcomponents in sufficient detail to highlight them for scoping boundaries.

Components Subject to AMR

Table 2.3.1-4 lists the component types that are subject to AMR and their intended functions.

Table 3.1.2-4, Aging Management Review Results – Steam Generators, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- Orifice plate – controls the differential pressure between the feedwater and the boiling region, adjusting the "level" in the once through steam generator (OTSG) during operation.
- Baffle (shroud) inspection opening cover assemblies – these prevent steam/feedwater bypass during operation but perform no license renewal function.
- External attachments – The shell thermocouples and grounding plates do not support the OTSG intended functions. Therefore, they are not subject to AMR.
- Stabilizers – Tube stabilizers are not part of the primary pressure boundary and do not support the OTSG intended functions. Therefore, they are not subject to AMR.

Table 2.3.1-4
Steam Generators
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary
Primary Side; Drain Nozzle	Pressure boundary
Primary Side; Manway and Inspection Opening Cover and Backing Plate	Pressure boundary
Primary Side; Nozzle Dam Retaining Ring	Support
Primary Side; Tube and Sleeve	Heat transfer Pressure boundary
Primary Side; Tube Plug	Pressure boundary
Primary Side; Upper and Lower Head, Inlet and Outlet Nozzle	Pressure boundary
Primary Side; Upper and Lower Tubesheet	Pressure boundary
Secondary Side; AFW Header, Riser, Weldneck, and Blind Flange	Pressure boundary
Secondary Side; AFW Thermal Sleeve, AFW Header Transition Section	Pressure boundary
Secondary Side; Baffle (Shroud), Closure Ring, Support Ring, and Base Ring	Support
Secondary Side; Manway and Handhole Cover	Pressure boundary
Secondary Side; MFW Header Support Plate and Gusset	Support
Secondary Side; MFW Header	Pressure boundary
Secondary Side; MFW Spray Head	Pressure boundary
Secondary Side; Nozzle	Pressure boundary
Secondary Side; Pipe Cap	Pressure boundary
Secondary Side; Shell	Pressure boundary
Secondary Side; Tube Support Plate	Support
Secondary Side; Tube Support Rod and Spacer	Support
Support Skirt	Support

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2.3.2 ENGINEERED SAFETY FEATURES SYSTEMS

The following systems are addressed in this section.

- Containment Air Cooling and Recirculation System (Section 2.3.2.1)
- Containment Spray System (Section 2.3.2.2)
- Core Flooding System (Section 2.3.2.3)
- Decay Heat Removal and Low Pressure Injection System (Section 2.3.2.4)
- High Pressure Injection System (Section 2.3.2.5)

2.3.2.1 Containment Air Cooling and Recirculation System

System Description

The Containment Air Cooling and Recirculation System is composed of the Containment Air Cooling System and the Containment Recirculation System.

The Containment Air Cooling System is composed of three air coolers units located within the Containment Vessel. Two of the three units are used for both normal and emergency cooling. The system is designed to control the Containment Vessel ambient air temperature to a maximum of 120°F with two of the three units operating.

The Containment Air Cooling System is composed of three parallel trains, each with an air cooler unit, ductwork, and backdraft dampers, discharging to a common distribution system. The system is used for both normal and emergency cooling. Each air cooler unit consists of a finned tube cooling coil and a direct drive two speed fan. The Containment Air Cooling System provides cooling by recirculation of the Containment Vessel air across air-to-water heat exchangers. The containment air cooler fans pull the air through the cooling coils where heat is transferred from the air to the cooling water (supplied by the Service Water System) in the tubes.

The Containment Recirculation System consists of two trains, each with a direct drive, vane axial fan, ductwork, and dampers. The fans circulate the air in the Containment Dome to the vicinity of the Containment Air Cooling System inlets. This action helps prevent temperature stratification in Containment.

Reason for Scope Determination

The Containment Air Cooling and Recirculation System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Maintain post-accident containment temperature and pressure within the design limits
- Remove heat from the containment atmosphere to reduce pressure (post-LOCA (loss-of-coolant accident) and following main steam line break in containment)
- Mix the post-LOCA containment atmosphere to prevent the formation of hydrogen pockets

The Containment Air Cooling and Recirculation System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Containment Air Cooling and Recirculation System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the

Containment Air Cooling and Recirculation System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Containment Air Cooling and Recirculation System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) and Environmental Qualification (10 CFR 50.49) regulated events.

USAR References

USAR Section 6.2.2.2.1 describes the Containment Air Cooling and Recirculation System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M029E

Components Subject to AMR

Table 2.3.2-1 lists the component types that are subject to AMR and their intended functions.

Table 3.2.2-1, Aging Management Review Results – Containment Air Cooling and Recirculation System, provides the results of the AMR.

Table 2.3.2-1
Containment Air Cooling and Recirculation System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary
Damper Housing	Pressure boundary
Drain Pan	Structural integrity
Duct	Pressure boundary
Fan Housing – Containment air cooler fans (DB-C1-1, -2 & -3)	Pressure boundary
Flexible Connection	Pressure boundary
Heat Exchanger (cooling coil casing) – Containment air cooling coils (DB-E37-1, -2 & -3)	Pressure boundary
Heat Exchanger (cooling coil fins) – Containment air cooling coils (DB-E37-1, -2, & -3)	Heat transfer
Heat Exchanger (cooling coil tubes) – Containment air cooling coils (DB-E37-1, 2, & 3)	Heat transfer Pressure boundary
Piping	Pressure boundary
Register	Pressure boundary
Valve Body	Pressure boundary

2.3.2.2 Containment Spray System

System Description

The Containment Spray System is an engineered safety feature which has the dual function of removing heat and fission product iodine from the post-accident containment atmosphere.

The system consists of two redundant, independent trains. Each train consists of a containment spray pump, a containment isolation valve that also serves as a throttle valve, piping, instrumentation, and a containment spray ring header with 90 spray nozzles. Each containment spray pump is provided with two suction paths, one from the borated water storage tank (BWST) and the other from the containment emergency sump. One train of containment spray, operating in conjunction with one containment air cooler, is designed to remove the total post- LOCA heat release to the containment.

High containment vessel pressure or low reactor coolant pressure will actuate a Level 2 trip to open the spray isolation valves. High-high containment pressure will actuate a Level 4 trip to start the two containment spray pumps. The pumps take suction initially from the BWST. The Containment Spray System shares the BWST and the suction lines from the tank with the High Pressure Injection System and the Low Pressure Injection System. After the water in the BWST reaches a low level, the suction for the spray pumps is transferred to the containment vessel emergency sump. Baskets of Na_3PO_4 are available in containment so that when sump flooding occurs, neutralization of the sump water will result.

Reason for Scope Determination

The Containment Spray System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Cool and condense the post-LOCA containment atmosphere to reduce the pressure and, as a result, minimize the leakage of airborne and gaseous radioactivity from the containment
- Mix the containment atmosphere to prevent the stratification of hydrogen, which could produce areas of high local concentration
- Maintain containment design temperature and pressure limits following a LOCA
- Reduce elemental and particulate fission product iodine in the containment atmosphere such that offsite radiation exposures post-LOCA are within the guidelines of 10 CFR 100
- Provide containment isolation

The Containment Spray System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Containment Spray System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Containment Spray System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Containment Spray System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 6.2.2.2.2 describes the Containment Spray System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M034

Components Subject to AMR

Table 2.3.2-2 lists the component types that are subject to AMR and their intended functions.

Table 3.2.2-2, Aging Management Review Results – Containment Spray System, provides the results of the AMR.

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

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Orifice	Pressure boundary Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – Containment spray pumps (DB-P56-1 & 2)	Pressure boundary
Separator	Pressure boundary
Spray Nozzle	Spray
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.2.3 Core Flooding System

System Description

The Core Flooding System is a fluid system designed to store borated water for pressure injection into the reactor pressure vessel in the event of an accident which lowers the RCS below the pressure maintained in the two core flooding tanks. The Core Flooding System is divided into two injection trains. Each train has a separate core flooding tank which discharges to separate reactor core flooding nozzles. This allows one core flooding tank to inject into the reactor pressure vessel during a core flooding tank discharge line break. Each train is self-contained and self-actuated. This allows the system to perform its emergency core cooling system (ECCS) function without relying on any auxiliary system or electrical power sources.

Reason for Scope Determination

The Core Flooding System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Supply water to the reactor when RCS pressure falls below core flood tank pressure following a LOCA
- Provide containment isolation
- Maintain RCS pressure boundary integrity
- Isolate core flood tanks when cooling down before going below 700 psig

The Core Flooding System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Core Flooding System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Core Flooding System satisfies the scoping criteria 10 CFR 54.4(a)(2).

The Core Flooding System is also relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) and Environmental Qualification (10 CFR 50.49) regulated events.

USAR References

USAR Section 6.3.1 describes the Core Flooding System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M033A, LR-M033B, LR-M034, LR-M040A, LR-M042C

Components Subject to AMR

Table 2.3.2-3 lists the component types that are subject to AMR and their intended functions.

Table 3.2.2-3, Aging Management Review Results – Core Flooding System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- Air operators and associated components – Core flood tank fill and pressurization isolation valves (DB-CF1541 and DB-CF1544), pneumatic vent to waste gas isolation (DB-CF1542), and core flood tank bleed line isolation valve (DB-CF1545) are air-operated valves. As shown on LR-M034, these valves are normally closed and fail closed. Therefore, these valves are fail-safe on loss of the control air supply. Additionally, the solenoid valves that supply the control air to the operators, which are themselves active components, fail open to vent the control air lines. As such, a pressure boundary failure of any component within the control air supply will result in the isolation valves going to their safe positions, and the system will perform its intended function. Therefore, the air operators and associated components are not subject to AMR.

Table 2.3.2-3
Core Flooding System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Nozzle – Core flood tanks (DB-T9-1 & 2)	Pressure boundary
Orifice	Structural integrity
Piping	Pressure boundary Structural integrity
Tank – Core flood tanks (DB-T9-1 & 2)	Pressure boundary
Tubing	Pressure boundary
Valve Body	Pressure boundary Structural integrity

2.3.2.4 Decay Heat Removal and Low Pressure Injection System

System Description

The Decay Heat Removal and Low Pressure Injection (DHR) System provides both normal operating and emergency operating functions. The system, operating in the decay heat removal mode, removes decay heat from the core and sensible heat from the RCS during the later stages of cooldown. The system also provides auxiliary spray to the pressurizer for complete depressurization, maintains the reactor coolant temperature during refueling, and provides a means for filling and partial draining of the refueling canal. In the event of a LOCA, the system injects borated water into the reactor pressure vessel for long-term emergency cooling.

During the injection phase following a LOCA, the Decay Heat Removal and Low Pressure Injection System, operating in the low-pressure injection mode, in conjunction with the High Pressure Injection System, will operate to provide full protection over the entire spectrum of break sizes. As the postulated break size is increased, the RCS pressure will tend to decrease to lower levels because the break can pass all of the steam that is generated in the core. At the lower RCS pressures, the Decay Heat Removal and Low Pressure Injection System, along with the Core Flooding System and the High Pressure Injection System, will inject borated water into the core to ensure adequate core cooling.

During the recirculation phase, the Decay Heat Removal and Low Pressure Injection System, operating in the low-pressure injection mode, will recirculate the spilled reactor coolant and injection water from the containment emergency sump to the reactor pressure vessel through the core flooding lines or the high pressure injection line, if required, to maintain long-term core cooling and through the DHR drop line or auxiliary pressurizer spray line via the high pressure injection pump for post-LOCA boron precipitation management.

For small breaks, the RCS pressure may be higher than the maximum DHR pump head at the time of containment emergency sump recirculation. Under these circumstances a crossover connection permits alignment of the high pressure injection pumps to take suction from the outlet of the DHR coolers to provide for recirculation to the reactor core.

Reason for Scope Determination

The Decay Heat Removal and Low Pressure Injection System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide controlled cooldown of the reactor vessel and core during the latter stages of plant cooldown, and maintain coolant temperature during shutdown and refueling operations

- Provide post-LOCA emergency core cooling: low pressure injection from the BWST (during injection phase) or from the containment emergency sump (during recirculation phase)
- Provide containment isolation
- Provide a pressurized water supply from the containment emergency sump to the suction of the high pressure injection pumps during piggyback mode of operation
- Provide containment heat removal by cooling the water in the containment emergency sump used for containment spray
- Provide an alternate minimum flow path for high pressure injection after isolating the BWST prior to establishing recirculation from the containment emergency sump during a small-break LOCA
- Control reactivity and boron concentration in the RCS and prevent post-LOCA boron precipitation
- Provide low-temperature over-pressure protection of the RCS
- Provide means to sample the containment emergency sump fluid during the sump mode of ECCS operation
- Provide RCS pressure boundary integrity

The Decay Heat Removal and Low Pressure Injection System also recirculates back into the RCS any coolant that may have entered the refueling canal following a LOCA. This system-intended function is performed by NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Decay Heat Removal and Low Pressure Injection System also contains NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Decay Heat Removal and Low Pressure Injection System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Decay Heat Removal and Low Pressure Injection System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) and Environmental Qualification (10 CFR 50.49) regulated events.

<u>USAR References</u>

USAR Section 9.3.5 describes the Decay Heat Removal and Low Pressure Injection System.

<u>License Renewal Drawings</u>

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M033A, LR-M033B, LR-M033C, LR-M034, LR-M035, LR-M036B, LR-M042C

<u>Components Subject to AMR</u>

Table 2.3.2-4 lists the component types that are subject to AMR and their intended functions.

Table 3.2.2-4, Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but are not subject to AMR:

- Air operators and associated components – DHR cooler outlet and bypass flow control valves (DH14A/B and DH13A/B, respectively) are air-operated valves. As shown on LR-M033B and LR-M033C, the outlet flow control valves are locked open and fail open, and the bypass flow control valves are normally closed and fail closed. Therefore, these valves are fail-safe on loss of the control air supply.

  Additionally, the solenoid valves that supply the control air to the air operators, which are themselves active components, fail open to vent the control air lines. As such, a pressure boundary failure of any component within the control air supply will result in the flow control valves going to their safe positions, and the system will perform its intended function. Therefore, the air operators and associated control air supply components are not subject to AMR.

Table 2.3.2-4
Decay Heat Removal and Low Pressure Injection System Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Heat Exchanger (channel, shell) – BWST heater (DB-E34)	Structural integrity
Heat Exchanger (channel, shell, tubesheet) – DHR cooler (DB-E27-1 & 2)	Pressure boundary
Heat Exchanger (housing) – DHR pump bearing oil cooler (DB-P42-1 & 2)	Heat transfer Pressure boundary
Heat Exchanger (tube) – DHR cooler (DB-E27-1 & 2)	Heat transfer Pressure boundary
Orifice	Pressure boundary Structural integrity Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – Borated water recirculation pump (DB-P57_BW)	Structural integrity
Pump Casing – DHR pump (DB-P42-1 & 2)	Pressure boundary
Pump Casing – Refueling canal drain pump (DB-P204)	Pressure boundary
Separator	Pressure boundary
Tank – BWST (DB-T10)	Pressure boundary
Tank – Incore instrument tank (DB-T92)	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.2.5 High Pressure Injection System

System Description

The High Pressure Injection System provides an emergency function as a part of the ECCS. The ECCS provides core cooling following a break or transient in the RCS or secondary system of sufficient magnitude to result in a Safety Features Actuation System (SFAS) signal which actuates the ECCS. The SFAS will actuate the High Pressure Injection System upon detection of low RCS pressure or high containment pressure. The High Pressure Injection System uses high pressure injection pumps to pump borated water from the BWST into the RCS cold leg piping near the reactor inlet nozzles. The high pressure injection pumps are capable of injecting BWST water into the RCS over the RCS pressure range of approximately 1600 psig to 0 psig with an injection rate of 900 gallons per minute for one high pressure injection pump at 0 psig RCS pressure.

Reason for Scope Determination

The High Pressure Injection System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide emergency core cooling for small-break LOCA
- Provide borated water for reactor coolant makeup and to decrease reactivity
- Provide makeup for reactor coolant contraction due to excessive cooling of the RCS
- Provide containment isolation
- Maintain RCS pressure boundary integrity
- Maintain boric acid concentration below its solubility limit during post-accident cooling by supplying water for dilution flow to the pressurizer auxiliary spray line (piggyback operation).

The High Pressure Injection System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The High Pressure Injection System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the High Pressure Injection System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The High Pressure Injection System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) and Environmental Qualification (10 CFR 50.49) regulated events.

USAR References

USAR Section 6.3.1 describes the High Pressure Injection System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M031C, LR-M033A, LR-M033B, LR-M036B

Components Subject to AMR

Table 2.3.2-5 lists the component types that are subject to AMR and their intended functions.

Table 3.2.2-5, Aging Management Review Results – High Pressure Injection System, provides the results of the AMR.

The ASME Class 1 portions of the High Pressure Injection System are addressed with the other RCPB systems and system portions in Section 2.3.1.3.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- High pressure injection pump lubrication oil system filter media are replaced periodically as the media becomes fouled (or the oil is changed). High pressure injection pump lubrication oil system filter media are therefore short-lived components and not subject to AMR.

Table 2.3.2-5
High Pressure Injection System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Filter Housing	Pressure boundary
Flow Element	Pressure boundary
Heat Exchanger (bonnet, shell, tubesheet) – HPI pump lube oil heat exchangers (DB-E198-1 & 2)	Pressure boundary
Heat Exchanger (tube) – HPI pump lube oil heat exchangers (DB-E198-1 & 2)	Heat transfer Pressure boundary
Orifice	Pressure boundary Structural integrity Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – HPI pumps (DB-P58-1 & DB-P58-2)	Pressure boundary
Pump Casing – HPI pump AC lube oil pumps (DB-P197-1 & DB-P198-1)	Pressure boundary
Pump Casing – HPI pump DC lube oil pumps (DB-P197-2 & DB-P198-2)	Pressure boundary
Separator	Pressure boundary
Tank – HPI pump lube oil head tanks (DB-T198-1 & DB-T198-2)	Pressure boundary
Tank – HPI pump lube oil reservoirs (DB-T199-1 & DB-T199-2)	Pressure boundary
Thrust Bearing Housing	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

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2.3.3 AUXILIARY SYSTEMS

The following systems are addressed in this section:

- Auxiliary Building Heating, Ventilation, and Air Conditioning (HVAC) Systems (Section 2.3.3.1)
- Auxiliary Building Chilled Water System (Section 2.3.3.2)
- Auxiliary Steam and Station Heating System (Section 2.3.3.3)
- Boron Recovery System (Section 2.3.3.4)
- Chemical Addition System (Section 2.3.3.5)
- Circulating Water System (Section 2.3.3.6)
- Component Cooling Water System (Section 2.3.3.7)
- Containment Hydrogen Control System (Section 2.3.3.8)
- Containment Purge System (Section 2.3.3.9)
- Containment Vacuum Relief System (Section 2.3.3.10)
- Demineralized Water Storage System (Section 2.3.3.11)
- Emergency Diesel Generators System (Section 2.3.3.12)
- Emergency Ventilation System (Section 2.3.3.13)
- Fire Protection System (Section 2.3.3.14)
- Fuel Oil System (Section 2.3.3.15)
- Gaseous Radwaste System (Section 2.3.3.16)
- Instrument Air System (Section 2.3.3.17)
- Makeup and Purification System (Section 2.3.3.18)
- Makeup Water Treatment System (Section 2.3.3.19)
- Miscellaneous Building HVAC System (Section 2.3.3.20)
- Miscellaneous Liquid Radwaste System (Section 2.3.3.21)
- Nitrogen Gas System (Section 2.3.3.22)
- Process and Area Radiation Monitoring System (Section 2.3.3.23)
- Reactor Coolant Vent and Drain System (Section 2.3.3.24)
- Sampling System (Section 2.3.3.25)
- Service Water System (Section 2.3.3.26)

- Spent Fuel Pool Cooling and Cleanup System (Section 2.3.3.27)
- Spent Resin Transfer System (Section 2.3.3.28)
- Station Air System (Section 2.3.3.29)
- Station Blackout Diesel Generator System (Section 2.3.3.30)
- Station Plumbing, Drains, and Sumps System (Section 2.3.3.31)
- Turbine Plant Cooling Water System (Section 2.3.3.32)

2.3.3.1 Auxiliary Building HVAC Systems

System Description

The Auxiliary Building HVAC Systems consist of the Control Room HVAC, Fuel-handling Area Heating and Ventilation (H&V) (Fuel-handling Area Ventilation), Non-radioactive Areas H&V (Nonradwaste Area Ventilation, Turbine Building Ventilation – for Rooms 237, 238), and Radioactive Areas H&V (Radwaste Area Ventilation). Each of the subsystems is discussed below.

Control Room HVAC – The heating, ventilating, and air conditioning systems for the control room are designed to provide a suitable environment for equipment and station operator comfort and safety.

The Control Room Normal Ventilation System consists of redundant air-handling units with heating and cooling coils. Each air-handling unit has a prefilter, final filter, hot water preheat coil, and a cooling coil. One unit will be operating with the other unit available for manual actuation in the event of failure of the operating unit.

The Control Room Emergency Ventilation System (CREVS), which also includes the Control Room Emergency Air Temperature Control System, consists of two 100% capacity redundant fan-filter assemblies. Each filter system includes a roughing filter, high-efficiency particulate air (HEPA) filter, and charcoal adsorber. A cooling coil and water-cooled condensing unit are provided for each system to provide suitable temperature conditions in the control room for operating personnel and safety-related control equipment. Two 100% capacity redundant air-cooled condensing units are provided as backup to the water-cooled condensing units. On high refrigerant head pressure, the Service Water System valve closes and the refrigerant solenoid valves align the air-cooled condensing unit automatically.

During normal operation, the CREVS is held on standby. Under normal operating conditions, the control room will be free of airborne radioactivity. In the event of a LOCA, the Control Room Normal Ventilation System is automatically shutdown by a SFAS signal. The control room normal air conditioning system is also shutdown by a high radiation signal from the station vent radiation monitors. The CREVS fans are manually activated from the control room.

During emergency isolation of the control room, the normal supply and return fans are shutdown automatically and all control room isolation dampers are closed to preclude the admission of airborne contaminants to the control room. The control room operator has manual controls for initiating the control room emergency ventilation system to ensure satisfactory control room conditions following an accident. The CREVS can either be operated in the recirculation mode or outside air intake mode. However, to minimize the unfiltered in-leakage into the control room, the CREVS is operated in the outside air intake mode following a LOCA.

Fuel-handling Area H&V – The ventilation system for the fuel-handling area is independent of that used in any other areas and is designed on a once-through basis to control and direct all potentially contaminated air to the station vent stack via roughing and HEPA filters. Exhaust air from the fuel-handling area is monitored before it is discharged from the station through the vent stack.

The fuel-handling area ventilation system consists of a supply-air unit and redundant exhaust fans. The supply-air unit provides 100% outside air without a recirculation mode. The fuel-handling area filter consists of prefilters and HEPA filters. During normal operation, the exhaust from the fuel-handling area is passed through the fuel-handling area exhaust filter and discharged through the station vent stack.

In the event of a fuel-handling accident, the fuel-handling area is connected to the Emergency Ventilation System filters by means of ductwork bypasses and dampers. The fuel-handling area supply and exhaust ducting is isolated and the Emergency Ventilation System fans are started automatically to pull a negative pressure in the fuel-handling area.

Non-radioactive Areas H&V – The heating and ventilating systems for the non-radioactive areas are designed to provide a suitable environment for equipment and personnel. The heating and ventilating systems in the following non-radioactive areas perform license renewal intended functions: auxiliary feedwater pump rooms, battery rooms, component cooling water (CCW) pump rooms, emergency diesel generator (EDG) rooms, and low voltage switchgear rooms.

The auxiliary feedwater pump room ventilation system consists of one 100% capacity, safety-related exhaust fan and a temperature switch in each room. Each exhaust fan is started automatically by its pump room temperature switch at a predetermined temperature setpoint and is sized to maintain its pump room between 60°F and 120°F during all modes of operation including post accident, utilizing supply air from the Turbine Building at ≤ 110°F.

Each battery room receives ventilation air from its respective low voltage switchgear room through a transfer grill and is continuously exhausted through duct work by roof mounted nonsafety-related battery room exhaust fans. Fans are energized from hand indicating switches and are designed to run continuously to maintain room temperatures and to purge the hydrogen gas in the room generated by the battery charging. One safety-related battery room ventilation fan is provided in each battery room to exhaust the room following a loss of off-site power, a postulated accident, or failure of the normal, nonsafety-related exhaust fans.

The CCW pump room ventilation system consists of safety-related and nonsafety-related systems. The safety-related system provides two 100% capacity CCW pump room ventilation fans, and electro-hydraulic actuator operated exhaust and recirculation dampers. Safety-related cooling and ventilation is ensured by one of these two 100%

capacity safety-related CCW pump room ventilation fans. The nonsafety-related system consists of the elevator room exhaust fan, which is kept normally shutdown with its damper closed. This restriction is administratively applied to prevent drawing steam laden air into the CCW pump room in the event of a high energy line break in the Turbine Building. The supply air for this fan is drawn from the Turbine Building through a transfer grill located in the north elevator machinery room wall and exhausted into the CCW pump room.

The EDG room ventilation system consists of two safety-related, 50% capacity supply air fans in each EDG room. The fans are started automatically when the respective diesel engine is started. Each ventilation system includes safety-related modulating supply, return, and exhaust air dampers which are interlocked through room temperature controllers. The dampers modulate to maintain the room temperature between 60°F and 125°F for all operating conditions. The supply and exhaust air dampers fail closed, and the return air damper fails open, to prevent freezing temperatures in the EDG room.

The low voltage switchgear ventilation system consists of the non-radioactive area supply and return fans, two safety-related low voltage switchgear room ventilation fans, three safety-related motor operated outside air dampers, two safety-related exhaust dampers and associated controls and duct work. The normal ventilation system consisting of non-radioactive fans operates continuously through temperature controllers which modulate supply, return, and exhaust dampers to maintain the average temperature in the non-radioactive areas between 60°F and 104°F for all normal modes of operation. The safety-related 100% capacity low voltage switchgear room ventilation fans are provided to ensure adequate cooling of the low voltage switchgear room following a loss of off-site power, postulated accident, or failure of the normal ventilation system. Each safety-related ventilation fan is started automatically by a temperature switch at a predetermined temperature setpoint which simultaneously opens outside air supply louvers and exhaust air dampers. Each safety-related ventilation train is designed to maintain its low voltage switchgear average room temperature between 60°F and 104°F year-round during all modes of operation, including post-accident.

Radioactive Areas H&V – The ventilation system for the radioactive areas is independent of that used in other areas and is designed on a once-through basis to control and direct all potentially contaminated air to the vent stack via roughing and HEPA filters. Exhaust air from the radioactive areas HVAC is monitored before it is discharged from the station through the vent stack. The system is required for building ventilation during station operation and during shutdown operation. It consists of a supply-air unit and redundant exhaust fans. The supply-air unit distributes fresh outside air to the potentially contaminated areas at all levels of the Auxiliary Building. The unit provides 100% outside air without a recirculation mode.

During normal operation, the exhaust from the Radwaste HVAC is passed through prefilters and HEPA filters and discharged through the station vent stack. In the event that radioactivity levels exceed acceptable limits, the supply and exhaust fans are stopped and the ducting from the radioactive areas to the Emergency Ventilation System is opened automatically. The cross connect is normally closed.

The ECCS rooms contain pumps that are required to bring the plant to a safe shutdown or mitigate the effects of an accident. The cooling units for the ECCS rooms maintain a suitable environment for the electric motor drivers of the high-pressure injection pumps, decay heat pumps, and containment spray pumps. Each cooling unit consists of a fan and a cooling coil. Room air is circulated over the water-cooling coils by the fans and discharged back into the room. The cooling units are automatically energized by an increase in the room temperature. The Radioactive Areas H&V passive exhaust ductwork that passes through the ECCS rooms has valve and damper sets comprised of a motor-operated valve and a pneumatic isolation damper. In the event of a SFAS signal, these valves and dampers close automatically to isolate the ECCS rooms. The basis for isolating radioactive exhaust ductwork through the ECCS rooms is to ensure that all Engineered Safety Features (ESF) leakage passes through the Emergency Ventilation System after an accident and thus preclude any possibility of the spread of contamination to other areas in case of a breach of the integrity of the subject ductwork.

Reason for Scope Determination

The Auxiliary Building HVAC Systems perform the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Maintain a suitable temperature for safety-related equipment in the following rooms: battery rooms, low-voltage switchgear rooms, emergency diesel generator rooms, auxiliary feedwater rooms, component cooling water pump rooms, and ECCS pump rooms (high-pressure injection, decay heat removal, and containment spray)
- Maintain a suitable environment for safety-related equipment, and a comfortable environment for operators, in the control room and cabinet room

- Provide recirculated filtered air (following a LOCA) or filtered outside air (when required) to the Control Room
- Maintain positive pressure in the Control Room
- Isolate the Auxiliary Building Radioactive Areas H&V System passive exhaust ductwork passing through the ECCS rooms in the event of a LOCA

The Auxiliary Building HVAC Systems contain NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Auxiliary Building HVAC Systems satisfy the NSAS scoping criterion of 10 CFR 54.4(a)(2), and performs the following system intended function:

- Provide a path from the fuel handling area to the Emergency Ventilation System following a fuel handling accident

The Auxiliary Building HVAC Systems also contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Auxiliary Building HVAC Systems satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The Auxiliary Building HVAC System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48), Environmental Qualification (10 CFR 50.49), and Station Blackout (10 CFR 50.63) regulated events.

<u>USAR References</u>

USAR Sections 9.4.1, 9.4.2, and 9.4.3 describe the Auxiliary Building HVAC Systems.

<u>License Renewal Drawings</u>

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M026A, LR-M027A, LR-M027B, LR-M028B, LR-M028C, LR-M028D, LR-M029E

<u>Components Subject to AMR</u>

Table 2.3.3-1 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-1, Aging Management Review Results – Auxiliary Building HVAC Systems, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, dampers (except housings), and fans (except housings), the following components are within the scope of license renewal, but are not subject to AMR:

- Component filter media are evaluated as short-lived components (consumables), not subject to an AMR. Note that the filter housings do have a pressure boundary function and are subject to AMR.
- The system filter media for CREVS filter units DB-F22-1 & 2, including the roughing filters, HEPA filters, and charcoal adsorbers, are evaluated as short-lived components (consumables). The media are replaced on condition in accordance with the applicable standards of Regulatory Guide 1.52 Revision 2, ANSI/ASME N510-1980, and ASTM D3803-1989.
- The system filter media for Fuel Handling area exhaust filter housing DB-F24 including the roughing filters, and HEPA filters, are evaluated as short-lived components (consumables). The media are replaced on condition in accordance with ANSI/ASME N510-1980.
- Electric coil heater DB-E110 and DB-E111 are electrical components that are fully enclosed within the duct and do not have a separate pressure boundary function. The heaters, therefore, are not subject to AMR.
- The humidifier disposable plastic cylinder is evaluated as a short-lived component and is not subject to AMR. The cylinder is replaced on condition between 500 – 2000 operating hours of use.
- Solenoid valves in the air supplies to the damper actuators are not subject to AMR because their function is to vent the air lines (they all fail open), so if they lose their pressure boundary, they still perform their function.

Table 2.3.3-1
Auxiliary Building HVAC Systems
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Compressor housing – CREVS air conditioning unit compressor (DB-MS3311 & DB-MS3321)	Pressure boundary
Condenser Unit Housing – CREVS air-cooled condensing unit (DB-S61-1 & 2)	Pressure boundary
Damper Housing	Pressure boundary Structural integrity
Drain Pan	Structural integrity
Duct	Pressure boundary Structural integrity
Fan Housing – Auxiliary Feedwater Pump Room ventilation fans (DB-C73-1 & 2), Battery Room ventilation fans (DB-C78-1 & 2), component cooling water ventilation fans (DB-C75-1 & 2), CREVS fans (DB-C21-1 & 2), Emergency Diesel Generator Room ventilation fans (DB-C25-1, 2, 3, & 4), ECCS room cooler fans (DB-C31-1, 2, 3, 4, & 5), and Low Voltage Switchgear Room ventilation fans (DB-C71-1 & DB-C133)	Pressure boundary
Filter Housing – CREVS filters (DB-F22-1 & 2) CREVS water-cooled condenser skid (DB-S33-1 & 2) and Fuel Handling Building area exhaust filter (DB-F24)	Pressure boundary
Flexible Connection	Pressure boundary
Heat Exchanger (channel) – CREVS water-cooled condensing units (DB-S33-1 & 2)	Pressure boundary
Heat Exchanger (cooling coil casing) – CREVS air-cooled condensing unit (DB-S61-1 & 2) cooling coils, CREVS cooling coils (DB-E106-1 & 2), and ECCS room cooler coils (DB-E42-1, 2, 3, 4, & 5)	Pressure boundary

Table 2.3.3-1 (Continued)
Auxiliary Building HVAC Systems
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Heat Exchanger (cooling coil fins) – CREVS air-cooled condensing unit (DB-S61-1&2) cooling coils, CREVS cooling coils (DB-E106-1 & 2), and ECCS room cooler coils (DB-E42-1, 2, 3, 4, & 5)	Heat transfer
Heat Exchanger (cooling coil tubes) – CREVS air-cooled condensing units (DB-S61-1 & 2) CREVS cooling coils (DB-E106-1 & 2), and ECCS room cooler coils (DB-E42-1, 2, 3, 4, & 5)	Heat transfer Pressure boundary
Heat Exchanger (shell) – CREVS water-cooled condensing units (DB-S33-1 & 2)	Pressure boundary
Heat Exchanger (tubes) – CREVS water-cooled condensing units (DB-S33-1 & 2)	Heat transfer Pressure boundary
Heat Exchanger (tubesheet) – CREVS water-cooled condensing units (DB-S33-1 & 2)	Pressure boundary
Humidifier (tubing) – Control Room HVAC humidifiers (DB-S19-1 & 2)	Structural integrity
Mechanical Sealant	Pressure boundary
Piping	Pressure boundary Structural integrity
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.2 Auxiliary Building Chilled Water System

System Description

The Auxiliary Building Chilled Water System consists of two chilled water pumps (in parallel) discharging to a common header. During normal operation, one chilled water pump is on to ensure chilled water is continuously supplied to the computer room air conditioning unit DB-S77 while the other pump is off. The chilled water pump DB-P92-1 (DB-P92-2) discharge flows through the two water chiller evaporators (in parallel) and circulates to the control room air handling unit (AHU) cooling coil DB-E44 (DB-E45) and the computer room air conditioning unit DB-S77, as well as to the access control area duct cooling coil DB-E47 and the electric penetration room cooling coil DB-E78. After providing cooling to the coils, the heated water is returned to the pump suction via an air separator and chilled water system expansion tank DB-T88, which is provided to alleviate any surges and thermal expansion in the closed loop chilled water system. The expansion tank also provides suction pressure for the chilled water pumps.

Reason for Scope Determination

The Auxiliary Building Chilled Water System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Auxiliary Building Chilled Water System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Auxiliary Building Chilled Water System does, however, contain NSR components that are located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Auxiliary Building Chilled Water System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Auxiliary Building Chilled Water System is not relied upon to demonstrate compliance with, and does not satisfy the 10 CFR 54.4(a)(3) scoping criteria for, any regulated events.

USAR References

USAR Section 9.4.3.2 describes the Auxiliary Building Chilled Water System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M027A, LR-M028C, LR-M043

Components Subject to AMR

Table 2.3.3-2 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-2, Aging Management Review Results – Auxiliary Building Chilled Water System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The internals (tubes and tubesheets) for the Control Room water chiller evaporators (DB-S12-1 and 2) are not subject to AMR because these heat exchangers are in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.

Table 2.3.3-2
Auxiliary Building Chilled Water System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Structural integrity
Flexible Connection	Structural integrity
Heat Exchanger (shell) – Control Room water chiller evaporator (DB-S12-1 & 2)	Structural integrity
Heat Exchanger (tubes) – Access Control Area duct cooling coil (DB-E47)	Structural integrity
Heat Exchanger (tubes) – Computer Room A/C unit (DB-S77)	Structural integrity
Heat Exchanger (tubes) – Control Room air handling cooling coil (DB-E44 & 45)	Structural integrity
Heat Exchanger (tubes) – Electric Penetration Room 402 cooling coil (DB-E78)	Structural integrity
Orifice	Structural integrity
Piping	Structural integrity
Pump Casing – Chilled water pump (DB-P92-1 & 2)	Structural integrity
Strainer (body)	Structural integrity
Tank – Air separator	Structural integrity
Tank – Chemical pot feeder (DB-T154)	Structural integrity
Tank – Expansion tank (DB-T88)	Structural integrity
Tubing	Structural integrity
Valve Body	Structural integrity

2.3.3.3 Auxiliary Steam and Station Heating System

System Description

During normal plant operation, the Auxiliary Steam System is supplied with steam from the Main Steam System. Superheated steam at a pressure of approximately 875 psig is drawn from the main steam header downstream of the main steam isolation valves and is passed through a pressure reducing valve which reduces the steam pressure to 235 psig prior to introducing the steam to the Auxiliary Steam System header. The 235 psig header supplies steam to components either directly or via other steam headers at reduced pressures.

The Station Heating System uses a closed loop, circulating hot water system. The water is heated by the station heating heat exchangers using auxiliary steam as a heat source. Hot water is circulated through a primary loop that feeds various secondary loops. The primary loop provides a constant supply of hot water for conveying heat to the secondary loops while the secondary loops serve the terminal heat transfer units.

Reason for Scope Determination

The Auxiliary Steam and Station Heating System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Auxiliary Steam and Station Heating System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Auxiliary Steam and Station Heating System does, however, contain NSR components that are located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Auxiliary Steam and Station Heating System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Auxiliary Steam and Station Heating System is not relied upon to demonstrate compliance with, and does not satisfy the 10 CFR 54.4(a)(3) scoping criteria for, any regulated events.

USAR References

USAR Sections 3.6.2.7.1.9 and 3.6.2.7.1.13 describe the Auxiliary Steam and Station Heating System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M010D, LR-M020A, LR-M020B, LR-M020D, LR-M021, LR-M026B, LR-M027A, LR-M027B, LR-M028C, LR-M028D, LR-M029E

Components Subject to AMR

Table 2.3.3-3 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-3, Aging Management Review Results – Auxiliary Steam and Station Heating System, provides the results of the AMR.

Table 2.3.3-3
Auxiliary Steam and Station Heating System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Structural integrity
Heat Exchanger (tubes) – Containment purge air supply heating coil (DB-E38)	Structural integrity
Heat Exchanger (tubes) – Control Room heating coil (DB-E46-1 & 2)	Structural integrity
Heat Exchanger (tubes) – Fuel handling supply heating coil (DB-E40)	Structural integrity
Heat Exchanger (tubes) – Intake structure unit heater (DB-E50-1)	Structural integrity
Heat Exchanger (tubes) – Main steam line area unit heater (DB-E87-1, 2, & 3)	Structural integrity
Heat Exchanger (tubes) – Radwaste supply heating coil (DB-E39)	Structural integrity
Orifice	Structural integrity
Piping	Structural integrity
Pump Casing – 10 psig condensate pump (DB-P118-1 & 2)	Structural integrity

**Table 2.3.3-3 (Continued)
Auxiliary Steam and Station Heating System
Components Subject to Aging Management Review**

Component Type	Intended Function (as defined in Table 2.0-1)
Pump Casing – Degasifier package drain pump (DB-P178-1 & 2)	Structural integrity
Pump Casing – Evaporator package condensate drain pump (DB-P275-1 & 2)	Structural integrity
Pump Casing – Secondary hot water control room AHU pump (DB-P97 & 98)	Structural integrity
Pump Casing – Secondary hot water fuel handling pump (DB-P95)	Structural integrity
Pump Casing – Secondary hot water purge supply pump (DB-P93)	Structural integrity
Pump Casing – Secondary hot water radwaste supply pump (DB-P94)	Structural integrity
Strainer (body)	Structural integrity
Tank – 10 psig condensate tank (DB-T95)	Structural integrity
Tank – Degasifier package drain pump reservoir	Structural integrity
Trap Body	Structural integrity
Tubing	Structural integrity
Valve Body	Structural integrity

2.3.3.4 Boron Recovery System

<u>System Description</u>

The Boron Recovery System performs several functions important to normal operation. The first function is to collect, store, process, and reuse or dispose of radioactive reactor grade liquid from various sources, including liquid from the reactor coolant drain tank (DB-T14) and letdown from the Makeup and Purification System. Another function is to remove boron from reactor coolant letdown to maintain proper boron coolant chemistry. The last function is to collect, store, process, and reuse or dispose of recovered boron.

Liquid from the reactor coolant drain tank (DB-T14) and letdown from the Makeup and Purification System is pumped through one of the primary demineralizer filters (DB-F5-1 and 2), associated primary demineralizers (DB-T19-1 and 2), and into one of the clean waste receiver tanks (DB-T15-1 and 2). The liquid is then pumped by transfer pumps (DB-P49-1 and 2) to one of the boric acid evaporators (DB-S1-1 and 2) where it is separated into demineralized water (distillate) and boric acid.

The demineralized water is pumped through one of the clean waste polishing demineralizers (DB-T21-1 and 2), one of the clean waste monitor tank filters (DB-F6-1 and 2), and into one of the clean waste monitor tanks (DB-T23-1 and 2). From the clean waste monitor tanks (DB-T23-1 and 2), the demineralized water is pumped by transfer pumps (DB-P50-1 and 2) directly into the RCS via the Makeup and Purification System or discharged to the collection box.

The boric acid is pumped from the boric acid evaporators (DB-S1-1 and 2) through the concentrates demineralizer (DB-T55) and into the concentrates storage tank (DB-T16). The boric acid is then pumped by the concentrates transfer pump (DB-P47-2), from the concentrates storage tank (DB-T16) to the boric acid addition tanks (DB-T7-1 and 2) for reuse or to the Miscellaneous Waste System if the acid does not meet chemistry specifications.

The deborating demineralizers (DB-T20-1 and 2) are used in lieu of the boric acid evaporators (DB-S1-1 and 2), near the end of core life when the boron concentration is relatively low in order to remove boron from the liquid. The sodium hydroxide tank (DB-T90) and pump (DB-P113) were designed to inject sodium hydroxide into the boric acid evaporators (DB-S1-1 and 2) for pH control and for regeneration of the deborating demineralizers (DB-T20-1 and 2).

<u>Reason for Scope Determination</u>

The Boron Recovery System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Boron Recovery System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Boron Recovery System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Boron Recovery System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Boron Recovery System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) regulated event.

USAR References

USAR Section 11.2.2 describes the Boron Recovery System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M010D, LR-M031A, LR-M033B, LR-M033C, LR-M036C, LR-M037C, LR-M037D, LR-M037E, LR-M037F, LR-M037G, LR-M037H, LR-M038B, LR-M046

Components Subject to AMR

Table 2.3.3-4 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-4, Aging Management Review Results – Boron Recovery System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The internals (tubes) for the boric acid concentrators (DB-T200-1 and 2) are not subject to AMR because these tanks are in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.
- The internals (tubes and tubesheets) for the seal water coolers (DB-E199-1 and 2) and distillate coolers (DB-E200-1 and 2) are not subject to AMR because these heat exchangers are in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.
- The internals for the air-water separators (DB-S403-1 and 2) are not subject to AMR because these components are in scope only for potential leakage and

spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.

- Component filter media are evaluated as short lived components (consumables), not subject to AMR. Note that the housings for the primary demineralizer filters (DB-F5-1 and 2), clean waste monitor tank filters (DB-F6-1 and 2), clean waste receiver tank recirculation filter (DB-F90), and concentrates storage tank particulate filter (DB-F155), serve a structural integrity function and are subject to AMR.
- The internals (screens) for the deborating demineralizer outlet strainers (DB-S347 and S348), primary demineralizer outlet strainers (DB-S345 and 346), clean waste polishing demineralizer outlet strainers (DB-S374 and S375), and concentrates demineralizer outlet strainer (DB-S376) are not subject to AMR because these strainers are in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.

Table 2.3.3-4
Boron Recovery System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Filter Housing	Structural integrity
Flexible Connection	Structural integrity
Heat Exchanger (channel, shell) – Distillate coolers (DB-E200-1 & 2)	Structural integrity
Heat Exchanger (channel, shell) – Seal water coolers (DB-E199-1 & 2)	Structural integrity
Orifice	Pressure boundary Structural integrity
Piping	Pressure boundary Structural integrity
Pump Casing – Bottoms circulation pumps (DB-P271-1, 2, 3, & 4)	Structural integrity
Pump Casing – Clean waste booster pumps (DB-P179-1 & 2)	Structural integrity
Pump Casing – Clean waste monitor tank transfer pumps (DB-P50-1 & 2)	Structural integrity
Pump Casing – Clean waste receiver tank transfer pumps (DB-P49-1 & 2)	Structural integrity
Pump Casing – Concentrates pumps (DB-P272-1 & 3)	Structural integrity
Pump Casing – Concentrates transfer pump (DB-P47-2)	Structural integrity
Pump Casing – Concentrator vacuum pumps (DB-270-1, 2, 3, & 4)	Structural integrity

**Table 2.3.3-4 (Continued)
Boron Recovery System
Components Subject to Aging Management Review**

Component Type	Intended Function (as defined in Table 2.0-1)
Pump Casing – Distillate pumps (DB-269-1 & 3)	Structural integrity
Rupture Disc	Structural integrity
Separator	Structural integrity
Strainer (body)	Structural integrity
Tank – Boric acid concentrators (DB-T200-1 & 2)	Structural integrity
Tank – Clean waste monitor tanks (DB-T23-1 & 2)	Structural integrity
Tank – Clean waste polishing demineralizers (DB-T21-1 & 2)	Structural integrity
Tank – Clean waste receiver tanks (DB-T15-1 & 2)	Pressure boundary
Tank – Concentrates demineralizer (DB-T55)	Structural integrity
Tank – Concentrates storage tank (DB-T16)	Structural integrity
Tank – Deborating demineralizers (DB-T20-1 & 2)	Structural integrity
Tank – Primary demineralizers (DB-T19-1 & 2)	Structural integrity
Tank – Boric acid concentrators condensate reservoirs	Structural integrity
Tubing	Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.5 Chemical Addition System

The Chemical Addition System consists of the Boric Acid Addition System, Reactor Coolant Chemical Addition System, and Steam Generator Wet Layup Chemical Addition System. The Boric Acid Addition System injects boric acid into the RCS to control reactivity. The Boric Acid Addition System injects boric acid into the Borated Water Storage Tank System and the Spent Fuel Pool Cooling System to control their boron levels.

The Chemical Addition System provides a boric acid solution to the Boric Acid Addition System, and provides lithium hydroxide, hydrazine, ammonia, and other chemical amines to control pH and oxygen in the plant systems fed by the Reactor Coolant Chemical Addition System and Steam Generator Wet Layup Chemical Addition System.

Boric acid is mixed in the boric acid mix tank (DB-T6) and then transferred to the boric acid addition tanks (DB-T7-1 and 2) for storage. The solution is then delivered by the boric acid pumps (DB-P38-1 and 2) to the RCS to control reactivity in the reactor core.

Lithium hydroxide or hydrazine is mixed individually in the lithium hydroxide and hydrazine mix tank (DB-T8) and then transferred by the corresponding lithium hydroxide pump (DB-P39) or hydrazine pump (DB-P40) to the makeup filters (DB-F12-1 and 2) in the Makeup and Purification System. Lithium hydroxide is used in the RCS as a pH control additive during all phases of critical conditions and power operations and during normal subcritical or cold shutdown conditions. Controlling the pH helps to control corrosions of the system materials. Hydrazine is injected into the RCS during subcritical conditions to scavenge dissolved oxygen.

Chemicals are added to either of the steam generator wet layup chemical addition tanks (DB-T139-1 and 2). The solution is then transferred by the steam generator wet layup chemical addition metering pumps (DB-P259-1 and 2) and steam generator wet layup recirculation pumps (DB-P182-1 and 2) to the steam generators via the Auxiliary Feedwater System. Amines and hydrazine are injected during a wet layup condition for pH control and oxygen control respectively to minimize corrosion in the steam generators.

<u>Reason for Scope Determination</u>

The Chemical Addition System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Chemical Addition System contains NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1):

- Provide makeup from the boric acid addition tanks to the RCS in the event of a tornado that causes a loss of offsite power and loss of the borated water storage tank.

The Chemical Addition System also contains NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Chemical Addition System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Chemical Addition System is not relied upon to demonstrate compliance with, and does not satisfy the 10 CFR 54.4(a)(3) scoping criteria for, any regulated events.

USAR References

USAR Section 9.3.6 describes the Chemical Addition System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M035, LR-M037D, LR-M039A, LR-M039B, LR-M045

Components Subject to AMR

Table 2.3.3-5 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-5, Aging Management Review Results – Chemical Addition System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal but are not subject to AMR:

- The internals (screens) for the lithium hydroxide mix tank discharge strainer (DB-S334) and hydrazine pump suction strainer (DB-S335) are not subject to AMR because these strainers are in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.

Table 2.3.3-5
Chemical Addition System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Orifice	Pressure boundary Structural integrity
Piping	Pressure boundary Structural integrity
Pump Casing – Boric acid pumps (DB-P38-1 & 2)	Pressure boundary
Pump Casing – Hydrazine pump (DB-P40)	Structural integrity
Pump Casing – Lithium hydroxide pump (DB-P39)	Structural integrity
Strainer (body)	Pressure boundary Structural integrity
Strainer (screen)	Filtration
Tank – Boric acid addition tanks (DB-T7-1 & 2)	Pressure boundary
Tank – Boric acid mix tank (DB-T6)	Structural integrity
Tank – Lithium hydroxide and hydrazine mix tank (DB-T8)	Structural integrity
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.6 Circulating Water System

System Description

The Circulating Water System removes heat from the condenser and then disperses this heat to the atmosphere via the cooling tower. The Circulating Water System also provides a backup supply of water for cooling the turbine plant cooling water (TPCW) heat exchangers, provides dilution flow to the collection box during planned discharge of processed radioactive liquid, and receives the discharge of the Service Water System and the drainage from the condenser hotwell during hotwell cleanup operations.

Reason for Scope Determination

The Circulating Water System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Circulating Water System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Circulating Water System does, however, contain NSR components that are located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Circulating Water System satisfies the scoping criteria of 10 CFR 54.4(a)(2)

The Circulating Water System is not relied upon to demonstrate compliance with, and does not satisfy the 10 CFR 54.4(a)(3) scoping criteria for, any regulated events.

USAR References

USAR Section 10.4.5 describes the Circulating Water System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M012E, LR-M041A, LR-M041C

Components Subject to AMR

Table 2.3.3-6 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-6, Aging Management Review Results – Circulating Water System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The cooling tower makeup pumps (DB-P116-1 and 2) are within the scope of license renewal. However, the only license renewal function that these pumps serve is as the anchors of safety-nonsafety interfaces and for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function. Only the discharge head portion of these pumps fulfills this function, not the column pipe, top bowl, intermediate bowl or suction bell.

Table 2.3.3-6
Circulating Water System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Structural integrity
Flexible Connection	Structural integrity
Piping	Structural integrity
Pump Casing – Cooling tower makeup pump (DB-P116-1 & 2)	Structural integrity
Strainer (body)	Structural integrity
Tubing	Structural integrity
Valve Body	Structural integrity

2.3.3.7 Component Cooling Water System

System Description

The Component Cooling Water System is a closed loop system which provides cooling water to the nuclear and engineered safety features systems. It also acts as an intermediate barrier between radioactive systems and the Service Water System. The system consists of three circulating pumps, three heat exchangers, a surge tank, associated valves, piping, instrumentation, and controls.

The Component Cooling Water System is designed to provide cooling water to reactor auxiliaries and ECCS systems during normal station operation and Design Basis Accident (DBA) conditions. The components of the system are sized on the basis of removing the maximum heat load during normal station operation with 90°F service water temperature, and removing maximum heat loads from ECCS components during DBA conditions with service water at the ultimate heat sink conditions.

During normal operation, one of the loops will supply cooling water to reactor auxiliaries with the other loop in a standby capacity. During DBA conditions, the nonessential portion of the system is automatically isolated from both loops and the standby loop starts.

Three CCW pumps and heat exchangers are provided so that any one of the pump heat exchanger units can be removed from service for maintenance or repair without reducing the capability or redundancy of the system.

During normal station operation one pump is operating and one pump is in standby (in the redundant loop). The third pump is electrically disconnected from the system. Failure of the operating pump initiates an automatic transfer to the standby pump in the redundant loop. Manual valve and electrical alignment is initiated to place the third pump in a standby status in place of the affected pump.

Under DBA conditions, one CCW pump runs in each loop and nonessential components are isolated from the system. No single failure in a loop affects the other loop.

During normal operation, cooling to the makeup pumps is supplied via the nonessential header, which may be isolated during conditions requiring feed-and-bleed operations. During DBA accident conditions, cooling is supplied by the essential flowpath.

The system also contains two control rod drive cooling (CRDC) booster pumps and filters. The three CCW pumps and heat exchangers supply two essential loops and non-essential loads.

Reason for Scope Determination

The Component Cooling Water System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide cooling water to the following safety-related components: high-pressure injection pumps and bearing oil coolers; decay heat removal pump bearing housing coolers; decay heat removal coolers; containment gas analyzer heat exchangers; emergency diesel generator jacket cooling water heat exchangers
- Provide containment isolation

The Component Cooling Water System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Component Cooling Water System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Component Cooling Water System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Component Cooling Water System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48), Environmental Qualification (10 CFR 50.49), and Station Blackout (10 CFR 50.63) regulated events.

USAR References

USAR Section 9.2.2 describes the Component Cooling Water System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M036A, LR-M036B, LR-M036C, LR-M040D, LR-M041B, LR-M042C

Components Subject to AMR

Table 2.3.3-7 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-7, Aging Management Review Results – Component Cooling Water System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- Air operators and associated components – Decay heat removal cooler outlet flow control valves (DB-CC1467 and DB-CC1469), Auxiliary Building nonessential header inlet flow control valve (DB-CC1495), component cooling surge tank outlet valve (DB-CC1412), demineralized water crosstie valve (DB-DW2643), and inlet to normal makeup pump header valve (DB-CC1460), are air-operated valves. As shown on LR-M036A and LR-M036B, the supply control valves fail closed, and the outlet flow control valves fail open to ensure a flowpath to remove decay heat under worst case conditions is available to satisfy this requirement. Therefore, these valves are fail-safe on loss of the control air supply. In accordance with NEI 95-10, the nonsafety-related air supply components are not subject to aging management review.

  Additionally, the solenoid valves that supply the control air to the air operators, which are themselves active components, fail open to vent the control air lines. As such, a pressure boundary failure of any component within the control air supply will result in the flow control valves going to their safe positions, and the system will perform its intended function. Therefore, the air operators and associated components are not subject to AMR. In accordance with NEI 95-10, the nonsafety-related air supply components are not subject to AMR.

Table 2.3.3-7
Component Cooling Water System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Filter Housing	Structural integrity
Heat Exchanger (channel, shell, tubesheet) – Component cooling heat exchangers (DB-E22-1, 2, & 3)	Pressure boundary
Heat Exchanger (tubes) – Component cooling heat exchangers (DB-E22-1, 2, & 3)	Heat transfer Pressure boundary
Orifice	Pressure boundary Structural integrity Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – Component cooling pumps (DB-P43-1, 2, & 3)	Pressure boundary
Pump Casing – CRDC booster pumps (DB-P170-1 & 2)	Structural integrity
Tank – Chemical pot feeder (DB-T13)	Structural integrity
Tank – Component cooling surge tank (DB-T12)	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.8 Containment Hydrogen Control System

System Description

The Containment Hydrogen Control System includes the Containment Hydrogen Dilution System and Containment Gas Analyzer System.

The Containment Hydrogen Control System operation is post-accident only. These subsystems are not normally operated under any plant operating conditions, except during testing.

The Containment Hydrogen Dilution System was designed to add air to the containment vessel to effectively maintain hydrogen concentrations within acceptable limits. The Containment Hydrogen Dilution System consists of redundant trains of a 100%-capacity air compressor (blower).

The Containment Gas Analyzer System consists of two redundant operating trains. Each train consists of a heat exchanger, recombiner, moisture removal system, and gas sampling system. Both trains of electronics are typically in operation with the sample pumps in standby mode.

After a LOCA, the Containment Gas Analyzer System monitors the containment atmosphere for hydrogen. When the hydrogen in the Containment reaches 3% by volume, the Containment Hydrogen Dilution System will be manually initiated, to introduce air into the Containment to dilute the hydrogen concentration if the pressure inside Containment is less than 32.4 psia. The Containment Hydrogen Dilution System is used to pressurize the containment vessel to 32 psia, and then the Containment Purge System is lined up to the station exhaust.

Reason for Scope Determination

The Containment Hydrogen Control System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Monitor and indicate the hydrogen concentration of the containment vessel atmosphere
- Provide containment isolation

The Containment Hydrogen Control System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Containment Hydrogen Control System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Containment Hydrogen Control System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Containment Hydrogen Control System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 6.2.5 describes the Containment Hydrogen Control System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M029B, LR-M029C, LR-M029D, LR-M041B, LR-M041C

Components Subject to AMR

Table 2.3.3-8 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-8, Aging Management Review Results – Containment Hydrogen Control System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- Component filter media are evaluated as short-lived components (consumables), not subject to AMR. Note that the housing for DB-F60 serves a pressure boundary function and is subject to AMR.
- The demister pads for DB-S432 are evaluated as short-lived components not subject to AMR.

Table 2.3.3-8
Containment Hydrogen Control System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Damper Housing	Pressure boundary
Demister (DB-S432)	Pressure boundary Water removal
Duct	Pressure boundary
Fan Housing – Hydrogen dilution system blowers (DB-C62-1 & 2)	Pressure boundary
Filter Housing (DB-F60)	Pressure boundary
Heat Exchanger (shell) – Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Pressure boundary
Heat Exchanger (tubes) – Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Heat transfer Pressure boundary
Moisture Separator (DB-F131 & 132)	Pressure boundary Water removal
Moisture Separator (DB-S404-1 & 2)	Pressure boundary Water removal
Orifice (DB-RO186, DB-RO187, DB-RO5063)	Pressure boundary Throttling
Orifice (DB-RO4813A-D, DB-RO4814A-D)	Pressure boundary
Piping	Pressure boundary Structural integrity
Pump Casing – Containment hydrogen analyzer pumps (DB-P267-1, -2 & DB-P268-1, -2)	Pressure boundary
Silencer (muffler)	Pressure boundary

Table 2.3.3-8 (Continued)
Containment Hydrogen Control System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Tank – Containment radiation monitor moisture accumulation tank (DB-T216)	Pressure boundary
Trap Body (DB-MT9 & 10)	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.9 Containment Purge System

System Description

The Containment Purge System was designed to be a standby system. However, in order to maintain temperature and control noble gas levels, the system is normally in operation ventilating the mechanical penetration rooms. The Containment Purge System was designed to purge Containment during normal plant operation, but regulatory commitments have been made to keep the containment isolation valves closed in modes 1 through 4.

The Containment Purge System serves as a backup to the Containment Hydrogen Dilution System and is designed to release containment air through a HEPA and a charcoal filter prior to discharge to the station exhaust. The driving force for the Containment Purge System is the difference in pressure between the Containment and the atmosphere.

Reason for Scope Determination

The Containment Purge System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide containment isolation
- Provide mechanical penetration rooms isolation

The Containment Purge System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Containment Purge System does not contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Containment Purge System does not satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The Containment Purge System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 6.2.3 describes the Containment Purge System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M029E

Components Subject to AMR

Table 2.3.3-9 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-9, Aging Management Review Results – Containment Purge System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments (including flow indicators), the following components are within the scope of license renewal, but not subject to AMR:

- Valve actuator housings are evaluated as active components, and as such are not subject to AMR. Additionally, the solenoid valves that supply the control air to the actuators fail open to vent the control air lines. As such, a pressure boundary failure of any component within the control air supply will result in the isolation valves going to their safe, fail-closed, positions, and the system will perform its intended function. Therefore, the solenoid valves and the associated capillary tubing are also not subject to AMR.

Table 2.3.3-9
Containment Purge System
Components Subject to Aging Management Review

Component Type	**Intended Function (as defined in Table 2.0-1)**
Bolting	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve Body	Pressure boundary

2.3.3.10 Containment Vacuum Relief System

System Description

The Containment Vacuum Relief System consists of ten piping penetrations which penetrate the containment vessel. Each piping penetration is provided with a motor-operated butterfly valve in series with a non-return (swing check) valve. The motor-operated butterfly valve is normally open and can be closed from the Control Room, locally with a control switch, or by a SFAS level 2 signal. The non-return valves are free to open whenever the Containment negative pressure exceeds the valve unseating pressure.

Reason for Scope Determination

The Containment Vacuum Relief System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Maintain the integrity of the containment vessel by permitting an influx of air to the Containment under positive external differential pressure conditions, which may occur in the event of an inadvertent actuation of the Containment Spray System
- Provide containment isolation

The Containment Vacuum Relief System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Containment Vacuum Relief System does not contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Containment Vacuum Relief System does not satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The Containment Vacuum Relief System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 3.8.2.1 describes the Containment Vacuum Relief System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M029B

Components Subject to AMR

Table 2.3.3-10 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-10, Aging Management Review Results – Containment Vacuum Relief System, provides the results of the AMR.

Table 2.3.3-10
Containment Vacuum Relief System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary
Piping	Pressure boundary
Valve Body	Pressure boundary

2.3.3.11 Demineralized Water Storage System

System Description

The Demineralized Water Storage System consists of two tanks, a heat exchanger, and four pumps (three transfer pumps and one recirculation pump). The Demineralized Water Storage System functions to supply demineralized plant water to equipment and systems throughout the plant. The demineralized water supply header is normally kept pressurized by one of the transfer pumps, with the other two in standby.

Reason for Scope Determination

The Demineralized Water Storage System performs the following safety-related system intended function that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Provide containment isolation

The Demineralized Water Storage System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Demineralized Water Storage System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Demineralized Water Storage System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Demineralized Water Storage System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 9.2.3.2 describes the Demineralized Water Storage System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M010C, LR-M010D, LR-M020B, LR-M021, LR-M031A, LR-M035, LR-M036A, LR-M037C, LR-M037D, LR-M037E, LR-M039A, LR-M040A, LR-M045

Components Subject to AMR

Table 2.3.3-11 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-11, Aging Management Review Results – Demineralized Water Storage System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- Air operators and associated components – DB-DW6831A and DB-DW6831B are air-operated valves. As shown on LR-M010C, the valves fail closed upon loss of power or loss of instrument air. In accordance with NEI 95-10, the NSR air supply components are not subject to AMR.

  Additionally, the solenoid valves that supply the control air to the air operators, which are themselves active components, fail open to vent the control air lines. As such, a pressure boundary failure of any component within the control air supply will result in the flow control valves going to their safe positions, and the system will perform its intended function. Therefore, the air operators and associated components are not subject to AMR. In accordance with NEI 95-10, the NSR air supply components are not subject to AMR.

Table 2.3.3-11
Demineralized Water Storage System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Piping	Pressure boundary Structural integrity
Tank – Lab. demin. water storage tank (DB-T108)	Structural integrity
Tubing	Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.12 Emergency Diesel Generators System

System Description

Two redundant EDG units, one connected to essential 4.16-kV bus C1 and the other connected to essential 4.16-kV bus D1, are provided as onsite standby power sources to supply their respective essential buses upon loss of the normal and the reserve power sources. Bus load shedding and isolation, bus transfer to the EDG, and pickup of critical loads are automatic.

EDG Air Start – Each of the two EDGs has a complete starting air supply system including starting air compressor, two air reservoirs (each of which has the capacity to provide 5 starts without recharging), and two sets of two starting motors in parallel, one set from each reservoir. The compressor has sufficient capacity to recharge two air reservoirs from minimum to maximum starting air pressure in not more than 30 minutes. Each air compressor will charge one of the two air reservoirs in the starting systems for each of the two emergency diesel engines. A third compressor, which can be manually aligned to act as either of the normally aligned compressors, is available when either of the other two compressors has been isolated.

EDG Lubricating Oil – Each diesel engine has its own independent lube oil system which is an integral part of the engine. The lube oil system consists of the following:

- Lube oil filtering and cooling system – this system draws oil from the engine sump through a cleanable basket strainer by means of an engine-driven scavenge pump. The oil is directed to a full flow filter, and then to an oil cooler. Thermostatically controlled engine jacket water cools and maintains the lube oil temperature automatically at the proper operating condition. The cooled oil returns to an engine-mounted strainer.
- Main lubrication and piston cooling systems – these systems draw oil from the oil cooler through the duplex strainer by the gear-driven pressure pump. The main lubrication oil system supplies oil pressure to all necessary moving parts of the engine. The piston cooling pump discharges oil in continuous sprays on the underside of the piston crowns. All oil from these systems drains into the engine oil sump.
- Turbocharger cooling system – an independent, essentially powered, electric AC motor-driven turbo oil pump draws oil from the sump and delivers it to the turbocharger bearings through a replaceable cartridge filter. This pump is always kept running to provide pre-lubrication of the turbocharger bearings for starting and post-lubrication at stopping. The oil drains from the turbocharger housing into the oil sump. An alarm is actuated if sufficient oil pressure is not provided to the turbocharger bearings. An electric, DC motor-driven pump acts as a back-up to the AC turbo oil pump. The DC motor-driven pump is normally in standby (not

running) but will automatically start when the discharge pressure from the AC motor-driven turbo pump drops off.

- An essentially powered AC motor-driven circulating oil pump draws oil from the engine sump and circulates it through the main lube oil filter, the lube oil cooler, and the main lube oil gallery. This pump is always kept running to provide pre-lubrication of the engine with warm, filtered oil.

EDG Jacket Water Cooling – Each EDG jacket water cooling system includes a heat exchanger, expansion tank, lube oil cooler, automatic cooling water temperature regulating valve, and engine-driven water pumps. Jacket cooling water is circulated in a closed loop through the engine lube oil cooler, the engine cooling water passages, and the shell side of the raw water heat exchanger. The raw water flowing through the tube side is supplied by the Component Cooling Water System.

An electric immersion heater powered from an essential source is provided in the diesel engine jacket water system, and is controlled by a temperature switch. The immersion heater keeps both the jacket water and lube oil systems warm during standby conditions to enhance reliability and fast starting of the EDG set. The heated water is circulated by thermo-siphoning through the lube oil cooler where the circulating oil gets heated up, and is maintained above 85°F. A low jacket water temperature alarm monitors the operation of the immersion heater.

EDG Fuel Oil – The diesel fuel oil system includes sufficient fuel oil storage for seven days of operation for each emergency diesel generator. This system consists of the EDG day tank, bulk storage (week) tank, pumps, and associated piping and valves to the respective diesel generator.

The diesel fuel oil storage and transfer system is comprised of two separate trains. Each train consists of one supply (week) tank, one fuel oil transfer pump, one day tank, and piping between the supply (week) tank and day tank. Each supply (week) tank has a gross capacity of approximately 40,000 gallons. The tanks are installed above grade elevation; with tornado missile protection provided by a truncated pyramid of structural backfill built around the tanks.

The EDG day tanks are filled automatically via separate transfer systems which receive fuel oil from the two emergency diesel fuel oil storage (week) tanks. Each transfer pump is a submersible centrifugal pump suspended from the supply (week) tank manhole. The pumps have a capacity which is greater than the fuel consumption of its associated emergency diesel generator at its maximum rated load. The fuel oil transfer pump discharge lines run directly to the associated diesel day tank.

Each of the two diesel generator day tanks has a capacity of approximately 5,000 gallons, measured from the "start" level for the transfer pump.

The fuel oil filtering system is composed of a number of devices to guarantee fuel oil purity. Before entering the suction of the engine-driven fuel pump, the oil passes through a strainer which protects the pump. The oil discharged from the pump then passes through a duplex cartridge filter. The fuel supplied by the DC motor-driven, redundant fuel pump is filtered in the same manner as that supplied by the engine-driven pump, except that a duplex basket strainer is used on the suction of the pump.

EDG Air Intake and Exhaust – The air intake structure and filtering system for each diesel consists of an intake filter assembly, an intake silencer, and interconnecting piping to the diesel engine-mounted air inlet flexible connector. The filtered air then enters the impeller-end of a turbocharger where its pressure is increased for combustion and exhaust gas removal. The exhaust system consists of an engine-mounted manifold, turbine-end of the turbocharger, and interconnecting piping to an exhaust silencer.

The air intake filter and intake and exhaust silencers are located outside at the roof top of the Auxiliary Building above the diesel rooms. Suitable enclosures are provided to protect the filter and silencers from missiles, tornadoes, snow, rain, etc. Since the air intake is located outside of the diesel building, there is no possibility of fire extinguishing agents being drawn into the air intakes. The physical separation of the intake and exhaust preclude significant recirculation of exhaust gas into the air intake.

Reason for Scope Determination

The Emergency Diesel Generators System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1)

- Provide onsite standby power source for safety-related loads required to mitigate the effects of an accident combined with a loss of offsite power and to safely shut down the plant and maintain safe shutdown
- Provide onsite standby power source for safety-related loads following a loss of offsite power not accompanied by an accident

The Emergency Diesel Generators System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Emergency Diesel Generators System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Emergency Diesel Generators System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Emergency Diesel Generators System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) and Environmental Qualification (10 CFR 50.49) regulated events.

USAR References

USAR Sections 8.3.1.1.4 and 9.5.4.2 describe the Emergency Diesel Generators System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M017A, LR-M017B, LR-OS041A1, LR-OS041A2

Components Subject to AMR

Table 2.3.3-12 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-12, Aging Management Review Results – Emergency Diesel Generators System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The EDG engines and generators are active components and not subject to AMR. The diesel engine boundary extends to the interfaces with the jacket water, intake and exhaust, lubricating oil, fuel oil, and starting air subsystems. Components integral to the EDG engine, such as the engine block, intake and exhaust manifolds, gear housings, lube oil pan (crankcase), and the fuel injectors, are included in the diesel engine boundary.

- The EDG main, turbo and aux turbo lubricating oil filter media (DB-F104-1/2, 105-1/2, and 106-1/2) are replaced periodically. Also the air intake oil bath filters (DB-F108-1 and 2) have the oil, which is the filter media, drained and replaced periodically. As such the EDG lubricating oil filter and air filter media are short-lived components and not subject to AMR.

- The EDG fuel oil filter media (DB-F158 through 161) are replaced periodically. As such they are short-lived components and not subject to AMR.

- The EDG circulating (i.e., soakback) oil pumps (DB-P147-1 and 2) are replaced periodically. As such they are short-lived components and not subject to AMR.

- The EDG air line lubricators (DB-S406-1 and 2 and DB-S407-1 and 2) are replaced periodically. As such they are short-lived components and not subject to AMR.

- The EDG AC turbo lube oil pumps (DB-P147-3 and 4) are replaced periodically. As such they are short-lived components and not subject to AMR.
- The EDG immersion heater elements are replaced periodically. As such they are short-lived components and not subject to AMR.
- The EDG jacket water pumps (DB-P148-1A, 1B, 2A, and 2B) are replaced periodically. As such they are short-lived components and not subject to AMR.
- The EDG engine-driven fuel oil pumps and the DC fuel oil pumps are replaced periodically. As such they are short-lived components and not subject to AMR.
- The EDG air start flexible hoses are replaced periodically. As such they are short-lived components and not subject to AMR.
- The EDG air start motors (DB-S207-1 through 4) are replaced periodically. As such they are short-lived components and not subject to AMR.
- The following jacket water flexible connections, of which not all are shown on LR-OS041A1 and LR-OS041A2, are replaced periodically, and are therefore short-lived components and not subject to AMR:
    - Water pump suction line from left bank pump
    - Water pump suction line from right bank pump
    - Jacket water line between engine and thermostatic control valve
    - Jacket water line between lube oil cooler and thermostatic control valve
    - Jacket water vent line between lube oil cooler and jacket water tank
    - Lines (2) off bottom of jacket water tank

Table 2.3.3-12
Emergency Diesel Generators System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Compressor Casing – Turbocharger (DB-C148-1 & 2)	Pressure boundary
Filter Body	Pressure boundary
Flame Arrestor	Pressure boundary
Flexible Connection	Pressure boundary
Heat Exchanger (channel, shell, tubesheet) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary
Heat Exchanger (shell) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Pressure boundary
Heat Exchanger (shell) – EDG immersion heater	Pressure boundary
Heat Exchanger (shell) – Lube oil cooler (DB-E94-1 & 2)	Pressure boundary
Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Heat Transfer Pressure boundary
Heat Exchanger (tubes) – EDG jacket cooling water heat exchangers (DB-E10-1 & 2)	Heat Transfer Pressure boundary
Heat Exchanger (tubes) – Lube oil cooler (DB-E94-1 & 2)	Heat Transfer Pressure boundary
Piping	Pressure boundary Structural integrity
Pump Casing – DC turbo oil pump (DB-P147-5 & 6)	Pressure boundary
Pump Casing – Engine-driven main lube oil pump (DB-P150-1 & 2)	Pressure boundary
Pump Casing – Engine-driven piston cooling pump (DB-P265-1 & 2)	Pressure boundary
Pump Casing – Engine-driven scavenger pump (DB-P264-1 & 2)	Pressure boundary
Pump Casing – Transfer pump (DB-P195-1 & 2)	Pressure boundary

Table 2.3.3.12 (Continued)
Emergency Diesel Generators System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Silencer (exhaust, intake)	Pressure boundary
Strainer (body)	Pressure boundary Structural integrity
Strainer (screen)	Filtration
Tank – EDG day tank (DB-T46-1 & 2)	Pressure boundary
Tank – EDG fuel oil storage tank (DB-T153-1 & 2)	Pressure boundary
Tank – EDG starting air receiver (DB-T86-1, 2, 3 & 4)	Pressure boundary
Tank – Jacket water expansion tank (DB-T121-1 & 2)	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.13 Emergency Ventilation System

System Description

The function of the Emergency Ventilation System is to collect and process potential leakage from the containment vessel to minimize environmental activity levels resulting from all sources of containment leakage following a LOCA. The Emergency Ventilation System is designed to provide a negative pressure with respect to the atmosphere within the annular space between the Shield Building and the containment vessel and in the penetration rooms following a LOCA and to provide a filtered exhaust path from the shield building annulus, penetration rooms, and pump rooms following a LOCA.

The system has two redundant, independent fan/filter subsystems, each fully capable of the functional requirement. Each of the two redundant subsystems is provided with an exhaust fan, prefilters, HEPA filters to remove airborne particulates, and charcoal adsorbers to remove gaseous activity (principally iodine).

Following the detection of a radioactive release in the spent fuel pool area, the Fuel Handling Area Ventilation System will be automatically shutdown and its exhaust ductwork will be aligned to the Emergency Ventilation System. The automatic initiation of the Emergency Ventilation System will provide the appropriate ventilation and filtration to limit the potential release of radioactive iodine and other radioactive materials. The Emergency Ventilation System also provides a filtered ventilation path with an assigned filter efficiency of 95% for the areas served by the Containment Purge System or the Auxiliary Building Radioactive Area HVAC Systems in the event that high radiation is detected in any of these ventilation systems.

Reason for Scope Determination

The Emergency Ventilation System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Maintain negative pressure in the shield building annulus and penetration rooms (105, 113, 115, 208, 225, 236, 303, and 314) following a LOCA
- Provide a filtered exhaust path from the shield building annulus and penetration rooms to the station vent following a LOCA
- Provide a filtered exhaust path from the fuel handling area to the station vent following a fuel handling accident

The Emergency Ventilation System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Emergency Ventilation System does not contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Emergency Ventilation System does not satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The Emergency Ventilation System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 6.2.3.1 describes the Emergency Ventilation System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M029D

Components Subject to AMR

Table 2.3.3-13 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-13, Aging Management Review Results – Emergency Ventilation System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, dampers (except housings), and fans (except housings), the following components are within the scope of license renewal, but are not subject to AMR:

- Component filter media are evaluated as short-lived components (consumables), not subject to an AMR. Note that the filter housings do have a pressure boundary function and are subject to AMR.
- The system filter media for the Emergency Ventilation System filter units (DB-F19-1 & 2), including the prefilters, HEPA filters, and charcoal adsorbers, are evaluated as short-lived components (consumables). The media are replaced in accordance with the applicable standards of Regulatory Guide 1.52 Revision 2, ANSI/ASME N510-1980, and ASTM D3803-1989.

Table 2.3.3-13
Emergency Ventilation System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary
Damper Housing	Pressure boundary
Duct	Pressure boundary
Fan Housing – Emergency ventilation fans (DB-C30-1 & 2)	Pressure boundary
Filter Housing – Emergency ventilation system filter units (DB-F19-1 & 2)	Pressure boundary
Flexible Connection	Pressure boundary
Mechanical Sealant	Pressure boundary
Piping	Pressure boundary
Tubing	Pressure boundary
Valve Body	Pressure boundary

2.3.3.14 Fire Protection System

System Description

The fire suppression system provides water for all in-scope automatic and manual fire suppression systems. Two separate water supplies and fire pumps are utilized to deliver water to the system. The primary supply consists of a fire water storage tank from which an electric motor-driven fire pump receives water, while the secondary water supply is Lake Erie, from which a diesel engine-driven fire pump takes suction.

Each fire pump discharges to the underground fire main through a separate feed. The underground fire main encircles the plant protected area and provides water to internal building headers and fire hydrants. The internal headers supply sprinkler, deluge and water spray systems, and standpipes. Several Turbine Building sprinkler systems are fed directly from the underground fire main. The underground fire main also supplies water to fire suppression systems, standpipes, and fire hydrants installed outside the protected area.

The fire suppression system is maintained within a predetermined pressure range by a continuously running jockey fire pump. The flow of water from the system will result in a lower water pressure in the underground fire main and internal building headers. The electric fire pump will automatically start when the system pressure has decreased to a predetermined point and begin supplying the underground fire main. Should the electric fire pump be unable to meet the demand, and the system pressure decreases further, the diesel fire pump will automatically start and also supply the underground fire main.

Wet Pipe Sprinkler Systems – Wet pipe sprinkler systems consist of automatic sprinklers, distribution piping (which contains water under pressure), an alarm check valve or flow switch (which indicates water flow in the system), and an isolation valve.

Water flow from a wet pipe sprinkler system is initiated by the operation of individual automatic sprinklers. Only sprinklers whose operating elements reach their design operating temperature will fuse and discharge water.

Preaction Sprinkler Systems – Preaction sprinkler systems consist of automatic sprinklers, distribution piping (which contains supervisory air pressure), an air check valve, a deluge valve with alarm trim (which controls water flow into the system and provides for a water flow alarm), and an isolation valve. The preaction sprinkler systems rely on a detection system to actuate the deluge valve and rely on the Station and Instrument Air System for supervisory air. Two preaction sprinkler systems are installed, one in each diesel generator room.

The system deluge valve is actuated either by a signal from a detection system installed in the area the preaction system protects or by manually actuating the deluge valve.

Water entering the preaction system distribution piping will remain in the piping until the individual automatic sprinklers operate. Only sprinklers whose operating elements reach their design operating temperature will fuse, resulting in the discharge of supervisory air and water.

Deluge Sprinkler Systems – Deluge systems consist of open sprinklers (sprinklers from which the operating elements have been removed), distribution piping, a deluge valve with alarm trim (which controls water flow into the system and provides for a water flow alarm), a strainer provided in the supply piping upstream of the deluge valve, and an isolation valve. One deluge system is installed and protects the hydrogen seal oil unit.

The system deluge valve is actuated by one of three methods; from a detection system installed in the room protected by the deluge system, from a manual pull station which sends an electric signal to release the valve or by manually tripping the deluge valve.

Water entering the deluge system distribution piping will be discharged from all sprinklers in the system.

Water Spray Systems – Water spray systems consist of open nozzles, distribution piping, a deluge valve with alarm trim (to control water flow into the system and provide for a water flow alarm), and an isolation valve. A strainer is provided in the supply piping to all water spray systems, with the exception of the system protecting the open penetrations in the walls in room 235.

The deluge valves are actuated by either a detection system installed in the area protected by the water spray system or a manual release station provided at the individual deluge valves, or manually in the Control Room via Simplex System.

Actuation of the deluge valve for a water spray system results in the discharge of water from all system nozzles.

Fire Protection Diesel – The fire pump diesel engine (DB-K6_FP) supplies power to operate the diesel fire pump (DB-P5-2). The fire pump diesel engine starts automatically when the electric fire pump (DB-P5-1) fails to start or the pressure drops below set limits. The fire pump diesel engine will also start automatically if there is a loss of electric power supply or if the fire water storage tank reaches the low water level.

Reason for Scope Determination

The Fire Protection System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Fire Protection System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Fire Protection System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Fire Protection System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Fire Protection System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) regulated event.

USAR References

USAR Section 9.5.1 describes the Fire Protection System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M016A, LR-M016B, LR-M017C, LR-M026B, LR-M269P, LR-M33301

Components Subject to AMR

Table 2.3.3-14 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-14, Aging Management Review Results – Fire Protection System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The jockey fire pump (DB-P6_FP) is replaced periodically. As such it is short-lived and not subject to AMR.
- Fire hoses are within the scope of license renewal. However, they are periodically inspected and replaced. Therefore, the fire hoses are not subject to AMR, as outlined in 10 CFR 54.21(a)(1)(i) and (ii).
- Fire extinguishers, such as those in the Control Room, are periodically inspected and replaced. Therefore the fire extinguishers are short-lived and not subject to AMR, as outlined in 10 CFR 54.21(a)(1)(i) and (ii).
- The fire protection (FP) engine is an active component and not subject to AMR. The FP engine boundary extends to the interfaces with the jacket water, intake and exhaust, fuel oil, and lubricating oil subsystems. The diesel engine boundary includes the engine, intake and exhaust manifolds, lube oil pan (crankcase), and the fuel injectors. This also includes the FP diesel lube oil pump and diesel water pump that are internal to the engine.

- The FP diesel coolant, fuel oil, and lubricating oil filter media are replaced periodically. Also the air intake oil bath filter has the oil, which is the filter media, drained and replaced periodically. As such they are short-lived components and not subject to AMR.
- The FP diesel oil cooler is replaced periodically. As such it is a short-lived component and not subject to AMR.
- The FP diesel fuel oil pump is replaced periodically. As such it is a short-lived component and not subject to AMR.
- The failure due to aging of the piping associated with the diesel engine combustion air supply (see LR-M026B) will not prevent the FP engine from performing its intended function. Therefore, the piping is not subject to AMR.

Table 2.3.3-14
Fire Protection System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Heat Exchanger (channel, shell, and tubesheet) – Fire water storage tank heat exchanger (DB-E52)	Pressure boundary
Heat Exchanger (tubes) – Fire water storage tank heat exchanger (DB-E52)	Heat transfer
Hydrant	Pressure boundary
Orifice	Pressure boundary Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary
Pump Casing – Electric fire pump (DB-P5-1)	Pressure boundary
Pump Casing – Fire water storage tank recirculation pump (DB-P114)	Pressure boundary
Spray Nozzle	Pressure boundary Spray Structural integrity
Strainer (body)	Pressure boundary
Strainer (screen)	Filtration
Tank – Fire water storage tank (DB-T81)	Pressure boundary
Tank – Retard chamber	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

Table 2.3.3.14 (Continued)
Fire Protection System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Fire Protection Diesel	
Bolting	Pressure boundary
Compressor Casing – Turbocharger	Pressure boundary
Filter Body	Pressure boundary
Flexible Connection	Pressure boundary
Gear Housing	Pressure boundary
Heat Exchanger (shell) – Gear housing oil cooler	Pressure boundary
Heat Exchanger (shell) – Radiator	Pressure boundary
Heat Exchanger (tubes) – Gear housing oil cooler	Heat transfer Pressure boundary
Heat Exchanger (tubes) – Radiator	Heat transfer Pressure boundary
Piping	Pressure boundary
Silencer (exhaust)	Pressure boundary
Tubing	Pressure boundary
Valve Body	Pressure boundary

2.3.3.15 Fuel Oil System

System Description

The fire pump diesel day tank (DB-T47) supplies diesel fuel oil to the fire pump diesel engine (DB-K6_FP). The fire pump diesel day tank is refilled through a fill line from the diesel oil storage tank. The tank will contain sufficient fuel to operate the diesel engine at full load for a minimum of 8 hours.

The diesel oil storage tank (DB-T45) can supply fuel oil, via a diesel oil transfer pump (DB-P8-1) and a temporary connection through valve DB-DO118, to the EDG day tanks in the event of a serious fire event coincident with the failure of the EDG fuel oil transfer pump (DB-P195-1).

Reason for Scope Determination

The Fuel Oil System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Fuel Oil System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Fuel Oil System does not contain NSR components that are attached or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Fuel Oil System does not satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The Fuel Oil System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) regulated event.

USAR References

USAR Section 2.2.3.6.2 describes the Fuel Oil System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M017C

Components Subject to AMR

Table 2.3.3-15 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-15, Aging Management Review Results – Fuel Oil System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The temporary connection used to transfer fuel oil from the diesel oil storage tank (DB-T45) to the EDG day tanks during a postulated fire is evaluated as a short-lived component subject to periodic inspection.

Table 2.3.3-15
Fuel Oil System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary
Flexible Connection	Pressure boundary
Piping	Pressure boundary
Pump – Diesel oil transfer pump (DB-P8-1)	Pressure boundary
Strainer (body)	Pressure boundary
Strainer (screen)	Filtration
Tank – Diesel oil storage tank (DB-T45)	Pressure boundary
Tank – Fire pump diesel day tank (DB-T47)	Pressure boundary
Tubing	Pressure boundary
Valve Body	Pressure boundary

2.3.3.16 Gaseous Radwaste System

System Description

The function of the Gaseous Radwaste System is to collect, hold, and reuse or dispose of radioactive gas generated by the station. The system is designed so that estimated releases of gaseous effluents from the station comply with the requirements of 10 CFR 20 and 10 CFR 50.

Hydrogen and fission product gases are vented from the reactor coolant drain tank, makeup tank, and containment vent header, and returned from the Sample System to the waste gas surge tank. From the waste gas surge tank the radioactive gaseous waste is sent to one of two waste gas compressors. The gaseous waste is then transferred to one of three waste gas decay tanks. Once a decay tank is full, the waste gas decays in the tank for at least 30 days. The waste gas then exits the decay tank and either is released in a controlled manner or reused as a cover gas for the clean waste receiver tanks or clean waste monitor tanks. The gas which is released from the waste gas decay tank passes through an absolute filter, charcoal filter, and two radiation detectors at a predetermined rate prior to being released.

The other waste gas compressor takes its suction from a header containing displaced cover gas from the Clean Liquid Radwaste System and vent gases from the boric acid evaporators. This gas is kept separate from the waste gas surge tank gas and is processed in much the same manner as described above.

To preclude forming an explosive hydrogen-oxygen mixture, in-leakage of oxygen is prevented through the use of a nitrogen blanketing system.

Reason for Scope Determination

The Gaseous Radwaste System performs the following safety-related system intended function that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Maintain system pressure boundary integrity.

The Gaseous Radwaste System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Gaseous Radwaste System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Gaseous Radwaste System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Gaseous Radwaste System is not relied upon to demonstrate compliance with, nor satisfies the 10 CFR 54.4(a)(3) scoping criteria for, any regulated event.

USAR References

USAR Section 11.3 describes the Gaseous Radwaste System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M037D, LR-M038A, LR-M038B, LR-M038C, LR-M040A

Components Subject to AMR

Table 2.3.3-16 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-16, Aging Management Review Results – Gaseous Radwaste System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but are not subject to AMR:

- Air operators and associated components – Gaseous Radwaste waste gas surge tank and waste gas decay tanks isolation control valves (DB-WG2853, 2854, 1803, 1810, 1823 through 1828, and 1835 through 1840) are air-operated valves. As shown on LR-M038B and LR-M038C, the isolation control valves to the waste gas surge tank are normally open and fail closed, and the control valves upstream of the waste gas decay tanks and downstream of the waste gas surge tank and waste gas decay tanks are normally closed and fail closed. Therefore, these valves are fail-safe on loss of the control air supply.

  Additionally, the solenoid valves that supply the control air to the air operators, which are themselves active components, fail open to vent the control air lines. As such, a pressure boundary failure of any component within the control air supply will result in the flow control valves going to their safe positions, and the system will perform its intended function. Therefore, the air operators and associated components are not subject to AMR.

- The sample racks DB-R2714 and DB-R2715 are located in room 244 of the Auxiliary Building. The components within the sample racks are all NSR, and do not meet the NSAS criteria and are not subject to AMR. The sample racks DB-R2714 and DB-R2715 provide anchors for safety-nonsafety interfaces and are evaluated as structural bulk commodities (see Section 2.4.13).

Table 2.3.3-16
Gaseous Radwaste System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Compressor Casing – Waste gas compressor (DB-C10-1 & 2)	Structural integrity
Filter Housing – Waste gas absolute filter (DB-F8)	Structural integrity
Heat Exchanger (shell) – Aftercooler (DB-C10-1 & 2)	Structural integrity
Orifice	Pressure boundary Structural integrity Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – Waste gas surge tank transfer pump (DB-P168)	Structural integrity
Tank – Waste gas decay tank (DB-T25-1, 2, & 3)	Pressure boundary
Tank – Waste gas surge tank (DB-T24)	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.17 Instrument Air System

System Description

The Instrument Air System is designed to provide a reliable continuous supply of dry, oil-free compressed air for pneumatic instrument operation and for control of pneumatic valves. The Instrument Air System consists of a 100% capacity emergency instrument air compressor provided to supply instrument air during a malfunction of the station air compressors, with prefilters, two sets of heatless air dryers and after-filters. The Station Air System supplies air to the Instrument Air System upstream of the dryer prefilters. The air is filtered and some moisture is removed by a coalescing type prefilter. From the prefilter, the air is further dried by one of the air dryers. The dry air then passes through an after-filter to remove any particulates generated by the dryer bed. Normally one set of dryers is in service with the other in standby.

Reason for Scope Determination

The Instrument Air System performs the following safety-related system intended function that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Provide containment isolation

The Instrument Air System does not contain any NSR components that are identified in the CLB as having the potential to prevent satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Instrument Air System does, however, contain NSR components that are attached to safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Instrument Air System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Instrument Air System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 9.3.1 describes the Instrument Air System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M015A, LR-M029C

Components Subject to AMR

Table 2.3.3-17 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-17, Aging Management Review Results – Instrument Air System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- Air operators and associated components – The Instrument Air System containment isolation valve, DB-IA2011, is an air-operated valve. This valve is normally open and fails closed. Therefore, this valve is fail-safe on loss of the control air supply. Additionally, the solenoid valve that supplies the control air to the operator fails open to vent the control air line. As such, a pressure boundary failure of any component within the control air supply will result in the isolation valve going to its safe position, and the system will perform its intended function. Therefore, the air operator and associated components are not subject to AMR.

Table 2.3.3-17
Instrument Air System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Drain Trap Body	Structural integrity
Moisture Separator Body	Structural integrity
Piping	Pressure boundary Structural integrity
Tubing	Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.18 Makeup and Purification System

System Description

The Makeup and Purification System is operated during all phases of the Nuclear Steam Supply Systems (NSSS) operating life, including startup, power operation and shutdown. The system is also operated during refueling by employing the purification equipment through interconnections to the Decay Heat Removal and Low Pressure Injection System. During reactor operation, the system is designed to serve multiple functions.

The Makeup and Purification System is designed to control the RCS inventory during all phases of normal reactor operation. The system operates in conjunction with the pressurizer to accommodate changes in the reactor coolant volume due to small temperature changes. The system also serves to receive, purify, and recirculate reactor coolant water during reactor operation.

Proper chemistry in the RCS is maintained by the Makeup and Purification System. The system serves to maintain the required boron concentration in order to control reactivity and adds borated water to the core flooding tanks. The system also serves to maintain the proper concentration of hydrogen and hydrazine for oxygen control, lithium for pH control, and to degas the RCS.

In addition, the Makeup and Purification System also serves to supply high pressure water from the makeup tank to the seals of the reactor coolant pumps. Seal water is supplied continuously by one of the makeup pumps. The system also provides makeup to the RCS for protection against small breaks in the RCS pressure boundary. In the event of a loss of all secondary side cooling, the Makeup and Purification System operates to provide feed and bleed capability to maintain core cooling.

Reason for Scope Determination

The Makeup and Purification System performs the following safety-related system intended function that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Provide containment isolation

The Makeup and Purification System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Makeup and Purification System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Makeup and Purification System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Makeup and Purification System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48), Environmental Qualification (10 CFR 50.49), and Station Blackout (10 CFR 50.63) regulated events.

USAR References

USAR Section 9.3.4 describes the Makeup and Purification System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M031A, LR-M031B, LR-M031C, LR-M033B, LR-M033C, LR-M036B, LR-M037E, LR-M039A, LR-M040D, LR-M042C, LR-M045, LR-OS002

Components Subject to AMR

Table 2.3.3-18 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-18, Aging Management Review Results – Makeup and Purification System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- Component filter media are evaluated as short-lived components (consumables), not subject to AMR. Note that the housings for the purification demineralizer filter (DB-F-35) and seal injection filters (DB-F59-1 and 2) serve a pressure boundary function and are subject to AMR. The housings for the makeup filters (DB-F12-1 and 2) serve a structural integrity function and are also subject to AMR.
- The letdown coolers (DB-E25-1 & 2) are replaced periodically, and are evaluated as short-lived components (consumables). Therefore, the letdown coolers (DB-E25-1 & 2) are not subject to AMR.
- Makeup pump (DB-P37-1 and DB-P37-2) bearings and speed increaser gear are not subject to AMR because they are active components that perform their function with moving parts. However, the housings for these components are subject to AMR since they are part of the pressure boundary for the makeup pump lubrication oil system.
- Valve actuator housings are evaluated as active components, and as such are not subject to AMR.

Table 2.3.3-18
Makeup and Purification System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bearing Housing	Pressure boundary
Bolting	Pressure boundary Structural integrity
Filter Housing	Pressure boundary
Gear Housing	Pressure boundary
Heat Exchanger (channel, shell, tubesheet) – Makeup pump lube oil coolers (DB-E188-1 & 2 and DB-E212-1 & 2)	Pressure boundary
Heat Exchanger (channel, shell, tubesheet) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary
Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Heat transfer Pressure boundary
Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Heat transfer Pressure boundary
Orifice	Pressure boundary Structural integrity Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – Makeup pump lubrication oil pumps (DB-P371A-D & DB-P372A-D)	Pressure boundary
Pump Casing – Makeup Pumps (DB-P37-1 & 2)	Pressure boundary
Strainer (body)	Pressure boundary
Strainer (screen)	Filtration
Tank – Air volume tanks	Pressure boundary
Tank – Air volume tanks (DB-T6406 & DB-T6407)	Pressure boundary

**Table 2.3.3-18 (Continued)
Makeup and Purification System
Components Subject to Aging Management Review**

Component Type	Intended Function (as defined in Table 2.0-1)
Tank – Makeup pump lubricating oil reservoir	Pressure boundary
Tank – Makeup storage tank (DB-T4_MU)	Pressure boundary
Tank – Purification demineralizers (DB-T5-1, 2, & 3)	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity
Venturi	Pressure boundary Structural integrity Throttling

2.3.3.19 Makeup Water Treatment System

System Description

Two water treatment feed pumps located in the Intake Structure supply lake water to a vendor supplied demineralized water system. Normally one pump is in operation with the other pump on standby. The water is filtered by basket strainers, chlorinated in chlorine detention tanks, and sent to the vendor system.

Water is provided from the Carroll Township water system. The fire water storage tank is supplied from the discharge of the clearwell transfer pumps.

Reason for Scope Determination

The Makeup Water Treatment System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Makeup Water Treatment System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Makeup Water Treatment System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Makeup Water Treatment System satisfies the scoping criteria of 10 CFR 54.4(a)(2)

The Makeup Water Treatment System is not relied upon to demonstrate compliance with, and does not satisfy the 10 CFR 54.4(a)(3) scoping criteria for, any regulated events.

USAR References

USAR Section 9.2.3 describes the Makeup Water Treatment System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M011

Components Subject to AMR

Table 2.3.3-19 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-19, Aging Management Review Results – Makeup Water Treatment System, provides the results of the AMR.

Table 2.3.3-19
Makeup Water Treatment System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Structural integrity
Piping	Structural integrity
Tubing	Structural integrity
Valve Body	Structural integrity

2.3.3.20 Miscellaneous Building HVAC System

System Description

The Miscellaneous Building HVAC System consists of the Intake Structure H&V and SBODG Room HVAC. Each of the subsystems is discussed below.

Intake Structure H&V – The intake structure ventilation system is designed to maintain the service water pump room between 40°F and 104°F and the diesel fire pump room between 40°F and 120°F year round for all modes of operation including post-accident at design outside conditions. The system consists of four safety-related ventilation fans with associated temperature switches and controls. Each fan is sized at 50% of capacity needed to maintain the above room temperatures. Each channel of fans is started automatically by temperature switches at a predetermined temperature setpoint. The missile protected supply air penthouse is sized to ensure adequate supply air with all four supply fans operating simultaneously.

SBODG Room HVAC – Five wall fire dampers and two room exhaust fans in the SBODG room are required to operate to demonstrate the functionality of the SBODG.

Reason for Scope Determination

The Miscellaneous Building HVAC System performs the following safety-related system intended function that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Maintain a suitable environment inside the service water pump room and the fire pump room to ensure that the service water pumps, fire pump, and electrical distribution equipment can perform their intended functions

The Miscellaneous Building HVAC System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Also, the Miscellaneous Building HVAC System does not contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Miscellaneous Building HVAC System does not satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The Miscellaneous Building HVAC System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48), Environmental Qualification (10 CFR 50.49), and Station Blackout (10 CFR 50.63) regulated events.

USAR References

USAR Section 9.4.5 describes the Miscellaneous Building HVAC System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M026B, LR-M026B01

Components Subject to AMR

Table 2.3.3-20 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-20, Aging Management Review Results – Miscellaneous Building HVAC System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, dampers (except housings), and fans (except housings), the following components are within the scope of license renewal, but are not subject to AMR:

- The housings of the roof mounted exhaust fans for the traveling screen area (DB-C100) and for the station blackout diesel room (DB-C152-1 & 2) have no passive pressure boundary function for license renewal; air is moved by the active components of the fans, and the air would move without the housing. Therefore, there are no fan housings in the Miscellaneous Building HVAC System that are subject to AMR. The associated structural components (e.g., equipment component supports, vents and louvers) are subject to AMR.
- The Intake Structure fans (DB-C99-1, 2, 3, & 4) are propeller fans mounted on pedestals that blow through openings in the concrete wall, thus, there is no passive pressure boundary function for these fan housings. Therefore, these fan housings are not subject to AMR. The associated structural components (e.g., fan enclosures) are subject to AMR.

Table 2.3.3-20
Miscellaneous Building HVAC System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary
Damper Housing	Pressure boundary

2.3.3.21 Miscellaneous Liquid Radwaste System

System Description

The miscellaneous waste drain tank (MWDT) receives and collects potentially radioactive liquid waste from various sources. By original design, the liquid in the MWDT was pumped to the waste evaporator. The skid mounted demineralizer now processes liquid radwaste while the evaporator is abandoned.

The demineralizer skid consists of various filters and demineralizers that remove solid and ionic impurities from the liquid. From the skid, liquid is pumped through one of two miscellaneous waste monitor tank (MWMT) filters and is collected in the miscellaneous liquid waste monitor tank. From the monitor tank, liquid is pumped in a controlled manner to the collection box.

The detergent waste drain tank (DWDT 1-1) receives and collects potentially radioactive liquid waste from lab sinks, detergent drains, hot shower drains, and the decontamination area. Should the drain tank become full, the DWDT 1-1 holdup tank can accept waste while the drain tank's contents are being processed.

The liquid contents of the DWDT are normally processed through the demineralizer skid. Liquid from the DWDT may alternatively be pumped to the collection box after sampling and analysis, depending on sample results.

Numerous cross connects between the Boron Recovery System and the Miscellaneous Liquid Radwaste System were provided for processing flexibility between the systems, but liquid is never transferred from the Miscellaneous Liquid Radwaste System and the Boron Recovery System due to chemical impurities.

Reason for Scope Determination

The Miscellaneous Liquid Radwaste System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Miscellaneous Liquid Radwaste System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Miscellaneous Liquid Radwaste System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Miscellaneous Liquid Radwaste System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Miscellaneous Liquid Radwaste System is not relied upon to demonstrate compliance with, and does not satisfy the 10 CFR 54.4(a)(3) scoping criteria for, any regulated events.

USAR References

USAR Section 11.2 describes the Miscellaneous Liquid Radwaste System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M031A, LR-M033A, LR-M036A, LR-M037D, LR-M037E, LR-M037F, LR-M037G, LR-M039A, LR-M039B, LR-M045, LR-M046, LR-M281N13

Components Subject to AMR

Table 2.3.3-21 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-21, Aging Management Review Results – Miscellaneous Liquid Radwaste System, provides the results of the AMR.

Table 2.3.3-21
Miscellaneous Liquid Radwaste System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Structural integrity
Filter Body	Structural integrity
Flexible Connection	Structural integrity
Orifice	Structural integrity
Piping	Structural integrity
Pump Casing – Detergent waste drain tank pump (DB-P52_WM)	Structural integrity
Pump Casing – Miscellaneous waste drain tank pump (DB-P51_WM)	Structural integrity
Pump Casing – Miscellaneous waste monitor tank pump (DB-P54_WM)	Structural integrity
Rupture Disc	Structural integrity
Strainer (body)	Structural integrity
Tank – DWDT 1-1 (DB-T27)	Structural integrity
Tank – DWDT 1-1 hold-up tank (DB-T161)	Structural integrity
Tank – Miscellaneous liquid waste monitor tank (DB-T29)	Structural integrity
Tank – Miscellaneous waste drain tank (DB-T26)	Structural integrity
Tank – Miscellaneous waste evaporator storage tank (DB-T28)	Structural integrity
Tank – Radwaste demineralizer skid vessel (1, 2, 3, 4 & 5)	Structural integrity
Tank – Waste polishing demineralizer (DB-T125)	Structural integrity
Tubing	Structural integrity
Valve Body	Structural integrity

2.3.3.22 Nitrogen Gas System

System Description

The Nitrogen Gas System supplies nitrogen to various plant components from two primary sources: the Cryogenic Nitrogen Storage System and the High Pressure Nitrogen Storage System. Nitrogen is used for a variety of purposes, including acting as a cover gas on components to exclude oxygen and pressurizing tanks and demineralizers to act as the motive force for expelling the tank's contents.

Reason for Scope Determination

The Nitrogen Gas System performs the following safety-related system intended function that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Provide containment isolation

The Nitrogen Gas System does not contain any NSR components that are identified in the CLB as having the potential to prevent satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Nitrogen Gas System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Nitrogen Gas System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Nitrogen Gas System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Figure 7.3-9 describes the Nitrogen Gas System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M019, LR-M030A

Components Subject to AMR

Table 2.3.3-22 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-22, Aging Management Review Results – Nitrogen Gas System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- Air operators and associated components – The 100 psig nitrogen header containment isolation station air valve, DB-NN236, is an air-operated valve. This valve is normally open and fails closed on loss of the control air supply. Additionally, the solenoid valve that supplies the control air to the operator fails open to vent the control air line. As such, a pressure boundary failure of any component within the control air supply will result in the isolation valve going to its safe position, and the system will perform its intended function. Therefore, the air operator and associated components are not subject to AMR.

Table 2.3.3-22
Nitrogen Gas System
Components Subject to Aging Management Review

Component Type	**Intended Function (as defined in Table 2.0-1)**
Bolting	Pressure boundary Structural integrity
Piping	Pressure boundary Structural integrity
Tubing	Pressure boundary
Valve Body	Pressure boundary Structural integrity

2.3.3.23 Process and Area Radiation Monitoring System

System Description

The Process and Area Radiation Monitoring System includes the Process Radiation Monitoring System and the Area Radiation Monitoring System.

The Process Radiation Monitoring System is designed to continuously detect, compute, display, and record the level of radioactivity in certain processes and all effluent pathways in accordance with the requirements of 10 CFR 20, 10 CFR 50, and Safety Guide 21. The system also provides alarms in the Control Room and other designated areas when the radioactivity level increases beyond the set point of the monitors. It also initiates protective functions to maintain process and effluent radioactive levels within acceptable limits.

The Area Radiation Monitoring System is designed to continuously detect and compute the level of radiation in certain areas. The system also provides alarms in the Control Room and the monitored areas to warn personnel of increasing radiation that may be detrimental to their health when the radiation level increases beyond the setpoint of the monitor.

The detector, on being exposed to a radioactive environment, produces minute voltage pulses in proportion to the radiation level. These pulses are conditioned by the preamplifier, and a corresponding signal is sent to a readout module which displays the radiation level on a graduated scale. The readout module also has the capability to alarm on exceeding a preset radiation level and to provide output signals to a remote device, such as a computer or recorder. The area monitors consist of two types, Geiger-Mueller detectors and ionization chamber detectors.

Reason for Scope Determination

The Process and Area Radiation Monitoring System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Continuously monitor levels of radioactivity, provide alarm indications of all monitored levels, and initiate protective functions, as required:
    - Monitor and indicate radiation levels in designated process streams and provide output control signals (RE1412, RE1413, RE8446, and RE8447)
    - Monitor and indicate containment vessel accident/post-accident radiation levels (RE4596A and RE4596B)
    - Monitor and indicate one noble gas channel and one particulate channel in designated process streams (RE4597AA and RE4597BA)
    - Monitor and indicate containment vessel accident/post-accident radiation levels (RE4597AB and RE4597BB)

- Monitor and indicate one noble gas channel in designated process streams and provide output control signals (RE4598AA and RE4598BA)
- Monitor and indicate post-accident noble gas activity levels in designated process streams and provide output control signals (RE4598AB and RE4598BB)
- Monitor and indicate post accident radiation levels in designated process streams (RE5327A, RE5327B, RE5327C, RE5328A, RE5328B, and RE5328C)

The Process and Area Radiation Monitoring System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Process and Area Radiation Monitoring System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose and failure creates a potential for spatial interaction that could or prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Process and Area Radiation Monitoring System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Process and Area Radiation Monitoring System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 11.4 describes the Process and Area Radiation Monitoring System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M027A, LR-M028D, LR-M029B, LR-M029C, LR-M036A

Components Subject to AMR

Table 2.3.3-23 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-23, Aging Management Review Results – Process and Area Radiation Monitoring System, provides the results of the AMR.

Table 2.3.3-23
Process and Area Radiation Monitoring System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary
Duct	Pressure boundary
Orifice	Pressure boundary Throttling
Piping	Pressure boundary
Pump Casing – Control room emergency ventilation system vacuum pumps (DB-MRE-5327 & 5328)	Pressure boundary
Pump Casing – Kaman radiation monitor pumps (DB-P273-1, -2, -3 & -4 and P274-1, -2, -3 & -4)	Pressure boundary
Trap Body	Pressure boundary
Tubing	Pressure boundary
Valve Body	Pressure boundary

2.3.3.24 Reactor Coolant Vent and Drain System

System Description

The Reactor Coolant Vent and Drain System includes the Reactor Coolant Drain Tank and Containment Vent Header System and the Pressurizer Quench Tank System.

Reactor Coolant Drain Tank and Containment Vent Header System – The reactor coolant drain tank (DB-T14) consolidates clean radioactive liquid effluents from many sources. The liquid is then transferred by the reactor coolant drain tank pumps (DB-P46-1 and 2) to the Clean Liquid Radioactive Waste System for processing. These effluents come from drain and bleed lines and from discharge lines of relief valves in primary plant systems.

The containment vent header collects potentially radioactive gases from the RCS vent connections, the secondary side vent of each steam generator, and the pressurizer quench tank (DB-T3) then conveys the gaseous effluent outside containment to the Gaseous Radwaste System. The containment vent header penetration has isolation valves which automatically close following a LOCA.

The containment drain header conveys fluid drained from the RCS and Core Flooding System out of containment to the reactor coolant drain tank (DB-T14). The containment drain header has isolation valves which are normally closed to prevent leakage from the RCS to the reactor coolant drain tank (DB-T14). The containment isolation valves automatically close following a SFAS actuation.

The system also serves to provide containment penetration isolation for drain and vent piping which penetrates containment to reduce containment radioactivity release following an accident.

Pressurizer Quench Tank System – The Pressurizer Quench Tank System conveys effluents released from the pressurizer power operated relief valve, vent line stop valve, and code safety valves. The pressurizer quench tank (DB-T3) uses a sparger assembly which is submerged in subcooled water to condense any steam which may be conveyed to the tank. The water in the pressurizer quench tank (DB-T3) can be cooled by circulating the water through the pressurizer quench tank cooler (DB-E36). This will be required after steam discharge to the tank, or following excessive valve leakage. The pressurizer quench tank (DB-T3) also serves as a holding tank for highly radioactive fluids from the Post Accident Sampling System following a major accident involving fuel element failure. The Pressurizer Quench Tank System pipes penetrating containment provides containment penetration isolation to reduce containment radioactivity release following a LOCA.

Reason for Scope Determination

The Reactor Coolant Vent and Drain System performs the following safety-related system intended function that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Provide containment isolation

The Reactor Coolant Vent and Drain System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Reactor Coolant Vent and Drain System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Reactor Coolant Vent and Drain System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Reactor Coolant Vent and Drain System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 5.0 describes the Reactor Coolant System, which encompasses the Reactor Coolant Vent and Drain System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M010C, LR-M030A, LR-M031C, LR-M033A, LR-M033B, LR-M033C, LR-M037D, LR-M040A, LR-M040D

Components Subject to AMR

Table 2.3.3-24 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-24, Aging Management Review Results – Reactor Coolant Vent and Drain System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The internals (tubes and tubesheets) for the quench tank cooler (DB-E36) are not subject to AMR because this heat exchanger is in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serves only a structural integrity function.

- The internals (piping) for the pressurizer quench tank (DB-T3) are not subject to AMR because this tank is in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and the tank's shell performs the structural integrity function.
- The diaphragm air operated globe valves (RC1773A and B, RC1719A and B, RC229A and B, and RC 232), as shown on LR-M040A, normally fail closed. Therefore, these valves are fail-safe on loss of the control air supply.

  Additionally, the solenoid valves that supply the control air to the air operators, which are themselves active components, fail open to vent the control air lines. As such, a pressure boundary failure of any component within the control air supply will result in the flow control valves going to their safe positions, and the system will perform its intended function. Therefore, the air operators and associated components are not subject to AMR.

Table 2.3.3-24
Reactor Coolant Vent and Drain System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Heat Exchanger (channel, shell) – Quench tank cooler (DB-E36)	Structural integrity
Orifice	Pressure boundary Structural integrity Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – Quench tank circulation pump (DB-P87)	Structural integrity
Pump Casing – Reactor coolant drain tank pumps (DB-P46-1) Quench tank circulation pump (DB-P87)	Structural integrity
Rupture Disc	Structural integrity
Tank – Pressurizer quench tank (DB-T3)	Structural integrity
Tank – Reactor coolant drain tank (DB-T14)	Structural integrity
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.25 Sampling System

System Description

The Sampling System includes the Primary Sampling System and the Secondary Sampling System.

Primary Sampling System – The Primary Sampling System is made up of the Reactor Coolant Sampling System and the Post-Accident Sampling System (PASS).

The PASS liquid provides capability to sample the RCS, Decay Heat Removal and Low Pressure Injection System, and letdown system from the Makeup and Purification System. The fluids from sample locations in these systems are routed to a sample cave through sample coolers. The sample coolers cool the sample fluid to approximately 120°F. The system is purged either to the reactor coolant drain tank or pressurizer quench tank. The system is flushed with demineralized water each time after taking a sample. In addition, the PASS liquid has the capability to obtain high pressure liquid samples in a shielded shipping cask. This shipping cask is used to transport the samples to off-site analytical laboratories.

Each primary system grab sample goes through a heat exchanger to reduce the sample temperature to approximately 120°F using component cooling water on the shell side and a pressure control valve to reduce pressure to approximately 40 psig, except the high pressure module where reactor coolant, pressurizer liquid, and vapor bomb samples are reduced to 500 psig for dissolved gas analysis.

Secondary Sampling System – The Secondary Sampling System includes the Feedwater and Steam Sampling System.

The only portions of the Feedwater and Steam Sampling System that are subject to AMR are the samples taken off of the turbine driven auxiliary feed pumps and the steam generator wet lay-up recirculation pumps.

Reason for Scope Determination

The Sampling System performs the following safety-related system intended function that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Provide containment isolation

The Sampling System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Sampling System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Sampling System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Sampling System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 9.3.2 describes the Sampling System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M006D, LR-M007B, LR-M010D, LR-M031A, LR-M033A, LR-M035, LR-M036A, LR-M036C, LR-M037C, LR-M037D, LR-M037E, LR-M037F, LR-M037G, LR-M037H, LR-M038B, LR-M039A, LR-M039B, LR-M040A, LR-M042B, LR-M042C, LR-M045, LR-M046

Components Subject to AMR

Table 2.3.3-25 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-25, Aging Management Review Results – Sampling System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The internals (tubes) for the PASS sample coolers (DB-E144-1, 2, 3, and 4), reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204, and 205), and local grab sample coolers are not subject to AMR because these heat exchangers are in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.
- Air operators and associated components – The pressurizer quench tank Sample isolation valves, DB-SS235A and DB-SS235B, are air-operated valves. These valves are normally closed and fail closed on loss of the control air supply. Additionally, the solenoid valves that supply the control air to the operator fail open to vent the control air line. As such, a pressure boundary failure of any component within the control air supply will result in the isolation valve going to its safe position, and the system will perform its intended function. Therefore, the air operators and associated components are not subject to AMR.

Table 2.3.3-25
Sampling System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Heat Exchanger (shell) – Local grab sample coolers	Structural integrity
Heat Exchanger (shell) – PASS sample coolers (DB-E144-1, 2, 3 & 4)	Structural integrity
Heat Exchanger (shell) – Reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204 & 205)	Structural integrity
Orifice	Structural integrity
Piping	Pressure boundary Structural integrity
Sample Bomb	Structural integrity
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.26 Service Water System

System Description

The Service Water System is designed to serve two functions during station operation. The first function is to supply cooling water to the component cooling heat exchangers, the containment air coolers, and the cooling water heat exchangers in the Turbine Building during normal operation. The second function is to provide, through automatic valve sequencing, a redundant supply path to the engineered safety features components during an emergency. Only one path, with one service water pump, is necessary to provide adequate cooling during this mode of operation.

The Seismic Class I service water pumps are sized to provide cooling water to the component cooling heat exchangers, containment air coolers, and the emergency core cooling system room cooling coils. Two redundant pumps, of 100% capacity each, are provided to back up the operating pump.

The Service Water System also provides a backup source of water to the Auxiliary Feedwater System and the motor-driven feedwater pump (MDFP). During normal operation service water discharge provides makeup for the Circulating Water System.

The portion of the system required for emergency operation, including the Intake Structure, is designed to the ASME Code, Section III, Nuclear Class 3 and Seismic Class I, as applicable. This design includes protection from a tornado and tornado missiles. The associated containment penetrations are Nuclear Class 2.

Three service water pumps are part of the system. They are installed in the Intake Structure and use Lake Erie as a source of water. The Intake Structure is chlorinated to prevent slime and algae growth in the system. Two pumps are used in normal operation. Motor-operated strainers at the pump outlets filter any material that may plug heat exchanger tubes and the orifices of the auxiliary feedwater pump bearing oil cooler, turbine bearing cooler, and governor oil cooler.

The combined flow leaving the system is normally returned to the Circulating Water System as makeup. This flow may also be diverted to the Intake Structure to prevent icing in winter. All Seismic Class I piping which passes through the Turbine Building is enclosed in a Seismic Class I tunnel.

The service water system is designed to prevent any component failure from curtailing emergency operation. It is possible to isolate all heat exchangers and pumps on an individual basis. Additionally, the dilution pump, DB-P180, can supply water to the Service Water System from the Intake Structure in the event of a fire disabling the service water pumps.

Reason for Scope Determination

The Service Water System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide cooling water from the forebay to the following safe shutdown equipment (safety-related heat loads):
  - Containment air cooling units
  - Component cooling water heat exchangers
  - ECCS room coolers
  - Control room emergency ventilation condenser units
  - Hydrogen dilution system blowers
- Provide the safety-related backup source of water to the auxiliary feedwater pumps
- Provide containment isolation
- Isolate non-essential heat loads
- Provide backup source of makeup water to the Component Cooling Water System

The Service Water System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Service Water System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of one or more of the functions identified in 10 CFR 54.4(a)(1). Therefore, the Service Water System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Service Water System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48), Environmental Qualification (10 CFR 50.49), and Station Blackout (10 CFR 50.63) regulated events.

USAR References

USAR Section 9.2.1 describes the Service Water System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M006D, LR-M036A, LR-M036B, LR-M041A, LR-M041B, LR-M041C

Components Subject to AMR

Table 2.3.3-26 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-26, Aging Management Review Results – Service Water System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The radiation element (DB-RE8432), as a radiation monitor, does not meet the requirements of 10 CFR 54.21(a)(1)(i).
- The bolting in the service water pumps and dilution pump (DB-P3-1 through 3 and DB-P180) is within the scope of license renewal. However, in the process of rebuilding the pumps, the bolting is inspected and repaired or replaced as necessary. As such the pump bolting is evaluated as short-lived, subject to replacement based on a qualified life or specified time period, and is not subject to AMR.
- The rubber hoses attached to the service water pumps and dilution pump (DB-P3-1 through 3), the strainers downstream of the pumps (DB-F15-1 through 3), and the radiation element (DB-RE8432) are installed for housekeeping purposes to direct packing leak-off to floor drains, and perform no license renewal intended function. Therefore, the rubber hoses are not subject to AMR.
- The nitrogen bottles (DB-T1356 through 1358) supplying DB-SW1356 through 1358 are within the scope of license renewal. The principal design criterion for these bottles is Department of Transportation (DOT) Standards 3AA2015. The nitrogen bottles comply with the requirements of this standard. The bottles are evaluated as consumables, replaced periodically, and not subject to AMR.
- The valve actuator housings for the valves DB-SW1356 through 1358 and DB-SW1424, DB-SW1429, and DB-SW1434 are evaluated as active components, and as such are not subject to AMR.

Table 2.3.3-26
Service Water System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Expansion Joint	Pressure boundary
Flow Element	Pressure boundary Throttling
Orifice	Pressure boundary Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – Dilution pump (DB-P180)	Pressure boundary
Pump Casing – Service water pumps (DB-P3-1, 2 & 3)	Pressure boundary
Strainer (body, tubesheet)	Pressure boundary
Strainer (screen, tubes)	Filtration
Tank	Pressure boundary
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.27 Spent Fuel Pool Cooling and Cleanup System

System Description

The Spent Fuel Pool Cooling and Cleanup System serves two main functions. The first function is to remove the decay heat generated by spent fuel stored in the pool as a result of normal refueling conditions. The second function is to provide purification of the spent fuel cooling water.

The decay heat removal function is accomplished by recirculating spent fuel cooling water from the spent fuel pool through the spent fuel pool pumps (DB-P44-1 and 2), the spent fuel cooling heat exchangers (DB-E23-1 and 2) and then back to the pool. The spent fuel pool pumps take suction from the pool, circulate the pool water through the tubeside of two heat exchangers, and discharge back to the pool.

The cleanup function is accomplished by a bypass purification system. The bypass loop branches off from the spent fuel pool pump discharge cross-connect line, bypassing the heat exchangers. After demineralizing and filtering, the bypass flow is directed into the normal line downstream of the heat exchanger and returns to the pool.

Reason for Scope Determination

The Spent Fuel Pool Cooling and Cleanup System performs the following safety-related system intended functions that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Provide containment isolation
- Provide a flow path to and from the Decay Heat Removal System (safety-related backup)

The Spent Fuel Pool Cooling and Cleanup System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Spent Fuel Pool Cooling and Cleanup System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Spent Fuel Pool Cooling and Cleanup System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Spent Fuel Pool Cooling and Cleanup System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 9.1.3 describes the Spent Fuel Pool Cooling and Cleanup System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M033A, LR-M033B, LR-M033C, LR-M035, LR-M036C, LR-M039A, LR-M045

Components Subject to AMR

Table 2.3.3-27 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-27, Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The internals (tubes and tubesheets) for the spent fuel pool heat exchangers (DB-E23-1 and 2) are not subject to AMR because these heat exchangers are in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.
- The internals for the spent fuel pool skimmer filter (DB-F4), refueling canal skimmer filter (DB-F44) and spent fuel pool filter (DB-F3), and for strainers (DB-S379 & DB-S380), are not subject to AMR because these filters and strainers are in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.

Table 2.3.3-27
Spent Fuel Pool Cooling and Cleanup System
Components Subject to Aging Management Review

Component Type	**Intended Function (as defined in Table 2.0-1)**
Bolting	Pressure boundary Structural integrity
Filter Housing	Structural integrity
Heat Exchanger (channel, shell) – Spent fuel pool heat exchangers (DB-E23-1 & 2)	Structural integrity
Orifice	Structural integrity
Piping	Pressure boundary Structural integrity
Pump Casing – Spent fuel pool pumps (DB-P44-1 & 2) Spent fuel pool skimmer pump (DB-P45), Refueling canal skimmer pump (DB-P134)	Structural integrity
Strainer (body)	Structural Integrity
Tank – Spent fuel pool demineralizer (DB-T18)	Structural integrity
Tubing	Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.28 Spent Resin Transfer System

System Description

A spent resin storage tank receives and collects spent resin from various demineralizers. A spent resin tank overflow pump transfers excess liquid from the storage tank, through a spent resin tank strainer, to the MWDT. One of two spent resin transfer pumps is used to transfer spent resin from the spent resin storage tank through the drumming station to a high integrity container. Two resin fill tanks are used to fill demineralizers with fresh resin.

The drumming station is no longer used for processing of solid radwaste. Instead, the spent resin is transferred directly to a high integrity container which is placed inside a transfer cask to reduce radiation levels to operating personnel.

Reason for Scope Determination

The Spent Resin Transfer System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Spent Resin Transfer System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Spent Resin Transfer System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Spent Resin Transfer System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Spent Resin Transfer System is not relied upon to demonstrate compliance with, and does not satisfy the 10 CFR 54.4(a)(3) scoping criteria for, any regulated events.

USAR References

USAR Figure 11.2-2 and Section 11.5.3 describe the Spent Resin Transfer System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M031A, LR-M035, LR-M037C, LR-M037E, LR-M039B, LR-M047

Components Subject to AMR

Table 2.3.3-28 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-28, Aging Management Review Results – Spent Resin Transfer System, provides the results of the AMR.

Table 2.3.3-28
Spent Resin Transfer System
Components Subject to Aging Management Review

Component Type	**Intended Function (as defined in Table 2.0-1)**
Bolting	Structural integrity
Flexible Connection	Structural integrity
Orifice	Structural integrity
Piping	Structural integrity
Pump Casing – Spent resin tank overflow pump (DB-P140)	Structural integrity
Pump Casing – Spent resin transfer pump (DB-P121-1 & 2)	Structural integrity
Rupture Disc	Structural integrity
Strainer (body)	Structural integrity
Tank – Resin fill tank (DB-T17-1 & 2)	Structural integrity
Tank – Spent resin storage tank (DB-T22)	Structural integrity
Tubing	Structural integrity
Valve Body	Structural integrity

2.3.3.29 Station Air System

System Description

The Station Air System provides clean compressed air for maintenance, testing, fuel oil atomizing, air operated pumps, and other miscellaneous activities. The Station Air System consists of two station air compressors, each capable of supplying all of the plant station and instrument air requirements. During normal operation, one station air compressor will operate to supply station and instrument air requirements, with the other in standby mode. A temporary air compressor can also be utilized to feed the Station Air System through an external isolation valve.

Reason for Scope Determination

The Station Air System performs the following safety-related system intended function that satisfies the scoping criteria of 10 CFR 54.4(a)(1):

- Provide containment isolation

The Station Air System does not contain any NSR components that are identified in the CLB as having the potential to prevent satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Station Air System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Station Air System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Station Air System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 9.3.1 describes the Station Air System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M015D

Components Subject to AMR

Table 2.3.3-29 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-29, Aging Management Review Results – Station Air System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- Air operators and associated components – The Station Air System containment isolation valve, DB-SA2010, is an air-operated valve. This valve is normally closed and fails closed on loss of the control air supply. Additionally, the solenoid valve that supplies the control air to the operator fails open to vent the control air line. As such, a pressure boundary failure of any component within the control air supply will result in the isolation valve going to its safe position, and the system will perform its intended function. Therefore, the air operator and associated components are not subject to AMR.
- Component filter media are evaluated as short lived components (consumables), not subject to AMR. Note that the housing for the station air to containment filter (DB-F86) serves a structural integrity function and is subject to AMR.

Table 2.3.3-29
Station Air System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Filter Housing	Structural integrity
Piping	Pressure boundary Structural integrity
Tubing	Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.30 Station Blackout Diesel Generator System

System Description

A Station Blackout Diesel Generator (SBODG) is provided to supply power to non-essential bus D2 and essential buses D1 or C1 in the event of a Station Blackout (SBO). The SBODG has the capability of manually starting and loading from the Control Room within 10 minutes of this event. There are no automatic start features or loading sequencers associated with the SBODG.

SBODG Air Start System – The air start system consists of the common air compressors, two air receivers, and associated regulating valves, solenoid valves, relay valves, and air start motors. Nominal system pressure ranges from 220 to 250 psig up to the pressure regulator. Acceptable operating pressure downstream of the pressure regulator is 180 +/- 15 psig.

Each air compressor can supply one or both air receivers. The starting air compressors have sufficient capacity to recharge one or both air receivers from 210 to 250 psig air pressure in not more than 30 minutes.

The discharge of each compressor can be connected to either or both air receivers. The air compressors are automatically controlled only by their associated air receiver pressure.

Each of the two air receivers has a capacity of 32 cubic feet, sufficient to provide four starts to the SBODG before recharging. Both air receivers can be aligned to individually supply the SBODG air start motors, or they can be cross-connected in parallel.

SBODG Lubrication System – The SBODG is identical to the emergency diesel generator lube oil system described in Section 2.3.3.12, except for the following differences:

- The AC soakback (circulating) and turbocharger lube oil pumps run continuously while the SBODG is in standby. When a local or remote start signal is received, the AC soakback and AC turbocharger pumps turn off and the DC turbocharger pump turns on. The DC turbocharger pump will run for thirty seconds to allow oil pressure to build-up on the turbocharger bearings, then the engine will start. The basis for this is that during a loss of offsite power event, the SBODG may be without lubrication for a significant amount of time. The DC turbocharger pump cannot be allowed to run continuously on low AC turbocharger discharge pressure since this may seriously drain the SBODG batteries. Thus the timing circuit ensures the turbocharger bearings receive sufficient lubrication regardless of any start scenario.

- After the SBODG shutdown, the DC turbocharger pump will run for an additional ten minutes to ensure the bearings receive sufficient cooling if all power is not available.
- The SBODG lube oil sump is identical to the emergency diesel generator's except that it has a 349 gallon capacity.

SBODG Jacket Water System – Jacket cooling water is circulated in a closed loop through the engine lubricating oil cooler, the engine cooling water passages, the air intake intercooler and the radiator. To allow sufficient time to energize the SBODG bus D3 and the radiator fans the SBODG can operate for approximately 3 minutes at startup and 1 minute at full load without radiator fans running.

The expansion tank provides a 77 gallon surge volume for the closed system. Its location provides net positive suction head (NPSH) for the cooling water pumps, and is slightly higher than the radiator. A pressure cap is installed on the expansion tank to limit the system pressure to seven psig and reduce water loss due to evaporation. A low level alarm is installed to warn the operator of a coolant leak.

Two single-stage, centrifugal pumps provide the driving head for the system. They are engine-driven pumps that supply their respective sides of the engine.

An external horizontally mounted radiator is used to provide cooling for the SBODG. Two fans are utilized to force air over the cooling coils to aid in heat removal. These fans start automatically when an SBODG start signal is received. If the fans are out of service, and the SBODG must be run, most of the engine cooling can be provided by spraying water on to the radiator coils. Engine load capacity in this case will have to be limited to prevent engine overheating depending on weather conditions.

The SBODG immersion heater functions the same as the emergency diesel generator's with the exception that the SBODG maintains the temperature at 125°F to 155°F.

SBODG Fuel Oil System – The 2,000 gallon fuel oil day tank has sufficient capacity to supply at least four hours of SBODG runtime during a blackout event, and an additional four hours for testing. The tank can only be refilled from an external manual fuel hose connection. There are no provisions provided to directly fill this tank from either the 100,000 gallon fuel oil storage tank or the two emergency diesel generator 40,000 gallon fuel oil storage (week) tanks.

The SBODG is supplied with fuel from two fuel oil pumps mounted on the engine skid. One pump is an engine driven pump, while the other is driven by a DC motor. Either pump is sufficient to supply fuel for engine operation and injector lubrication. The pump suctions are continuously flooded.

SBODG Air Intake and Exhaust – Engine combustion air is drawn through a roof-mounted air inlet, and goes through a replaceable dry-type air filter. The filtered air enters the turbocharger, where its pressure is increased. The air is cooled on its way to the cylinders by the aftercoolers. The aftercoolers use the engine cooling water system to remove the heat of compression and increase the air density. The air is then blown into the cylinders for combustion and exhaust gas removal.

Each cylinder exhausts to a central manifold and is then directed though the turbine end of the turbocharger. The turbine vanes are protected by an exhaust screen, which includes a trap to remove foreign material from the gas flow. An inspection port is provided in the exhaust manifold shroud to allow screen inspection without removal. The exhaust gas is used to drive the turbocharger. The exhaust is directed to a silencer on the roof. There is sufficient separation between the intake and exhaust to minimize the amount of exhaust recirculation into the intake.

The turbocharger is an air pump used to increase engine efficiency and horsepower. During startup and low load conditions, the turbocharger is driven by the engine. When sufficient exhaust energy is available (approximately 2,300 kW), the turbocharger speed increases and disengages from the engine though an overrunning clutch.

Reason for Scope Determination

The Station Blackout Diesel Generator System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Station Blackout Diesel Generator System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Station Blackout Diesel Generator System does not contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Station Blackout Diesel Generator System does not satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The Station Blackout Diesel Generator System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Station Blackout (10 CFR 50.63) regulated event.

USAR References

USAR Section 8.3.1.1.4.2 describes the Station Blackout Diesel Generator System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M017D

Components Subject to AMR

Table 2.3.3-30 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-30, Aging Management Review Results – Station Blackout Diesel Generator System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The SBODG engine and generator are active components and not subject to AMR. The diesel engine boundary extends to the interfaces with the jacket water, intake and exhaust, lubricating oil, and starting air subsystems. The diesel engine boundary includes the engine, intake and exhaust manifolds, gear housings, lube oil pan (crankcase), and the fuel injectors.

- The SBODG main, turbo and aux turbo lubricating oil filter media (DB-F152 through 154) are replaced periodically. Also the air intake filter media are replaced periodically. As such they are short-lived components and not subject to AMR.

- The SBODG fuel oil filter media (DB-F148 and 149) are replaced periodically. As such they are short-lived components and not subject to AMR.

- The SBODG circulating (i.e., soakback) oil pump (DB-P280B) is replaced periodically. As such it is a short-lived component and not subject to AMR.

- The SBODG air line lubricators (DB-S435 and 436) are replaced or rebuilt periodically. As such they are short-lived components and not subject to AMR.

- The SBODG AC turbo lube oil pump (DB-P280A) is replaced periodically. As such it is short-lived component and not subject to AMR.

- The SBODG immersion heater element is replaced periodically. As such it is a short-lived component and not subject to AMR.

- The SBODG jacket water pumps (DB-P284-1 and 2) are replaced periodically. As such they are short-lived components and not subject to AMR.

- The SBODG engine-driven fuel oil pump (DB-P281-1) is replaced periodically. As such it is a short-lived component and not subject to AMR.

- The SBODG air start flexible hoses are replaced periodically. As such they are short-lived components and not subject to AMR.
- The SBODG air start motors (DB-S437 through 440) are replaced periodically. As such they are short-lived components and not subject to AMR.
- The SBODG fuel oil, jacket water, and lube oil flexible connections (including instrumentation hoses), which not all are shown on LR-M017D, are replaced periodically. As such they are short-lived components and not subject to AMR. This does not include the flexible connections between the SBODG and the SBODG day tank (DB-T210) and those between the SBODG radiator (DB-E211) and jacket water system. In addition, the flexible connection between the secondary strainer (DB-F149) and fuel priming pump (DB-P281-2) is not replaced.

Table 2.3.3-30
Station Blackout Diesel Generator System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary
Compressor Casing – Turbocharger	Pressure boundary
Filter Body	Pressure boundary
Flexible Connection	Pressure boundary
Heat Exchanger (channel, tubesheet) – Radiator (DB-E211)	Pressure boundary
Heat Exchanger (fins) – Radiator (DB-E211)	Heat transfer
Heat Exchanger (shell) – Aftercooler (DB-E215-1 & 2)	Pressure boundary
Heat Exchanger (shell) – Lube oil cooler (DB-E214)	Pressure boundary
Heat Exchanger (shell) – SBO diesel lube oil immersion heater (DB-E216)	Pressure boundary
Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Heat transfer Pressure boundary
Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Heat transfer Pressure boundary
Heat Exchanger (tubes) – Radiator (DB-E211)	Heat transfer Pressure boundary

Table 2.3.3-30 (Continued)
Station Blackout Diesel Generator System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Orifice	Pressure boundary Throttling
Piping	Pressure boundary
Pump Casing – DC turbocharger lube pump (DB-P280C)	Pressure boundary
Pump Casing – Engine-driven main lube oil pump (DB-P286A)	Pressure boundary
Pump Casing – Engine-driven piston cooling oil pump (DB-P286B)	Pressure boundary
Pump Casing – Engine-driven scavenge pump (DB-P286C)	Pressure boundary
Pump Casing – Fuel priming pump (DB-P281-2)	Pressure boundary
Silencer (exhaust)	Pressure boundary
Strainer (body)	Pressure boundary
Strainer (screen)	Filtration
Tank – Air receiver tank (DB-T209-1 & 2)	Pressure boundary
Tank – Jacket water expansion tank	Pressure boundary
Tank – SBODG day tank (DB-T210)	Pressure boundary
Tubing	Pressure boundary
Valve Body	Pressure boundary

2.3.3.31 Station Plumbing, Drains, and Sumps System

System Description

The Auxiliary Building contains the following sumps: Auxiliary Building sumps 1-5 and ECCS sumps 1-3.

All of these sumps are located at elevation 545 feet in flood rooms. These sumps and associated sump pumps are sized to handle normal drainage, such as equipment drainage, small pipe leaks, and partial Fire Suppression System actuations. However, the sumps and sump pumps are not sized to handle major pipe ruptures or large Fire Suppression System discharges. The flood rooms accept the excess flow until such time as the sump pumps can pump the excess volume to the MWDT or, if full, to the clean waste receiver tank (CWRT).

A wafer check valve is installed in all drain lines in negative pressure areas of the Auxiliary Building that communicate with atmospheric pressure areas. The wafer valve, installed directly below the drain grates, is supported by a spring and is normally in the horizontal closed position to maintain the differential pressure boundary. The wafer valve will open when there is a small (approximately 1/4 to 3/4 inch) water accumulation on the valve disc. The wafer valve meets all quality assurance requirements and is Seismic Category I.

Drain lines from the negative pressure area of the annulus go to aux bldg sump #1, which is outside the negative pressure boundary, and ECCS sump #1, which is inside the negative pressure boundary however a drain from outside the boundary ties into the annulus drain line. The annulus drain lines are provided with swing-type check valves located on the pipe end in the sand traps in room 114 and 105. The valve is normally held closed by the weight of the disc itself, opening when there is a minimal head of water in the drain line. This provides the required isolation for the negative pressure boundary. The valves and piping to the valves are considered nuclear safety related for negative pressure boundary purposes and are Seismic Category I.

Duplex pumps are installed in each sump. This allows pump starts to be alternated between the two pumps, extending pump life and maintaining equal pump wear. When one pump cannot handle the sump volume, the second pump actuates to assist in sump fluid removal.

The Containment Building Drainage System includes floor drains, equipment drains, the normal sump, and submersible type sump pumps with associated sump level controls. The normal sump in the containment vessel is pumped directly into the MWDT or alternatively may be aligned to be pumped to the CWRT.

All floor and equipment drains, including the Containment air cooler drains, in the Containment Building discharge to the Containment Vessel normal sump.

Containment vessel normal sump pump discharge piping passes through the Containment wall. Containment isolation requirements are met. Containment isolation valves DB-DR2012A, DB-DR2012B and DB-DR2012 and bounded piping are ASME III Class 2 and Seismic Category I.

The service water valve room sump, located at elevation 566 feet, collects water from piping leaks in the valve room and service water pipe tunnel to prevent water from flooding safety-related equipment in the Service Water System. Discharge from the duplex sump pump is directly to the storm sewer.

Discharge from the intake structure sump pumps DB-P145A and DB-P145B passes through oil interceptors prior to discharge to the storm sewer. A second sump and duplex sump pumps DB-P144A and DB-P144B in the intake structure pump house valve room ensure that water is collected and removed in the event of a postulated pipe break in the service water pipe tunnel so that the safety-related service water pumps are not affected. The intake structure pump house valve room sump pumps discharge directly to the storm drain.

All roof drains are gravity flow and drain to the storm sewer.

The plant sewage collects in wet-wells and the lift stations pump the wet-well contents to the Sewage Treatment Plant for processing.

Reason for Scope Determination

The Station Plumbing, Drains, and Sumps System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Maintain the integrity of the negative pressure boundary in the shield building annulus and penetration rooms following a LOCA
- Remove water accumulation from the ECCS pump rooms
- Provide containment isolation

The Station Plumbing, Drains, and Sumps System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Station Plumbing, Drains, and Sumps System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Station Plumbing, Drains, and Sumps System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Station Plumbing, Drains, and Sumps System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Environmental Qualification (10 CFR 50.49) regulated event.

USAR References

USAR Section 9.3.3 describes the Equipment and Floor Drainage System, which is evaluated for license renewal as the Station Plumbing, Drains, and Sumps System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M033B, LR-M033C, LR-M037C, LR-M039A, LR-M041C, LR-M042C, LR-M046, LR-M090

Components Subject to AMR

Table 2.3.3-31 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-31, Aging Management Review Results – Station Plumbing, Drains, and Sumps System, provides the results of the AMR.

Table 2.3.3-31
Station Plumbing, Drains, and Sumps System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Orifice	Structural integrity
Piping	Pressure boundary Structural integrity
Pump Casing – ECCS sump pumps (DB-P89-1, 2 & 3)	Pressure boundary
Tubing	Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.3.32 Turbine Plant Cooling Water System

System Description

During normal system operation, two of the three Turbine Plant Cooling Water (TPCW) pumps draw suction from the low level cooling water tank (LLCWT) and discharge through two of the three TPCW heat exchangers to the high level cooling water tank (HLCWT). The water in the HLCWT drains by gravity through each component of the turbine plant auxiliary equipment served by the Turbine Plant Cooling Water System. As the water drains through each load, heat is transferred from that load to the Turbine Plant Cooling Water System. The warm water then drains by gravity from the individual loads to the LLCWT. The Turbine Plant Cooling Water System also provides cooling water to the startup feed pump coolers.

Reason for Scope Determination

The Turbine Plant Cooling Water System does not perform any safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1).

The Turbine Plant Cooling Water System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Turbine Plant Cooling Water System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Turbine Plant Cooling Water System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Turbine Plant Cooling Water System is not relied upon to demonstrate compliance with, and does not satisfy the 10 CFR 54.4(a)(3) scoping criteria for, any regulated events.

USAR References

USAR Sections 1.2.8.2.3 and 3.6.2.7.2.17 describe the Turbine Plant Cooling Water System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M006D, LR-M009B

Components Subject to AMR

Table 2.3.3-32 lists the component types that are subject to AMR and their intended functions.

Table 3.3.2-32, Aging Management Review Results – Turbine Plant Cooling Water System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The internals (tubes and tubesheets) for the startup feed pump lube oil cooler (DB-E30) and startup feed pump seal water cooler (DB-E99) are not subject to AMR because these heat exchangers are in scope only for potential leakage and spray considerations in accordance with 10 CFR 54.4(a)(2), and serve only a structural integrity function.

Table 2.3.3-32
Turbine Plant Cooling Water System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Structural integrity
Heat Exchanger (channel) – Startup feed pump lube oil cooler (DB-E30)	Structural integrity
Heat Exchanger (channel) – Startup feed pump seal water cooler (DB-E99)	Structural integrity
Heat Exchanger (shell) – Startup feed pump lube oil cooler (DB-E30)	Structural integrity
Heat Exchanger (shell) – Startup feed pump seal water cooler (DB-E99)	Structural integrity
Piping	Structural integrity
Tubing	Structural integrity
Valve Body	Structural integrity

2.3.4 STEAM AND POWER CONVERSION SYSTEMS

The following systems are addressed in this section:

- Auxiliary Feedwater System (Section 2.3.4.1)
- Condensate Storage System (Section 2.3.4.2)
- Main Feedwater System (Section 2.3.4.3)
- Main Steam System (Section 2.3.4.4)

2.3.4.1 Auxiliary Feedwater System

System Description

The Auxiliary Feedwater System is designed to provide feedwater to the steam generators when the turbine-driven main feedwater pumps are not available or following a loss of normal and reserve electric power. All components and piping in the system are designed to Class I requirements, except the condensate storage tank (CST) supply sources, and are tornado protected.

On station shutdown, the auxiliary feedwater pumps can be used to remove decay heat until the Decay Heat Removal and Low Pressure Injection System can be placed in service. The Auxiliary Feedwater System consists of two steam turbine-driven feedwater pumps, suction and discharge water piping, valves, and associated instrumentation and controls. The pumps take suction from the CSTs, or from the safety-related Seismic Class I Service Water System. A connection is provided to allow the Fire Protection System to supply water to the pump suctions. The turbine driver receives steam from the steam generators and exhausts to the atmosphere. The condensate storage capacity is sized so that a total condensate inventory may be available to the pumps sufficient to remove decay heat for approximately thirteen hours plus a subsequent cooldown to less than 280°F under normal conditions (i.e., no loss of offsite power). Following a complete loss of normal and reserve power, the Auxiliary Feedwater System supplies water directly to the steam generators through the auxiliary feedwater nozzles to remove reactor decay heat. Reactor decay heat removal after coastdown of the reactor coolant pumps is provided by the natural circulation characteristics of the RCS. Use of the Auxiliary Feedwater System for cooldown is discontinued when the RCS temperature decreases to about 280°F; further cooldown is accomplished by the Decay Heat Removal and Low Pressure Injection System.

The Auxiliary Feedwater System normally takes water from the CSTs, which is normally at a temperature between 50°F and 120°F.

Reason for Scope Determination

The Auxiliary Feedwater System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide a safety-related emergency source of feedwater to the steam generators for the removal of decay heat in the absence of main feedwater, and to promote natural circulation in the RCS on a loss of all four reactor coolant pumps
- Provide containment isolation

The Auxiliary Feedwater System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Auxiliary Feedwater System does, however, contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Auxiliary Feedwater System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Auxiliary Feedwater System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48), Environmental Qualification (10 CFR 50.49), and Station Blackout (10 CFR 50.63) regulated events.

<u>USAR References</u>

USAR Section 9.2.7 describes the Auxiliary Feedwater System.

<u>License Renewal Drawings</u>

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M003C, LR-M006D, LR-M007A, LR-M007B, LR-M024G, LR-M024H

<u>Components Subject to AMR</u>

Table 2.3.4-1 lists the component types that are subject to AMR and their intended functions.

Table 3.4.2-1, Aging Management Review Results – Auxiliary Feedwater System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following AFW components are within the scope of license renewal, but not subject to AMR:

- Pump seals and bearings – The seals and bearings for the auxiliary feedwater pumps (DB-P14-1 and DB-P14-2) include the mechanical seals and bearings in the flow-path of the feedwater. These seals and bearings perform their function with moving parts and are, therefore, also excluded in 10 CFR 54.21(a)(1)(i). As such, the pump seals and bearings (including their integral parts) are not subject to AMR.
- Filter media are short-lived components (consumables), not subject to an AMR. Note that the filter housings do have a pressure boundary function and are subject to AMR.

Table 2.3.4-1
Auxiliary Feedwater System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Flow Element	Pressure boundary Throttling
Heat Exchanger (casing) – AFW pump oil coolers	Pressure boundary
Heat Exchanger (fins) – AFW pump oil coolers	Heat transfer
Heat Exchanger (tubes) – AFW pump oil coolers	Heat transfer Pressure boundary
Orifice	Pressure boundary Structural integrity Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – AFW pumps (DB-P14-1 & 2)	Pressure boundary
Strainer (body)	Pressure boundary
Strainer (screen)	Filtration
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.4.2 Condensate Storage System

System Description

The CSTs provide the primary water source for the Auxiliary Feedwater System. The capacity is based on an assumed available inventory sufficient to remove decay heat for thirteen hours plus a subsequent RCS cooldown to less than 280°F, under normal conditions.

The Condensate Storage System is exposed to ambient conditions of 50°F to 120°F and 100% humidity.

Two 250,000-gallon tanks are provided. The tanks are located within a building adjacent to the Turbine Building. Normally, both tanks are in use, being interconnected by piping and normally locked-opened isolation valves. The tanks provide the suction of the auxiliary feed pumps, motor-driven feed pump, and startup feedwater pump.

Level is normally maintained by makeup directly from the 140,000-gallon demineralized water storage tank. The capability also exists to provide makeup through the condenser hotwell. Three 200 gallon per minute demineralized water transfer pumps are available for makeup supply to the tanks with interlocks permitting any two of the pumps to be operating. The pumps are available provided a sufficient level is maintained in the demineralized water storage tank.

The Condensate Storage System consists of two CSTs, supply and return water piping, valves, and associated instrumentation and controls.

Reason for Scope Determination

The Condensate Storage System does not perform any safety-related system intended functions that satisfy the scoping criteria in 10 CFR 54.4(a)(1).

The Condensate Storage System does not contain any NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). The Condensate Storage System does not contain NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1). Therefore, the Condensate Storage System does not satisfy the scoping criteria of 10 CFR 54.4(a)(2).

The Condensate Storage System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) and Station Blackout (10 CFR 50.63) regulated events.

USAR References

USAR Section 9.2.6 describes the Condensate Storage System.

License Renewal Drawings

The following license renewal drawing depicts the evaluation boundaries for the system components within the scope of license renewal:

LR-M006E

Components Subject to AMR

Table 2.3.4-2 lists the component types that are subject to AMR and their intended functions.

Table 3.4.2-2, Aging Management Review Results – Condensate Storage, provides the results of the AMR.

Table 2.3.4-2
Condensate Storage System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary
Piping	Pressure boundary
Tank – Condensate storage tanks (DB-T31-1 & 2)	Pressure boundary
Tubing	Pressure boundary
Valve Body	Pressure boundary

2.3.4.3 Main Feedwater System

System Description

The Main Feedwater System is a closed system with deaeration accomplished in the main condenser and two one-half capacity deaerators. Six stages of feedwater heating (including the deaerators) are incorporated. Chemical injection is provided for pH control and oxygen removal. Condensate polishing demineralizers provide impurity control. The feed pump system takes suction from the deaerators through two low speed booster pumps driven through gear reduction units from the feed pump driving turbines. The booster pumps discharge into the full speed feed pumps direct-connected to the driving turbines. These turbines are variable speed units controlled by the Integrated Control System, which controls feedwater flow to the two steam generators. There are individual control valves to each steam generator to divide flow between the steam generators. In addition to the two turbine-driven main feedwater pumps, a MDFP is installed to provide feedwater to the steam generators during plant startup and shutdown and for oxygen removal during feedwater cleanup. The startup feed pump (SUFP) may be used as a backup to the MDFP in Modes 4, 5, and 6.

Reason for Scope Determination

The Main Feedwater System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide feedwater isolation
- Provide containment isolation

The Main Feedwater System contains NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of a function identified in 10 CFR 54.4(a)(1):

- Provide feedwater isolation (main and start-up control valves)

The Main Feedwater System also contains NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of one or more of the functions identified in 10 CFR 54.4(a)(1). Therefore, the Main Feedwater System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Main Feedwater System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48) and Environmental Qualification (10 CFR 50.49) regulated events.

USAR References

USAR Section 10.4.7.2 describes the Main Feedwater System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M006D, LR-M007A, LR-M007B, LR-M041B, LR-M024G, LR-M024H

Components Subject to AMR

Table 2.3.4-3 lists the component types that are subject to AMR and their intended functions.

Table 3.4.2-3, Aging Management Review Results – Main Feedwater System, provides the results of the AMR.

Table 2.3.4-3
Main Feedwater System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Filter Housing	Pressure boundary Structural integrity
Heat Exchanger (casing, tubesheet) – MDFP LO cooler (DB-E183)	Pressure boundary
Heat Exchanger (casing, tubesheet) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary
Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Heat transfer Pressure boundary
Heat Exchanger (tubes) – MDFP seal water coolers (DB-184-1 & 2)	Heat transfer Pressure boundary
Orifice	Pressure boundary Structural integrity Throttling
Piping	Pressure boundary Structural integrity
Pump Casing – MDFP (DB-P241)	Pressure boundary
Pump Casing – Motor driven MDFP LO pump (DB-P242-1)	Pressure boundary
Pump Casing – Shaft driven MDFP LO pump (DB-P242-2)	Pressure boundary
Pump Casing – Motor driven SUFP LO pump	Structural integrity
Pump Casing – Shaft driven SUFP LO pump	Structural integrity
Pump Casing – SUFP (DB-P15)	Structural integrity
Tank – Air volume tank	Pressure boundary
Tank – MDFP LO reservoir	Pressure boundary
Tank – SUFP LO reservoir	Structural Integrity

**Table 2.3.4-3 (Continued)
Main Feedwater System
Components Subject to Aging Management Review**

Component Type	Intended Function (as defined in Table 2.0-1)
Tubing	Pressure boundary Structural integrity
Valve Body	Pressure boundary Structural integrity

2.3.4.4 Main Steam System

System Description

The main steam line takes steam from each of the two steam generators and conducts it through the main steam isolation, main steam non-return, turbine stop, and control valves to the high pressure turbine. There are several taps off the main steam header.

The atmospheric vent valve, safety valves, and auxiliary feed pump turbine lines tap off of the high pressure header between the steam generator and the main steam isolation valves (MSIVs). This design ensures overpressure protection of the steam generator even with the MSIVs shut. This design also allows for cooldown of the primary plant using auxiliary feed and the atmospheric vents when the condenser is not available for cooldown.

The main feed pump turbine, turbine bypass system, and moisture separator reheater (MSR) second stage reheating steam lines tap off of the high pressure header between the non-return valves and the high pressure turbine stop valves. The Auxiliary Steam System supply taps off the high pressure header from steam generator 1-1 in the same location. This design allows for primary system cooldown using the turbine bypass system and the Main Feedwater System. Steam generator 1-2 can also supply the Gland Seal System from a tap on the main steam line to the No. 1 high pressure turbine stop valve. The main feed pump turbines also receive low pressure main steam from between the MSR and low pressure turbines. Steam is extracted from the second stage of the high pressure turbine and used for first stage reheating steam in the MSR.

Reason for Scoping Determination

The Main Steam System performs the following safety-related system intended functions that satisfy the scoping criteria of 10 CFR 54.4(a)(1):

- Provide main steam isolation
- Provide containment isolation
- Provide over-pressure protection for the steam generators
- Remove post-LOCA decay heat by relieving steam to the atmosphere
- Provide a steam supply to the auxiliary feed pump turbines for emergency cooling
- Provide decay heat removal in hot standby (in conjunction with Auxiliary Feedwater System), and maintain secondary system pressure in steam generators, by relieving steam through the atmospheric vent valves or main steam safety valves

The Main Steam System contains NSR components that are identified in the CLB as having the potential to prevent the satisfactory accomplishment of the following 10 CFR 54.4(a)(1) function:

- Provide main steam isolation (turbine stop valves)

The Main Steam System also contains NSR components that are attached to or located near safety-related SSCs, whose failure creates a potential for spatial interaction that could prevent the satisfactory accomplishment of one or more of the functions identified in 10 CFR 54.4(a)(1). Therefore, the Main Steam System satisfies the scoping criteria of 10 CFR 54.4(a)(2).

The Main Steam System is relied upon to demonstrate compliance with, and satisfies the 10 CFR 54.4(a)(3) scoping criteria for, the Fire Protection (10 CFR 50.48), Environmental Qualification (10 CFR 50.49), and Station Blackout (10 CFR 50.63) regulated events.

USAR References

USAR Section 10.3 describes the Main Steam System.

License Renewal Drawings

The following license renewal drawings depict the evaluation boundaries for the system components within the scope of license renewal:

LR-M003A, LR-M003B, LR-M003C, LR-M007A, LR-M007B, LR-M022A, LR-M039A, LR-M045

Components Subject to AMR

Table 2.3.4-4 lists the component types that are subject to AMR and their intended functions.

Table 3.4.2-4, Aging Management Review Results – Main Steam System, provides the results of the AMR.

In addition to those components specifically excluded in 10 CFR 54.21(a)(1)(i), such as instruments, the following components are within the scope of license renewal, but not subject to AMR:

- The tanks DB-T217 and 218 are in fact level indicators, and as such are instruments, and not subject to AMR.
- Air operators and associated components – The main steam isolation bypass valves (DB-MS100-1 and 101-1), the main steam warmup drains (DB-MS394 and 375), and the sample line containment isolation valves (DB-SS598 and 607)

are air-operated valves. The valves fail closed. Therefore, these valves are fail-safe on loss of the control air supply.

Additionally, the solenoid valves that supply the control air to the air operators, which are themselves active components, fail open to vent the control air lines. As such, a pressure boundary failure of any component within the control air supply will result in the valves going to their safe positions, and the system will perform its intended function. Therefore, the air operators and associated components are not subject to AMR.

Table 2.3.4-4
Main Steam System
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Bolting	Pressure boundary Structural integrity
Heat Exchanger (fins) – AFW pump turbine bearing lube oil cooler	Heat transfer
Heat Exchanger (shell) – AFW pump turbine bearing lube oil cooler	Pressure boundary
Heat Exchanger (tubes) – AFW pump turbine bearing lube oil cooler	Heat transfer Pressure boundary
Heat Exchanger (channel, shell, tubesheet) AFW pump turbine governor lube oil coolers (DB-E194-1 & 2)	Pressure boundary
Heat Exchanger (tubes) – AFW pump turbine governor lube oil coolers (DB-E194-1 & 2)	Heat transfer Pressure boundary
Piping	Pressure boundary Structural integrity
Pump Casing – Steam generator wet layup chemical addition metering pump (DB-P259-1 & 2)	Structural integrity
Pump Casing – Steam generator wet layup recirculation pump (DB-P182-1 & 2)	Structural integrity

**Table 2.3.4-4 (Continued)
Main Steam System
Components Subject to Aging Management Review**

Component Type	Intended Function (as defined in Table 2.0-1)
Tank – Air volume tank (DB-T191-1 & 2 and DB-T143-1 & 2)	Pressure boundary
Tank – Steam generator wet layup chemical addition tank (DB-T139-1 & 2)	Structural integrity
Trap Body	Pressure boundary Structural integrity
Tubing	Pressure boundary Structural integrity
Turbine casing – AFW turbine casing (DB-K3-1 & 2)	Pressure boundary
Valve Body	Pressure boundary Structural integrity

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2.4 SCOPING AND SCREENING RESULTS: STRUCTURES

The determination of the structures within the scope of license renewal is made through the application of the process described in Section 2.1. The results of the structural plant-level scoping review are presented in Section 2.2.

Section 2.1 also provides the methodology for determining the components within the scope of 10 CFR 54.4 that meet the requirements contained in 10 CFR 54.21(a)(1). The components that meet these screening requirements are identified in this section.

The screening results for structures consist of lists of components and commodities that require aging management review (AMR). Brief descriptions of the structures within the scope of license renewal are provided as background information. Structural intended functions are described for in-scope structures.

The structures in the scope of license renewal are the:

- Containment (including Containment Vessel, Shield Building, and Containment internal structures) (Section 2.4.1)
- Auxiliary Building (Section 2.4.2)
- Intake Structure, Forebay, and Service Water Discharge Structure (Section 2.4.3)
- Borated Water Storage Tank Level Transmitter Building (Section 2.4.4)
- Miscellaneous Diesel Generator Building (Section 2.4.5)
- Office Building (Condensate Storage Tanks) (Section 2.4.6)
- Personnel Shop Facility Passageway (Missile Shield Area) (Section 2.4.7)
- Service Water Pipe Tunnel and Valve Rooms (Section 2.4.8)
- Station Blackout Diesel Generator Building (including Transformer X-3051 and Radiator Skid Foundations) (Section 2.4.9)
- Turbine Building (Section 2.4.10)
- Water Treatment Building (Section 2.4.11)
- Yard Structures (Section 2.4.12)

  Note: The yard structures evaluated for license renewal include foundations and structural arrangements for the Borated Water Storage Tank (including Trench); Diesel Oil Pump House, Diesel Oil Storage Tank, Emergency Diesel Generator Fuel Oil Storage Tanks; Fire Hydrant Hose Houses; Fire Walls between Bus-Tie Transformers, between Bus-Tie and Startup Transformer 01, and between Auxiliary and Main Transformers; Fire Water Storage Tank; Nitrogen Storage

Building; Station Blackout Components and Structures In the Yard and Switchyard (Startup Transformers 01 and 02, Bus-Tie Transformers, 345-kV Switchyard circuit breakers ACB34560, ACB34561, ACB34562, ACB34563, ACB34564, air break switch ABS34625, Relay House, "J" and "K" buses); Wave Protection Dikes; Duct Banks; Cable Trenches; and Manholes.

Structural components for in-scope structures are addressed in the structure reviews (Section 2.4.1 through 2.4.12).

Structural commodities (e.g., anchorages, instrument panels, cable trays, conduits, fire seals, fire doors, equipment and component supports, etc.) are addressed in the bulk commodities review (Section 2.4.13).

2.4.1 CONTAINMENT (INCLUDING CONTAINMENT VESSEL, SHIELD BUILDING, AND CONTAINMENT INTERNAL STRUCTURES) – SEISMIC CLASS I

Structure Description

The Seismic Class I Containment consists of three basic structures: a free-standing steel Containment Vessel, a reinforced concrete Shield Building, and the internal structures. The Containment Vessel is a cylindrical steel pressure vessel with hemispherical dome and ellipsoidal bottom which houses the reactor vessel, reactor coolant piping, pressurizer, pressurizer quench tank and coolers, reactor coolant pumps, steam generators, core flooding tanks, letdown coolers, and ventilating systems. It is completely enclosed by a reinforced concrete Shield Building having a cylindrical shape with a shallow dome roof. An annular space is provided between the wall of the Containment Vessel and the Shield Building, and clearance is also provided between the Containment Vessel and the dome of the Shield Building. The Containment Vessel and Shield Building are supported on a concrete foundation founded on a firm rock structure. With the exception of the concrete under the Containment Vessel there are no structural ties between the Containment Vessel and the Shield Building above the foundation slab. Above this there is unlimited freedom of differential movement between the Containment Vessel and the Shield Building. The Containment internal structures are constructed of reinforced concrete and structural steel. These structures are isolated from the Containment Vessel by steel grating panels with sliding supports which allows free differential movement between the internal structures and the vessel. The internal structures are supported by the massive concrete fill within the Containment Vessel bottom head.

The Shield Building is a concrete structure surrounding the Containment Vessel. It is designed to provide biological shielding during normal operation and from hypothetical accident conditions. The building provides a means for collection and filtration of fission product leakage from the Containment Vessel following a hypothetical accident through the Emergency Ventilation System, an engineered safety feature designed for that purpose. In addition, the building provides environmental protection for the Containment Vessel from adverse atmospheric conditions and external missiles.

The Containment Vessel is a Seismic Category I structure which is designed, fabricated, erected, tested, and quality-control documented in accordance with the requirements for Class B vessels of the ASME Boiler and Pressure Vessel Code (ASME Code), Section III, 1971. The Containment Vessel is a right cylindrical, freestanding, vertical steel pressure vessel with a hemispherical top head, and an ASME ellipsoidal bottom head. Access to the Containment Vessel is provided by a personnel air lock, an emergency air lock, and an equipment hatch. The equipment hatch is used during plant shutdown maintenance periods. A construction opening has been permanently sealed and leak tested. A similar opening used for reactor vessel head replacement was also permanently sealed and leak tested. Penetrations are provided in the vessel shell for mechanical, electrical, and instrumentation service access to the Containment interior.

Penetration bellows assemblies allow differential movement between the Containment Vessel and the Auxiliary Building. Each penetration bellows assembly is an extension of the Containment and is designed for containment pressure and displacement resulting from thermal expansion and seismic movements. The larger penetrations such as main steam and feedwater are anchored in the Auxiliary Building floor. Flexible bellows type connections are provided at the Containment Vessel shell allowing for all differential movements between the two structures.

The Containment internal structures are comprised of the reactor cavity (primary shield wall), the secondary shield wall, the refueling pool, the operating floors, miscellaneous equipment supports, stairs, and service missile shields. The primary coolant system including the reactor, steam generators, pressurizer and reactor coolant pumps is supported by these structures. Shield walls and floors are constructed of reinforced concrete. Structural steel frames and columns support the floors and transmit loads to the foundations. Metal decks provided support for the concrete floors during concrete placement. The Containment interior structures internal to the Containment Vessel include, but are not limited to:

- Primary shield structure, forming the reactor cavity
- Secondary shield structure, forming the steam generator compartments and the peripheral shield walls
- Polar crane
- Reactor service crane
- Refueling canal and fuel handling bridge
- Platforms and floors
- Elevator shaft and stairway
- Nuclear Steam Supply System (NSSS) components, supports, and restraints
- Pipe supports and restraints
- Missile shields and jet impingement barriers

Reason for Scope Determination

The Containment is within the scope of license renewal as a Seismic Class I structure, which meets the criteria of 10 CFR 54.4(a)(1). The function of the Containment is to provide physical support and protection for safety-related systems, equipment, and components.

The Containment System is designed to provide protection for the public from the consequences of any break in the reactor coolant piping up to and including a double-ended break of the largest reactor coolant pipe assuming unobstructed discharge from both ends.

The Containment design, along with the engineered safety features provided, ensure that the exposure of the public resulting from a hypothetical accident is below the guidelines established by 10 CFR 100.

The steel Containment Vessel provides a pressure and thermal-resistant barrier to control the release of radiation and radiation-contaminated matter into the environment in the event of a postulated accident.

The Shield Building serves two primary functions: radiation shielding and environmental protection.

The Containment shelters and protects nonsafety-related systems, structures, and components (SSCs) whose failure could prevent performance of a safety-related function. Therefore, it meets the 10 CFR 54.4(a)(2) scoping criteria.

The Containment is relied upon to demonstrate compliance with the Station Blackout (10 CFR 50.63) and Fire Protection (10 CFR 50.48) regulated events. This meets the 10 CFR 54.4(a)(3) scoping criteria.

USAR References

Updated Safety Analysis Report (USAR) Sections 1.2.10.2, 3.8.2, 3.8.2.1.10, 3.8.2.3.1, and 6.2.1.3.2 describe the Containment and its major structural components.

Components Subject to AMR

Table 2.4-1 lists the component types that require AMR and their intended functions.

The structural commodities for the Containment are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-1, Aging Management Review Results - Containment, provides the results of the AMR.

Table 2.4-1
Containment
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Containment Emergency Sump Recirculation Valve Enclosure Bellows	EN, SPB, SSR
Containment Emergency Sump Recirculation Valve Enclosures	EN, SPB, SSR
Containment Normal Sump	SNS
Containment Normal Sump Liners	SNS
Containment Vessel	EN, FLB, HELB, SHD, SPB, SRE, SSR
Containment Vessel Emergency Sump	DF, SSR
Containment Vessel Emergency Sump (including sump liner, antivortexing gratings, perforated plates, and trash racks)	DF, SSR
Cranes, including Bridge, Trolley, Rails, and Girders	SNS, SSR
Emergency Air Lock (including flange gaskets and closure mechanisms)	EN, SPB, SSR
Equipment Hatch (including flange gaskets and closure mechanisms)	EN, SPB, SSR
Floor Decking	SNS

**Table 2.4-1 (Continued)
Containment
Components Subject to Aging Management Review**

Component Type	Intended Function (as defined in Table 2.0-1)
Foundations	EN, EXP, FLB, SRE, SSR
Incore Tunnel	DF, SSR
LOCA Restraint Ring Cooling Fins	SSR
LOCA Restraint Rings	SSR
Lubrite® sliding supports	SSR
Neutron Streaming Shield Panels	SHD, SNS
Nuclear Instrumentation Shielding	SHD, SNS
Nuclear Instrumentation Support	SSR
Penetration Bellows	EN, SPB, SSR
Penetrations (Mechanical and Electrical, containment boundary)	EN, SPB, SSR
Permanent Reactor Cavity Seal Plate	FLB, SSR
Personnel Air Lock (including gaskets, hatch locks, hinges and closure mechanisms)	EN, SPB, SSR
Pressurizer Supports	SSR
Primary Shield Wall	EN, MB, SHD, SSR
Reactor Cavity Missile Shield	EN, MB, SHD, SSR
Reactor Closure Head and CRD Service Structure	SNS
Reactor Coolant Pressure Boundary Thermal Insulation	SNS
Reactor Head Storage Stand	SNS
Reactor Shield Wall Liner	SHD, SSR

**Table 2.4-1 (Continued)
Containment
Components Subject to Aging Management Review**

Component Type	Intended Function (as defined in Table 2.0-1)
Reactor Vessel Supports	SSR
Reactor Vessel Thermal Insulation	EN, SNS
Refueling Canal	SHD, SSR
Refueling Canal Fuel Storage Rack	SSR
Refueling Canal Liner	FLB, SSR
Reinforced Concrete: Walls, floors, and ceilings	EN, FLB, HELB, MB, PW, SHD, SNS, SPB, SRE, SSR
Secondary Shield Wall	EN, HELB, MB, SHD, SRE, SSR
Shield Building Dome	EN, MB, SPB, SRE, SSR
Shield Building Emergency Air Lock Enclosure	EN, MB, SSR
Shield Building Walls (above grade)	EN, FB, MB, SHD, SPB, SRE, SSR
Shield Building Walls (below grade)	EN, FB, SPB, SRE, SSR
Station Vent Stack Supports	SNS
Steam Generator Supports	SSR
Structural Steel: Beams, Columns, Plates, and Trusses	SNS, SRE, SSR
Trash Rack Gates	SSR
Trisodium Phosphate Baskets	SSR

2.4.2 AUXILIARY BUILDING– SEISMIC CLASS I

Structure Description

The Auxiliary Building is a Seismic Class I structure with steel framing and reinforced concrete walls, roofs, and floors. It is a five-story building with two levels below grade. Radioactive waste (radwaste) systems are housed in the basement. The remainder of the building is used for fuel storage and handling, the control room, switchgear, emergency diesel generators, air handling systems and other operational facilities.

The Auxiliary Building is an L-shaped structure that has three foundation levels. The northeast portion of the Auxiliary Building is supported on grade beams connected to pier footings. Pier footings extend through compacted granular backfill beneath the floor slab and are socketed into bedrock. The southeast portion of the Auxiliary Building is supported on a mat foundation that bears on bedrock. The southwest portion of the Auxiliary Building is supported on a mat foundation; the outside walls are supported on strip footings. The bottom of the mat is underlain by concrete backfill over bedrock and can be considered to be supported on bedrock.

The control room contains control panels necessary for maintaining safe plant shutdown. Safe occupancy of the control room during abnormal conditions is provided for in the design of the control room. The Control Room Emergency Ventilation System (CREVS) is provided with radiation detectors and appropriate alarms. When CREVS is operating with makeup air, a positive control room pressure is maintained to minimize in-leakage. The Control Room Emergency Ventilation System is evaluated as a mechanical system.

The two emergency diesel generators are located in separate rooms at the north end of the Auxiliary Building on elevation 585'-0", adjacent to the Shield Building. A three-hour rated firewall separates the two generators. Independence and physical separation between the two units and between each unit and the other power sources are maintained so that no credible single event will disable more than one unit.

The fuel storage area accommodates the spent fuel storage pool and its spent fuel storage racks, cask pit, transfer pit, storage facilities for new fuel assemblies and control rods, a spent fuel cask washdown facility, and a fuel handling crane.

The main steam line areas on elevation 643'-0" house the main steam lines between the Containment and Turbine Building. In addition to being designed for design loads established for Seismic Class I structures, these areas are designed for postulated accident loads. Explosion roof vents would relieve pressure in the event of a main steam line break.

The Emergency Ventilation System is provided with prefilter, HEPA filter and charcoal absorber banks. In the event radioactivity levels should exceed acceptable limits, the exhaust air may be passed through the Emergency Ventilation System HEPA filters and charcoal absorbers, before being discharged through the station vent stack. The station vent stack is located in the Auxiliary Building at elevation 623'-0" and extends through the Auxiliary Building roof. The station vent stack is supported by the Auxiliary Building and the Shield Building. The Emergency Ventilation System is evaluated as a mechanical system.

Two fuel transfer penetrations are provided to transport fuel assemblies between the refueling canal and the spent fuel pool during refueling operations of the reactor. Each penetration consists of a 30-inch diameter stainless steel pipe installed inside a 42-inch sleeve. The inner pipe acts as the transfer tube. Provisions are made to maintain integrity of containment, allow for differential movement between structures and prevent leakage through the transfer tubes in the event of an accident. The fuel transfer tubes penetration bellows assemblies are addressed with the Containment, in Section 2.4.1.

The penetration bellows assemblies allow differential movement between the Containment Vessel and the Auxiliary Building. Each penetration bellows assembly is an extension of the containment and is designed for containment pressure and displacement resulting from thermal expansion and seismic movements. The larger penetrations such as main steam and feedwater are anchored in the Auxiliary Building floor. Flexible bellows type connections are provided at the Containment Vessel shell allowing for all differential movements between the two structures. Penetration bellows assemblies are addressed with the Containment, in Section 2.4.1.

Access to the containment vessel is provided by a personnel air lock, an emergency air lock, and an equipment hatch. The personnel air lock, emergency air lock, and equipment hatch are addressed with the Containment, in Section 2.4.1.

The Auxiliary Building consists of the following major areas and design considerations:

- The Control Room houses electrical controls to monitor and control plant functions and safety class systems.
- The Mechanical and Electrical Penetration Rooms are maintained under a negative pressure to prevent any contaminants from leaking to clean areas of the Auxiliary Building. The penetration rooms house the process pipe and electrical penetrations that pass through the Shield Building wall.
- The main steam line areas house the main steam lines as they leave the Containment to pass into the Turbine Building. These areas are designed to withstand the design loads established for Seismic Category I structures.
- The Diesel Generator area houses the two emergency diesel generators. A fire wall separating the two engine areas is provided in accordance with Fire Code requirements.

- The Spent Fuel Pool, Fuel Transfer Pit (also known as transfer pit or fuel transfer tube pit) and Cask Pit walls and floors are lined with 1/4-inch-thick stainless steel liner plate. A watertight, bulkhead gate separates the spent fuel pool from the fuel transfer pit and another separates it from the cask pit. Struts are installed on the walls between the fuel transfer pit and the spent fuel pool when the fuel transfer pit water level is below the bottom of the spent fuel pool bulkhead gate. The struts prevent the wall from becoming overstressed during a seismic event.
- New fuel is stored in the New Fuel Storage Area. The storage rack assemblies are constructed of stainless steel.

Reason for Scope Determination

The Auxiliary Building is within the scope of license renewal as a Seismic Class I structure, which meets the criteria of 10 CFR 54.4(a)(1). The function of the Auxiliary Building is to provide physical support and protection for safety-related systems, equipment, and components.

The Auxiliary Building shelters and protects nonsafety-related SSCs whose failure could prevent performance of a safety-related function. Therefore, it meets the 10 CFR 54.4(a)(2) scoping criteria.

The Auxiliary Building is relied upon to demonstrate compliance with the Station Blackout (10 CFR 50.63) and Fire Protection (10 CFR 50.48) regulated events. This meets the 10 CFR 54.4(a)(3) scoping criteria.

USAR References

USAR Sections 3.8.1.1.1, 3.8.2.1.10, 8.3.1.2.3, 9.1.2.2, 12.2.1, 2C.6.2, and 3D.1.15 describe the Auxiliary Building.

Components Subject to AMR

Table 2.4-2 lists the component types that require AMR and their intended functions.

The structural commodities for the Auxiliary Building are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-2, Aging Management Review Results - Auxiliary Building, provides the results of the AMR.

Table 2.4-2
Auxiliary Building
Components Subject to Aging Management Review

Component Type	**Intended Function (as defined in Table 2.0-1)**
Auxiliary Building Exterior Walls (above grade)	EN, FLB, MB, SNS, SRE, SSR
Auxiliary Building Exterior Walls (below grade)	EN, FLB, SNS, SRE, SSR
Auxiliary Feedpump Turbine Exhaust	EN, MB, SRE, SSR
Battery Rack	SSR
Blowoff Roof Vents	EN, PR, SSR
Blowout Panels	PR, SSR
Cask Pit	SSR
Cask Pit Liner	FLB, SSR
Control Room Ceiling	SNS
Cranes, including Bridge, Trolley, Rails, and Girders	SNS, SSR
Floor Decking	SNS
Foundations	EN, EXP, FLB, SNS, SRE, SSR
Fuel Transfer Pit	SSR
Fuel Transfer Pit Liner	FLB, SSR

Table 2.4-2 (Continued)
Auxiliary Building
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Fuel Transfer Pit Struts	SSR
Fuel Transfer Tubes	SSR
Louvered Penthouses	EN, SSR
Masonry Block Wall Bracings and Frames	SNS, SSR
Masonry Block Walls	EN, FB, FLB, SHD, SNS, SRE, SSR
Missile Shield Walls	MB, SSR
New Fuel Storage Pit	EN, SSR
New Fuel Storage Racks	SSR
Pipe Tunnel	EN, SSR
Reinforced Concrete: Walls, floors, and ceilings	EN, FB, FLB, HELB, MB, PW, SHD, SNS, SPB, SRE, SSR
Roof Decking	SNS
Roof Penthouses	EN, MB, SSR
Roof Slabs	EN, MB, SNS, SRE, SSR
Shield Panels	SHD, SNS
Spent Fuel Pool	SHD, SSR
Spent Fuel Pool Bulkhead Gates	SSR
Spent Fuel Pool Liner	FLB, SSR
Spent Fuel Rack Neutron Absorbers	ABN, SSR
Spent Fuel Storage Racks	SSR

Table 2.4-2 (Continued)
Auxiliary Building
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Station Vent Stack	RP, SNS
Structural Steel: Beams, Columns, Plates, and Trusses	SNS, SRE, SSR
Sump	SNS

2.4.3 INTAKE STRUCTURE, FOREBAY, AND SERVICE WATER DISCHARGE STRUCTURE – SEISMIC CLASS I

Intake Structure – Seismic Class I

Structure Description

The ultimate heat sink for Davis-Besse is Lake Erie, which is the source of cooling water for the Service Water System. This single water source is utilized for both normal and emergency shutdown conditions. Lake water is conducted through the intake water system to the Intake Structure, where the service water pumps are located.

The Intake Structure is a Seismic Class I structure of reinforced concrete construction. Each of the three main service water pumps is housed in an individual cell, and each cell is designed to include such features as removable sliding screens for debris control and stop logs (gates) for dewatering cells during maintenance work. The intake structure is supported on a mat foundation bearing on bedrock.

The reinforced concrete substructure of the Intake Structure and enclosures for the service water pumps are designed to withstand a Class I seismic event, as well as tornado and turbine missiles. There are three floors, two of which accommodate all the pumps, traveling screens, and other equipment. The third floor is used as a secondary laydown area. The Seismic Class II structural steel superstructure is provided for Class II equipment on the second floor. A nonsafety-related 40-ton gantry crane is provided above the structure for equipment services and maintenance.

The Intake Structure is designed to withstand the effects of flooding and wave run-up. Water stops are provided at construction joints of Seismic Class I structures which prevent water from entering the structure. Watertight doors at both access openings complete the barrier against water entering the service water pump room. Floor drains and a sump collect seepage which might enter the room during a flood. Seismic Class I systems and structures are completely protected from adverse effects of flooding.

The Intake Structure consists of the following major components and design considerations:

- Service water pumps (Class I) (evaluated by mechanical)
- Diesel-driven fire water pump (Class II) (evaluated by mechanical)
- Backup Service Water Pump (also known as the Dilution Pump) (Class II) (evaluated by mechanical)
- Traveling screens (Class II)
- The Seismic Class II structural steel superstructure of the Intake Structure has insulated metal siding on structural steel frames.

- The diesel-driven fire pump fuel oil day tank is enclosed in a metal sided enclosure adjacent to the diesel-driven fire water pump room.
- The Intake Structure is founded on a 3-foot thick mat foundation bearing on bedrock at elevation 543 feet.

Reason for Scope Determination

The Intake Structure is within the scope of license renewal as a Seismic Class I structure, which meets the criteria of 10 CFR 54.4(a)(1). The function of the Intake Structure is to provide physical support and protection for the Seismic Category I service water pumps and piping that are a part of the reactor emergency cooling water system. The Intake Structure, in conjunction with the Forebay, functions to provide a source of cooling water for the Service Water System.

The Intake Structure shelters and protects nonsafety-related SSCs whose failure could prevent performance of a safety-related function. Therefore, it meets the 10 CFR 54.4(a)(2) scoping criteria.

The Intake Structure provides physical support and the water supply for the diesel-driven fire pump and contains credited fire barriers relied upon to demonstrate compliance with the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

The Intake Structure provides physical support and the water supply for the backup service water pump for compliance with the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

The Intake Structure provides physical support to the Service Water pumps which are relied upon to demonstrate compliance with the Station Blackout (10 CFR 50.63) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

Forebay – Seismic Class I

Structure Description

The Forebay, approximately 700 feet long, impounds a body of water that serves as a heat sink. The dikes on each side are classified and designed as Class I structures. Steel sheet pilings and concrete retaining walls provide slope stability at the Forebay area near the Intake Structure.

The ultimate heat sink for Davis-Besse is Lake Erie, which is the source of cooling water for the Service Water System. This single water source is utilized for both normal and emergency shutdown conditions. Lake water is conducted through the intake water system to the Intake Structure, where the service water pumps are located. An open Forebay area ahead of the Intake Structure serves as a reservoir for an ensured source of water in case of an extreme lowering of the lake due to meteorological conditions, or collapse of the intake canal or submerged pipes.

The Forebay consists of the following major structural components and design considerations:

- Class I Intake Forebay Dike fill (hereafter referred to as Class I intake fill) was placed and compacted along the Intake Canal to elevation 582 feet between approximately station 0+00 and station 7+00. Class I intake fill material consists of compacted glaciolacustrine and till deposit obtained from on-site borrow areas.
- The width of the Intake Canal, measured between the dike crest centerlines, ranges from 430 feet between station 0+00 to 7+00 (Class I portion) to 270 feet beyond station 7+00 (non-Class I portion). The dike slopes of the inboard and outboard canal are 3:1 (3 horizontal to 1 vertical) from Station 0+00 to approximately Station 10+00. From approximately Station 10+00 to Station 27+50, the inboard side of the canal varies with a slope of 3:1 and a slope of 2:1, with a few localized areas down to a 1.5:1 slope. The invert of the canal is in till deposit, except between station 0+00 and approximately station 2+00 where the invert is in bedrock. The inboard sides of the 3:1 canal slopes are lined with a three-foot thick facing of random placed angular quarry stone between station 0+00 and station 5+50. Beyond station 5+50, the canal dike slopes are also lined with smaller size riprap with a depth generally less than three feet thick. The canal invert and outboard side of the canal dike are unlined.
- Steel sheet pilings at the Forebay area adjacent to the Intake Structure are anchored into bedrock via concrete filled borings. Support braces anchored into bedrock via concrete filled borings are provided as lateral support to the sheet pilings. Rock anchors provide rock stability in the vicinity of sheet piling anchors. Reinforced concrete retaining walls at the Forebay area are founded on bedrock.

<u>Reason for Scope Determination</u>

The Forebay is within the scope of license renewal as a Seismic Class I structure, which meets the criteria of 10 CFR 54.4(a)(1).

The function of the Forebay is to impound and supply cooling water to remove heat from all nuclear plant equipment that is essential for a safe and orderly shutdown of the reactor and to maintain it in a safe shutdown condition.

The function of the Forebay is to impound and supply cooling water to the Service Water System which is relied upon to demonstrate compliance with the Station Blackout (10 CFR 50.63) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

The function of the Forebay is to impound and supply water to the diesel-driven fire pump which is relied upon to demonstrate compliance with the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

Service Water Discharge Structure – Seismic Class I

Structure Description

The Service Water Discharge Structure is a partially buried concrete structure located on the intake channel dike and discharges to the south side of the Forebay. The Service Water Discharge Structure consists of a concrete end-wall, slab, and spillway. A buried 42-inch diameter concrete pipe sleeve encases the service water discharge piping below the Forebay dike. The Service Water Discharge Structure is the safety-related Service Water discharge flowpath for Davis-Besse.

The Service Water discharge lines to the Cooling Tower are not seismically qualified and are not credited for accident mitigation. In the event that one of the non-seismic Service Water discharge lines is in use when a Loss of Coolant Accident (LOCA) occurs, the line may be partially or completely blocked. If the pressure in the safety-related common discharge header rises above a pre-determined pressure switch setpoint, one of the seismic flowpaths will be automatically established. Administrative controls have been established for the operators to manually establish a safety-related Service Water discharge flowpath if the common discharge header pressure remains below the pressure switch setpoint. The automatic transfer and manual actions assure that a safety-related Service Water discharge flow path is always established. The Service Water discharge can be redirected from the non-seismic cooling tower path to the seismic forebay path via the Service Water Discharge Structure when required to maintain water level in the Forebay above elevation 564 feet International Great Lakes Datum.

Reason for Scope Determination

The Service Water Discharge Structure is within the scope of license renewal as a Seismic Class I structure, which meets the criteria of 10 CFR 54.4(a)(1). The function of the Service Water Discharge Structure is to provide physical support and protection for the Seismic Category I service water discharge pipe.

USAR References

USAR Sections 3.4.1, 3.7.2.10, 3.8.1.1.2, 3.8.1.1.6, 9.2.1.2, 9.2.1.3, 9.2.5, 2C.6.2.4.c, 2C.6.3.3, and 2C.6.4 and USAR Figure 3.6-18 describe the Intake Structure, Forebay, and Service Water Discharge Structure.

Components Subject to AMR

Table 2.4-3 lists the component types that require AMR and their intended functions.

The structural commodities for the Intake Structure, Forebay, and Service Water Discharge Structure are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-3, Aging Management Review Results – Intake Structure, Forebay, and Service Water Discharge Structure, provides the results of the AMR.

Table 2.4-3
Intake Structure, Forebay, and Service Water Discharge Structure Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Battery Rack	SRE
Cranes, including Bridge, Trolley, Rails, and Girders	SNS
Fan Enclosure	EN, MB, SSR
Forebay (including riprap)	HS, SRE, SSR
Forebay Retaining Walls	FLB, SSR
Foundations	EN, EXP, FLB, SNS, SRE, SSR
Intake Structure Exterior Walls (above grade)	EN, FLB, MB, SNS, SRE, SSR

Table 2.4-3 (Continued)
Intake Structure, Forebay, and Service Water Discharge Structure Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Intake Structure Exterior Walls (below grade)	EN, FLB, SNS, SRE, SSR
Louvered Penthouse	EN, MB, SSR
Masonry Block Walls	EN, FB, FLB, SRE, SSR
Metal Siding	SNS, SRE
Pump Intake Cells	HS, SRE, SSR
Reinforced Concrete: Walls, floors, and ceilings	EN, FB, FLB, MB, SNS, SRE, SSR
Roof Decking	SNS, SRE
Roof Slabs	EN, MB, SNS, SRE, SSR
Service Water Discharge Pipe Sleeve	EN, SSR
Service Water Discharge Structure	EN, MB, SSR
Sheet Pilings (includes Support Braces and Rock Anchors)	FLB, SNS, SSR
Structural Steel: Beams, Columns, Plates, and Trusses	SNS, SRE
Sump	SNS
Trash Rack Guides	SNS
Trash Racks	SNS
Traveling Screen Casing and Associated Framing	SNS

2.4.4 BORATED WATER STORAGE TANK LEVEL TRANSMITTER BUILDING – SEISMIC CLASS II

Structure Description

The Borated Water Storage Tank (BWST) Level Transmitter Building is a Seismic Class II structure located adjacent to the BWST. It houses and protects safety-related components associated with the BWST. The BWST Level Transmitter Building is a shed-like structure that consists of steel beam framing with metal siding and roof. The steel framing is supported by reinforced concrete piers. The building has a gravel floor.

The BWST Level Transmitter Building contains safety-related components as identified in the plant configuration database.

Reason for Scope Determination

The BWST Level Transmitter Building is a Seismic Class II structure located adjacent to the Seismic Class I BWST and contains safety-related components, therefore it meets the 10 CFR 54.4(a)(2) scoping criteria.

USAR References

The structural details of the BWST Level Transmitter Building are not described in the USAR.

Components Subject to AMR

Table 2.4-4 lists the component types that require AMR and their intended functions.

The structural commodities for the BWST Level Transmitter Building are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-4, Aging Management Review Results - BWST Level Transmitter Building, provides the results of the AMR.

Table 2.4-4
Borated Water Storage Tank Level Transmitter Building
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Foundation Piers	SNS
Metal Roof	EN, SNS
Metal Siding	EN, SNS
Structural Steel: Beams, Columns, Plates, and Trusses	SNS

2.4.5 MISCELLANEOUS DIESEL GENERATOR BUILDING – SEISMIC CLASS II

Structure Description

The Miscellaneous Diesel Generator Building is located north of the Water Treatment Building and does not house any equipment that is used for any functions related to license renewal. The structure is a single story structure constructed of concrete masonry units on a concrete slab at grade.

The Yard is designated as a fire area to ensure safe shutdown with a fire outside or in miscellaneous buildings, such as the Miscellaneous Diesel Building, which contain cables that might affect safe shutdown such as the cable bus to the 13.8-kV to 4.16-kV transformer. A credited three-hour interior fire wall separates the miscellaneous diesel room and the oil tank room within the Miscellaneous Diesel Generator Building.

Reason for Scope Determination

The Miscellaneous Diesel Generator Building contains credited fire barriers relied upon to demonstrate compliance with the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

USAR References

The structural details of the Miscellaneous Diesel Generator Building are not described in the USAR.

Components Subject to AMR

Table 2.4-5 lists the component types that require AMR and their intended functions.

The structural commodities for the Miscellaneous Diesel Generator Building are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-5, Aging Management Review Results - Miscellaneous Diesel Generator Building, provides the results of the AMR.

Table 2.4-5
Miscellaneous Diesel Generator Building
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Exterior Walls (above grade)	SRE
Foundations	SRE
Masonry Block Walls	FB, SRE
Reinforced Concrete: Walls, floors, and ceilings	SRE
Roof	SRE
Structural Steel: Beams, Columns, Plates, and Trusses	SRE

2.4.6 OFFICE BUILDING (CONDENSATE STORAGE TANKS) – SEISMIC CLASS II

Structure Description

The Office Building is adjacent to the Turbine Building. The Office Building is a Seismic Class II structure with steel framing, reinforced concrete floors and walls, vertical window wall exterior panels and precast concrete exterior wall panels. The structure is supported by reinforced concrete caissons that are socketed into and bear directly on bedrock. The structural steel framing is independent of the Turbine Building, as directed by fire code requirements. Part of the Office Building provides an enclosure for the two nonsafety-related condensate storage tanks and associated piping. The Condensate Storage Tanks provide the primary water source for the Auxiliary Feedwater System. The Office Building provides office space for plant personnel. It also houses other personnel facilities, such as locker rooms, a tool crib, and a storage area.

The Office Building also contains rated fire barriers credited for safe shutdown analysis.

The turbine-driven auxiliary feed pumps provide feedwater to the steam generators by taking suction from the Condensate Storage Tanks and are driven by steam from either steam generator during a Station Blackout event.

Only the Condensate Storage Tank area and credited fire barriers are within the scope of license renewal. The remaining portions of the Office Building are not within the scope of license renewal.

Reason for Scope Determination

The Office Building contains credited fire barriers relied upon to demonstrate compliance with the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

The function of the Office Building is to provide physical support and shelter for the Condensate Storage Tanks which provide a source of cooling water used for the Station Blackout (10 CFR 50.63) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

USAR References

The structural details of the Office Building are not described in the USAR. The Office Building is depicted in USAR Figures 1.2-2, 1.2-4, 1.2-5, 1.2-10 and 1.2-11.

Components Subject to AMR

Table 2.4-6 lists the component types that require AMR and their intended functions.

The structural commodities for the Office Building are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-6, Aging Management Review Results - Office Building (Condensate Storage Tanks), provides the results of the AMR.

Table 2.4-6
Office Building (Condensate Storage Tanks)
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Condensate Storage Tanks Foundation	SRE
Exterior Walls (above grade)	SRE
Foundations (including caissons)	SRE
Masonry Block Walls	FB, SRE
Reinforced Concrete: Ceilings	FB, SRE
Reinforced Concrete: Walls and floors	SRE
Structural Steel: Beams, Columns, Plates, and Trusses	SRE
Wall Panel Support Frames	SRE
Window Wall Panels	SRE

2.4.7 PERSONNEL SHOP FACILITY PASSAGEWAY (MISSILE SHIELD AREA) – SEISMIC CLASS I

Structure Description

A Seismic Class I reinforced concrete passageway entry interface with the Auxiliary Building Radiological Restricted Area (RRA) at elevation 603' – 0" provides tornado missile protection to two Auxiliary Building doors.

Only the Missile Shield portion of the Personnel Shop Facility Passageway is within the scope of license renewal. The remaining portions of the Personnel Shop Facility are not within the scope of license renewal.

Reason for Scope Determination

The safety-related Personnel Shop Facility Passageway Missile Shield Area provides missile protection to the Auxiliary Building. This meets the 10 CFR 54.4(a)(1) scoping criteria.

The Personnel Shop Facility Passageway Missile Shield Area shelters and protects nonsafety-related SSCs whose failure could prevent performance of a safety-related function. Therefore, it meets the 10 CFR 54.4(a)(2) scoping criteria.

USAR References

The structural details of the Personnel Shop Facility Passageway Missile Shield Area are not described in the USAR. The Personnel Shop Facility Passageway Missile Shield Area is depicted in USAR Figures 1.2-4, 3.6-3 and 3.6-7.

Components Subject to AMR

Table 2.4-7 lists the component types that require AMR and their intended functions.

The structural commodities for the Personnel Shop Facility Passageway Missile Shield Area are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-7, Aging Management Review Results - Personnel Shop Facility Passageway (Missile Shield Area), provides the results of the AMR.

Table 2.4-7
Personnel Shop Facility Passageway (Missile Shield Area)
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Exterior Walls (above grade)	MB, SSR
Foundations	SSR
Metal Floor Deck	SSR
Metal Roof Decking	SNS
Metal Siding	SNS
Reinforced Concrete: Walls, floors, and ceilings	MB, SSR
Roof	MB, SSR
Structural Steel: Beams, Columns, Plates, and Trusses	SSR

2.4.8 SERVICE WATER PIPE TUNNEL AND VALVE ROOMS – SEISMIC CLASS I

Structure Description

The Service Water Pipe Tunnel is located between the Auxiliary Building and the Intake Structure. This reinforced concrete tunnel is buried underground and shields the safety-related Service Water pipes and other minor pipes. Valve Room No. 1 is located adjacent to the Auxiliary Building in the Turbine Building. Valve Room No. 2 is located adjacent to the Intake Structure. Both Valve Rooms are single below ground reinforced concrete rooms, housing required valves and connections for the Service Water pipes. The concrete roofs of these valve rooms are designed for protection from tornado and turbine missiles. These structures are designed for Class I seismic loads.

The portion of the Seismic Class I Service Water Pipe Tunnel that runs to the northeast from the east side of the basement of the Turbine Building is completely surrounded by a granular compacted fill with a minimum top cover of four feet. The 10-inch concrete ground floor slab bears on the compacted fill. The reinforced concrete tunnel, four feet of compacted fill cover and the 10-inch concrete ground floor slab protect the Class I piping against the unlikely failure of the Class II Turbine Building superstructure.

The Seismic Class I Service Water Pipe Tunnel may be flooded due to postulated failures of either the water treatment structures/systems or failure of Seismic Class II pipe within the tunnel. The tunnel is sealed at both ends, thereby preventing flooding of either the Auxiliary Building or the Intake Structure. The Seismic Class I systems within the tunnel are designed to remain operational while flooded.

The Service Water Pipe Tunnel and Valve Rooms contain rated fire barriers credited for safe shutdown analysis.

The Service Water Pipe Tunnel and Valve Rooms provide support to the Service Water system piping and valves which are relied upon to supply cooling water to safe shutdown equipment (safety-related heat loads) during a Station Blackout event.

Reason for Scope Determination

The Service Water Pipe Tunnel and Valve Rooms are within the scope of license renewal as a safety-related structure, which meets the criteria of 10 CFR 54.4(a)(1). The function of the Service Water Pipe Tunnel and Valve Rooms is to provide physical support and protection for safety-related equipment.

The Service Water Pipe Tunnel and Valve Rooms shelter and protect nonsafety-related SSCs whose failure could prevent performance of a safety-related function. Therefore, it meets the 10 CFR 54.4(a)(2) scoping criteria.

The Service Water Pipe Tunnel and Valve Rooms contain credited fire barriers relied upon to demonstrate compliance with the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

The Service Water Pipe Tunnel and Valve Rooms provides physical support to the Service Water system piping which are relied upon to demonstrate compliance with the Station Blackout (10 CFR 50.63) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

The function of the Service Water Pipe Tunnel and Valve Rooms is to provide protection from damage due to earthquake, tornadoes, or the array of credible missiles.

The function of the Service Water Pipe Tunnel and Valve Rooms is to provide flood protection to the Auxiliary Building and the Intake Structure in the event of postulated failures of either the water treatment structures or systems, or failure of Seismic Class II pipe within the tunnel.

<u>USAR References</u>

USAR Sections 3.4.1, 3.8.1.1.3, and 3.8.1.1.6 describe the Service Water Pipe Tunnel and Valve Rooms. The Service Water Pipe Tunnel and Valve Rooms are depicted in USAR Figures 3.6-18, 3.6-20, 9.3-14 and 9.3-15.

<u>Components Subject to AMR</u>

Table 2.4-8 lists the component types that require AMR and their intended functions.

The structural commodities for the Service Water Pipe Tunnel and Valve Rooms are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-8, Aging Management Review Results - Service Water Pipe Tunnel and Valve Rooms, provides the results of the AMR.

Table 2.4-8
Service Water Pipe Tunnel and Valve Rooms
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Foundations	SNS, SRE, SSR
Reinforced Concrete: Walls, floors, and ceilings	EN, FB, FLB, MB, SNS, SRE, SSR
Sumps	SNS

2.4.9 STATION BLACKOUT DIESEL GENERATOR BUILDING (INCLUDING TRANSFORMER X-3051 AND RADIATOR SKID FOUNDATIONS) – SEISMIC CLASS II

Structure Description

The Station Blackout Diesel Generator (SBODG) serves as the alternate AC source for station blackout. The SBODG is capable of supplying either of the station's essential 4.16-kV buses through nonessential Bus D2 and is available within ten minutes of the onset of station blackout. The Station Blackout Diesel Generator Building is a prefabricated building with spread footings for building columns and grade beams for the perimeter walls. It is a Seismic Class II structure with an independent reinforced concrete foundation for the diesel generator. The structure houses, supports and protects the SBODG and its supporting equipment.

A 2,000 gallon SBODG fuel oil storage tank is located within the SBODG Building.

The Transformer X-3051 Foundation is located just north of the SBODG Building and provides power to the SBODG generator room and battery room heaters. The Transformer X-3051 Foundation is a reinforced concrete slab on grade.

The Radiator Skid Foundation is a reinforced concrete foundation located outside adjacent to the SBODG Building providing support to the SBODG radiator skid.

Reason for Scope Determination

The function of the Station Blackout Diesel Generator Building is to provide physical support for equipment relied upon to demonstrate compliance with the Station Blackout (10 CFR 50.63) regulated event and for recovery from a Station Blackout as defined in 10 CFR 50.2. This meets the 10 CFR 54.4(a)(3) scoping criteria.

The function of the Transformer X-3051 Foundation is to provide physical support for Transformer X-3051 which supplies power to the SBODG generator room and battery room heaters.

The function of the Radiator Skid Foundation is to provide physical support for the SBODG radiator skid.

USAR References

USAR Sections 2.2.3.6.2, 8.1.2, and 8.3.1.1.4.2 describe the Station Blackout Diesel Generator. The structural details of the Station Blackout Diesel Generator Building are not described in the USAR.

Components Subject to AMR

Table 2.4-9 lists the component types that require AMR and their intended functions.

The structural commodities for the Station Blackout Diesel Generator Building are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-9, Aging Management Review Results - Station Blackout Diesel Generator Building, provides the results of the AMR.

Table 2.4-9
Station Blackout Diesel Generator Building
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Battery Rack	SRE
Foundations	SRE
Masonry Block Walls	SRE
Metal Roof	SRE
Metal Siding	SRE
Radiator Skid Foundation	SRE
Reinforced Concrete: Floors and ceilings	SRE
Structural Steel: Beams, Columns, Plates, and Trusses	SRE
Sumps	SRE
Transformer Foundation	SRE

2.4.10 TURBINE BUILDING – SEISMIC CLASS II

Structure Description

The Turbine Building is a Seismic Class II structure with steel framing, exterior metal siding, metal roof deck, and floors of reinforced concrete or steel grating. The structure is supported by concrete caissons and in some areas a mat foundation bearing on bedrock. Two 190-ton capacity bridge cranes are provided to service the building and equipment. The Turbine Building houses the turbine generator unit, condenser, feedwater systems, and associated equipment.

A small portion of the Class I reinforced concrete Auxiliary Building supports the structural steel framing for the heater bay of the Class II Turbine Building. Multi-level steel floor framing, the elevated and ground floor concrete slabs in the heater bay, and the reinforced concrete Auxiliary Building walls and slabs protect the Class I structure from the unlikely failure of the Class II structure or equipment.

The Turbine Building also contains rated and non-rated fire barriers credited for safe shutdown analysis.

The Turbine Building contains safety-related components as identified in the plant configuration database.

Reason for Scope Determination

The Turbine Building is a Seismic Class II structure adjacent to the Auxiliary Building and contains safety-related components; therefore it meets the 10 CFR 54.4(a)(2) scoping criteria.

The Turbine Building contains credited fire barriers and provides physical support to portions of the fire protection piping relied upon to demonstrate compliance with the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

USAR References

The structural details of the Turbine Building are not described in the USAR. The Turbine Building is depicted in USAR Figures 1.2-2, 1.2-3, 1.2-11, 3.6-20, 3.6-21, 3.6-22, 3.6-23 and 9.3-15.

Components Subject to AMR

Table 2.4-10 lists the component types that require AMR and their intended functions.

The structural commodities for the Turbine Building are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-10, Aging Management Review Results - Turbine Building, provides the results of the AMR.

Table 2.4-10
Turbine Building
Components Subject to Aging Management Review

Component Type	**Intended Function (as defined in Table 2.0-1)**
Foundations	EN, EXP, FLB, SNS, SRE
Masonry Block Walls	FB, SRE
Metal Roof Decking	EN, SNS, SRE
Metal Siding	EN, SNS, SRE
Reinforced Concrete: Walls, floors, and ceilings	EN, FB, SNS, SRE
Structural Steel: Beams, Columns, Plates, and Trusses	SNS, SRE
Sumps	SNS
Turbine Generator Pedestal	SNS

2.4.11 WATER TREATMENT BUILDING – SEISMIC CLASS II

Structure Description

The Water Treatment Building is a Seismic Class II structure with steel framing, reinforced concrete or steel grated floors, and metal roof deck. The structure is supported on a mat foundation bearing directly on bedrock. The Water Treatment Building houses the electric motor-driven fire pump, jockey fire water pump and associated piping; makeup water treatment system and the systems necessary to provide all plant potable water. The Water Treatment Building also contains rated fire barriers credited for safe shutdown analysis.

Reason for Scope Determination

The function of the Water Treatment Building is to provide physical support and protection for equipment used for the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

The Water Treatment Building contains credited fire barriers relied upon to demonstrate compliance with the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

USAR References

The structural details of the Water Treatment Building are not described in the USAR.

Components Subject to AMR

Table 2.4-11 lists the component types that require AMR and their intended functions.

The structural commodities for the Water Treatment Building are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-11, Aging Management Review Results - Water Treatment Building, provides the results of the AMR.

Table 2.4-11
Water Treatment Building
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Foundations	EXP, SRE
Masonry Block Walls	FB, SRE
Metal Roof Decking	SRE
Metal Siding	SRE
Reinforced Concrete: Walls, floors, and ceilings	SRE
Structural Steel: Beams, Columns, Plates, and Trusses	SRE
Sumps	SRE

2.4.12 YARD STRUCTURES

Yard Structures are structures at Davis-Besse not contained within or attached to buildings such as the Shield Building, Auxiliary Building, and Turbine Building. The yard structures evaluated for license renewal include foundations and structural arrangements for the:

- Borated Water Storage Tank (Including Trench)
- Diesel Oil Pump House
- Diesel Oil Storage Tank
- Emergency Diesel Generator Fuel Oil Storage Tanks
- Fire Hydrant Hose Houses
- Fire Wall between Bus-Tie Transformers
- Fire Wall between Bus-Tie Transformer and Startup Transformer 01
- Fire Wall between Auxiliary and Main Transformers
- Fire Water Storage Tank
- Nitrogen Storage Building
- Station Blackout Components and Structures in the Yard and Switchyard including Startup Transformers 01 and 02; Bus-Tie Transformers; 345-kV Switchyard circuit breakers ACB34560, ACB34561, ACB34562, ACB34563 and ACB34564; 345-kV Switchyard air break switch ABS34625; Relay House and the 345-kV Switchyard “J” and “K” buses
- Wave Protection Dikes
- Duct Banks
- Cable Trenches
- Manholes

The following yard structures were determined to be within the scope of license renewal:

2.4.12.1 Borated Water Storage Tank Foundation (including trench) – Seismic Class I

Structure Description

The BWST foundation and pipe trench are designed to Seismic Class I requirements and are located to the west of the Auxiliary Building. The foundation of the tank is a reinforced concrete mat resting on Class I structural backfill. The structural backfill extends to the in-situ rock. The below grade portion of the BWST piping is installed inside a pipe trench that is covered with steel plate and concrete hatch covers.

Reason for Scope Determination

The BWST foundation (including trench) is within the scope of license renewal as a Seismic Class I structure, which meets the criteria of 10 CFR 54.4(a)(1). The function of the BWST foundation is to provide physical support for the BWST and protection for the piping located in the trench below the BWST foundation. The function of the BWST pipe trench is to provide physical support and shelter for piping associated with the BWST. The BWST itself provides support for some mechanical and electrical components.

The BWST foundation (including trench) shelters and protects nonsafety-related SSCs whose failure could prevent performance of a safety-related function. Therefore, it meets the 10 CFR 54.4(a)(2) scoping criteria.

2.4.12.2 Diesel Oil Pump House – Seismic Class II

Structure Description

The Diesel Oil Pump House is a reinforced concrete structure located adjacent to the Diesel Oil Storage Tank. The Diesel Oil Pump House is designed to Seismic Class II requirements. The foundation is situated approximately 10 ft. below grade and is founded on Seismic Class II structural backfill material. The Diesel Oil Pump House allows transfer of fuel oil for the auxiliary boiler, diesel fire pump and miscellaneous diesel generator.

In the event of a postulated fire where the two emergency diesel generator fuel oil storage tanks are located, diesel fuel oil can be transferred from the nonsafety-related diesel oil storage tank using the nonsafety-related diesel oil transfer pump via a flexible hose. The emergency diesel generator fuel oil tank 1 and emergency diesel generator fuel oil transfer pump 1 would then not be used.

Reason for Scope Determination

The function of the Diesel Oil Pump House is to provide physical sheltering and support for the nonsafety-related diesel oil transfer pump and associated components. These components are used to provide an alternate fuel supply to the emergency diesel generator day tanks in the event of a postulated fire where the two emergency diesel generator fuel oil storage tanks are located. This meets the 10 CFR 54.4(a)(3) scoping criteria.

2.4.12.3 Diesel Oil Storage Tank Foundation – Seismic Class II

Structure Description

The diesel oil storage tank foundation rests on a reinforced concrete mat which is also part of the oil spill retention area (retaining area) for the storage tank. The foundation is designed to Seismic Class II requirements and is founded on Seismic Class II structural backfill material. The diesel oil storage tank foundation supports the diesel oil storage tank which supplies on-site fuel oil for the auxiliary boiler, diesel fire pump and miscellaneous diesel generator.

In the event of a postulated fire where the two emergency diesel generator fuel oil storage tanks are located, diesel fuel oil can be transferred from the nonsafety-related diesel oil storage tank using the nonsafety-related diesel oil transfer pump via a flexible hose. The emergency diesel generator fuel oil tank 1 and emergency diesel generator fuel oil transfer pump 1 would then not be used.

Reason for Scope Determination

The function of the diesel oil storage tank foundation is to provide physical support for the diesel oil storage tank which is credited to provide an alternate fuel supply to the emergency diesel generator day tanks in the event of a postulated fire. This meets the 10 CFR 54.4(a)(3) scoping criteria.

2.4.12.4 Emergency Diesel Generator Fuel Oil Storage Tanks Foundation – Seismic Class I

Structure Description

The two Emergency Diesel Generator Fuel Oil Storage (Week) Tanks are buried and are designed to Seismic Category I requirements. These tanks are supported by a reinforced concrete foundation and are covered with compacted material that qualifies as Seismic Category I structural backfill. The structural backfill along with vents and flame arresters reduce the probability of a fire. The structural backfill and other associated concrete and steel components are included for evaluation with the Tanks Foundation. The location of the tanks ensures that the effects of a fire would not affect the safe shutdown of the plant. The truncated pyramid of structural backfill built around the tanks provides tornado missile protection. The Emergency Diesel Generator (EDG) day tanks in the Auxiliary Building are filled automatically via separate transfer systems which receive fuel oil from the two EDG Fuel Oil Storage Tanks.

Reason for Scope Determination

The EDG Fuel Oil Storage Tanks foundation is within the scope of license renewal as a Seismic Class I structure, which meets the criteria of 10 CFR 54.4(a)(1). The function of the EDG Fuel Oil Storage Tanks Foundation with its associated components and structural backfill is to provide physical support and protection for the EDG Fuel Oil Storage Tanks which supply fuel oil to the Emergency Diesel Generators.

2.4.12.5 Fire Hydrant Hose Houses and Foundations – Seismic Class II

Structure Description

The outside manual fire hose installations have been evaluated and are sufficient to reach any location within the protected area with an effective hose stream. Fire hydrants are installed on the yard fire main system approximately every 250 feet.

Fire hydrant hose houses provide storage of necessary fire fighting equipment and the hose house foundations provide support to the hose houses. Fire hydrant hose houses are prefabricated steel sheds with two hinged doors on concrete pier foundations.

Reason for Scope Determination

The function of the in-scope fire hydrant hose houses and foundations is to provide physical sheltering and support for fire hydrants which are part of the fire suppression system. This meets the 10 CFR 54.4(a)(3) scoping criteria.

2.4.12.6 Fire Walls between Bus-Tie Transformers, between Bus-Tie and Startup Transformer 01, and between Auxiliary and Main Transformers – Seismic Class II

Structure Description

The Main, Auxiliary, Bus-Tie, and Startup Transformers are large oil-filled transformers. Three-hour barrier fire walls are provided between the Main and Auxiliary Transformers, the Bus-Tie Transformers, and between the Bus-Tie and Startup Transformer 01.

Reason for Scope Determination

The Fire Walls between Bus-Tie Transformers, between Bus-Tie and Startup Transformer 01, and between Auxiliary and Main Transformers are credited fire barriers relied upon to demonstrate compliance with the Fire Protection (10 CFR 50.48) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

2.4.12.7 Fire Water Storage Tank Foundation – Seismic Class II

Structure Description

The Fire Suppression system provides water for all automatic and manual fire water suppression systems. Two separate water supplies and fire water pumps are utilized to deliver water to the system. The primary supply consists of a fire water storage tank from which an electric motor-driven fire pump receives water, while the secondary water supply is Lake Erie, from which a diesel fire pump takes suction.

The fire water storage tank is a 300,000 gallon storage tank. The tank, foundation, and sub-base are designed to Seismic Class II requirements. The sub-base is constructed of earthen materials and compacted to Seismic Class II structural requirements.

Reason for Scope Determination

The function of the fire water storage tank foundation is to provide physical support for the fire water Storage tank which is the primary fire water supply for the Fire Suppression system. This meets the 10 CFR 54.4(a)(3) scoping criteria.

2.4.12.8 Nitrogen Storage Building – Seismic Class II

Structure Description

The Nitrogen Storage Building is located north-west of the Borated Water Storage Tank. The Nitrogen Storage Building is a single story steel framed storage structure with reinforced concrete foundation, walls, and roof. It provides shelter and support to the cryogenic nitrogen storage tank and the high pressure nitrogen storage system.

The Borated Water Storage Tank does not require protection from potential missiles since the nitrogen storage tank (located within the Nitrogen Storage Building), which is the nearest potential missile source, is enclosed in a structure capable of sustaining potential missiles from this source.

Reason for Scope Determination

The Nitrogen Storage Building provides missile protection to the Borated Water Storage Tank from potential missile sources contained within the Nitrogen Storage Building. This meets the 10 CFR 54.4(a)(2) scoping criteria.

2.4.12.9 Station Blackout Component Foundations and Structures in the Yard and Switchyard (Startup Transformers 01 and 02; Bus-Tie Transformers; 345-kV Switchyard circuit breakers ACB34560, ACB34561, ACB34562, ACB34563 and ACB34564; air break switch ABS34625; Relay House; "J" and "K" buses) – Seismic Class II

Structure Description

The station blackout component foundations and structures in the yard and switchyard (Startup Transformers 01 and 02; Bus-Tie Transformers; 345-kV switchyard circuit breakers ACB34560, ACB34561, ACB34562, ACB34563 and ACB34564; air break switch ABS34625; Relay House; "J" and "K" buses) are Seismic Class II structures. Startup Transformers 01 and 02, Bus-Tie Transformers, and associated breakers (circuit breakers ACB34560, ACB34561, ACB34562, ACB34563, ACB34564 and air break switch ABS34625) define the physical boundary that provides an offsite alternating current (AC) source for recovery from a station blackout regulated event.

Startup Transformer 01, Startup Transformer 02, and the Bus-Tie Transformers have reinforced concrete foundations that rest on structural backfill. The transformers are supported on wall and column footings. The switchyard breakers are supported by steel frame structures and the bus support structures are supported by reinforced concrete caisson foundations. Cable trenches provide routing space and support to electrical cables within the station blackout boundary. The concrete cable trench is provided with removable checkered plates and top slabs for access.

The Relay House is a Seismic Class II structure located at the southeast corner of the switchyard. It is a single story building with a basement constructed with reinforced concrete and concrete masonry blocks with precast decorative panels above grade. The Relay House contains the metering and relaying panels, supervisory controls, and the DC system equipment for the 345-kV switchyard and transmission systems.

Circuit breakers ACB34560, ACB34561, ACB34562, ACB34563 and ACB34564; air break switch ABS34625; the Relay House and "J" and "K" Bus Support Structures are located within the 345-kV Switchyard. The Relay House is located just east of the switchyard.

Reason for Scope Determination

The station blackout component foundations and structures in the yard and switchyard provide physical support for equipment relied upon to demonstrate compliance with the Station Blackout (10 CFR 50.63) regulated event. This meets the 10 CFR 54.4(a)(3) scoping criteria.

2.4.12.10 Wave Protection Dikes – Seismic Class II

Structure Description

The Wave Protection Dikes are Seismic Class II earthen dikes. The north, east and a small portion of the south sides of the station area with exposure to the lake are provided with dikes to elevation 591 feet International Great Lakes Datum to protect the facility from wave effects during the maximum credible water level conditions. Wave protection dike fill material consists of topsoil obtained from the on-site topsoil stockpile.

Reason for Scope Determination

The Wave Protection Dikes provide protection for the Davis-Besse site facilities from wave effects during the maximum credible water level conditions. This meets the 10 CFR 54.4(a)(2) scoping criteria.

2.4.12.11 Duct Banks, Cable Trenches, and Manholes – Seismic Class I and II

Structure Description

Duct banks, cable trenches, and manholes are installed and routed in the yard to provide physical support and shelter for in-scope electrical components such as electric cables and conduits.

Reason for Scope Determination

Duct banks and manholes located in the yard are structural component groups not identified as a structure or building. They provide physical support and shelter to safety-related equipment and therefore meet the criteria of 10 CFR 54.4(a)(1).

Duct banks and manholes located in the yard provide physical support and shelter to nonsafety-related equipment whose failure could prevent satisfactory accomplishment of required safety functions; therefore, they meet the scoping criteria of 10 CFR 54.4(a)(2).

Duct banks, cable trenches, and manholes located in the yard provide physical support and shelter to equipment relied upon to demonstrate compliance with the Station Blackout (10 CFR 50.63) and Fire Protection (10 CFR 50.48) regulated events. This meets the 10 CFR 54.4(a)(3) scoping criteria.

USAR References

USAR Section 3.7.2.3.4 describes the BWST foundation. The structural details of the BWST Pipe Trench are not described in the USAR.

The structural details of the Diesel Oil Pump House are not described in the USAR.

USAR Section 2.2.3.6.2 describes the Diesel Oil Storage Tank. The structural details of the Diesel Oil Storage Tank foundation are not described in the USAR.

USAR Section 9.5.4.2 describes the truncated pyramid of structural backfill built around the Emergency Diesel Generator Fuel Oil Storage Tanks. The structural details of the EDG Fuel Oil Storage Tanks foundation are not described in the USAR.

The structural details of the Fire Hydrant Hose Houses and Foundations are not described in the USAR.

The structural details of the Fire Walls between Bus-Tie Transformers, between Bus-Tie and Startup Transformer 01, and between Auxiliary and Main Transformers are not described in the USAR.

The structural details of the Fire Water Storage Tank Foundation are not described in the USAR.

The structural details of the Nitrogen Storage Building are not described in the USAR.

The structural details of the Station Blackout (SBO) Component Foundations and Structures in the Yard and Switchyard are not described in the USAR.

USAR Sections 1.2.1.1, 2C.6.3, and USAR Figure 2C.6-1 describe the Wave Protection Dikes.

The structural details of the duct banks, cable trenches, and manholes are not described in the USAR.

Components Subject to AMR

Table 2.4-12 lists the component types that require AMR and their intended functions.

Field erected tanks are evaluated in Section 2.3 as mechanical components within their corresponding system. The structural commodities for the yard structures are addressed in the bulk commodities evaluation in Section 2.4.13.

Table 3.5.2-12, Aging Management Review Results - Yard Structures, provides the results of the AMR.

Table 2.4-12
Yard Structures
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
BWST Foundation	EN, SSR
BWST Pipe Trench	EN, SNS, SSR
BWST Pipe Trench Cover Plates	EN, SNS
BWST Pipe Trench Hatch Covers	EN, SSR
Cable Trench Cover Plates	SRE
Cable Trench Top Slabs	SRE
Cable Trenches	SRE
Diesel Oil Pump House Foundation	SRE

**Table 2.4-12 (Continued)
Yard Structures
Components Subject to Aging Management Review**

Component Type	Intended Function (as defined in Table 2.0-1)
Diesel Oil Storage Tank Foundation	SRE
Diesel Oil Storage Tank Retaining Area and Dike	SRE
Duct Banks	EN, SNS, SRE, SSR
EDG Fuel Oil Storage Tank Hold Down Restraints	SSR
EDG Fuel Oil Storage Tanks Backfill	EN, MB, SSR
EDG Fuel Oil Storage Tanks Foundation	SSR
Fire Hydrant Hose Houses	SRE
Fire Hydrant Hose House Foundations	SRE
Fire Walls (transformers)	FB, SRE
Fire Water Piping Thrust Blocks	SRE
Fire Water Storage Tank Foundation	SRE
Manhole Covers and Frames	EN, SNS, SRE
Manhole Missile Shields	MB, SSR
Manholes	EN, SNS, SRE, SSR
Masonry Block Walls (Relay House)	SRE
Metal Roof Decking (Nitrogen Storage Building)	SNS
Nitrogen Storage Building Foundation	SNS
Precast Panels (Relay House)	SRE
Reinforced Concrete: Walls, Floors, and Ceilings (Diesel Oil Pump House)	SRE

Table 2.4-12 (Continued)
Yard Structures
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Reinforced Concrete: Walls, Floors, and Ceilings (Nitrogen Storage Building)	MB, SNS
Reinforced Concrete: Walls, Floors, and Ceilings (Relay House)	SRE
Relay House Foundation	SRE
Roof (Diesel Oil Pump House)	SRE
Roof (Nitrogen Storage Building)	MB, SNS
Roof (Relay House)	SRE
SBO Component Foundations	SRE
SBO Component Support Structures	SRE
Structural Steel: Beams, Columns, Plates, and Trusses (BWST trench cover support)	SNS
Structural Steel: Beams, Columns, Plates, and Trusses (Diesel Oil Pump House)	SRE
Structural Steel: Beams, Columns, Plates, and Trusses (Nitrogen Storage Building)	SNS
Structural Steel: Beams, Columns, Plates, and Trusses (Relay House)	SRE
Sumps (Diesel Oil Pump House and Diesel Oil Storage Tank Retaining Area)	SRE
Sumps (Manholes)	SRE
Sumps (Relay House)	SRE
Sumps (Transformer Foundations)	SRE
Transformer Foundations	SRE
Wave Protection Dike Corrugated Pipe Casings	EN, SNS

**Table 2.4-12 (Continued)
Yard Structures
Components Subject to Aging Management Review**

Component Type	Intended Function (as defined in Table 2.0-1)
Wave Protection Dike Piles	SNS
Wave Protection Dikes (including riprap)	FLB, SNS

2.4.13 BULK COMMODITIES

Structure Description

Bulk commodities are structural component groups that support in-scope structures' mechanical and electrical systems (e.g., anchorages, embedments, instrument panels, racks, cable trays, conduits, fire seals, fire doors, hatches, monorails, equipment and component supports). They are common to multiple systems, structures, and components and share material and environment properties which allow a common program or inspection to manage their aging effects.

Reason for Scope Determination

Bulk commodities are in scope based on the equipment that they support or protect.

Bulk commodities are in the scope of license renewal because they:

- provide structural or functional support to safety-related equipment. Therefore, they meet the 10 CFR 54.4(a)(1) scoping criteria.
- provide structural or functional support to nonsafety-related equipment whose failure could prevent satisfactory accomplishment of required safety functions (includes seismic II/I considerations). Therefore, they meet the 10 CFR 54.4(a)(2) scoping criteria.
- provide structural or functional support required to meet the Commission's regulations for any of the regulated events in 10 CFR 54.4(a)(3). Therefore, they meet the 10 CFR 54.4(a)(3) scoping criteria.

USAR References

The USAR does not specifically discuss or describe commodities.

Components Subject to AMR

Table 2.4-13 lists the component types that require AMR and their intended functions.

Table 3.5.2-13, Aging Management Review Results - Bulk Commodities, provides the results of the AMR.

Table 2.4-13
Bulk Commodities
Components Subject to Aging Management Review

Component Type	**Intended Function (as defined in Table 2.0-1)**
Steel and Other Metals	
Anchorage / Embedments	SNS, SRE, SSR
Cable Tray and Conduit Supports	SNS, SRE, SSR
Cable Trays and Conduits	EN, SNS, SRE, SSR
Component and Piping Supports (ASME Class 1, 2, and 3)	SRE, SSR
Damper Framing (in-wall)	SNS, SRE, SSR
Electrical and Instrument Panels & Enclosures	EN, SNS, SRE, SSR
Electrical Cable Bus Ducts	EN, SRE, SSR
Equipment Component Supports	SNS, SRE, SSR
Flood Curbs	FLB, SNS
Flood, Pressure, and Specialty Doors	FLB, MB, SPB, SHD, SNS, SRE, SSR
HELB Barriers (includes pipe restraints, whip restraints, and jet/missile impingement shields/plate barriers)	HELB, PW, SNS, SSR
HVAC Duct Supports	SNS, SRE, SSR
Instrument Line Supports	SNS, SRE, SSR
Instrument Racks and Frames	SNS, SRE, SSR
Missile Barriers	MB, SSR
Monorails, Hoists and Miscellaneous Cranes	SNS
Penetrations (Mechanical and Electrical)	EN, FB, FLB, SPB, SNS, SRE, SSR
Pipe Supports	SNS, SRE, SSR

Table 2.4-13 (Continued)
Bulk Commodities
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Stairs, Ladders, Platforms, and Gratings	FLB, SNS, SRE
Tube Track Supports	SNS, SRE, SSR
Tube Tracks	SNS, SRE, SSR
Vents and Louvers	SNS, SRE, SSR
Vibration Isolators	SNS, SRE
Threaded Fasteners	
Anchor Bolts	SNS, SRE, SSR
Anchor Bolts (ASME Class 1, 2, and 3 Supports Bolting)	SRE, SSR
Blowout Panel Release Fasteners	PR, SSR
Expansion Anchors	SNS, SRE, SSR
Concrete Components	
Equipment Pads	SNS, SRE, SSR
Flood Curbs	FLB, SNS
Hatches & Hatch Plugs	EN, FB, FLB, MB, SPB, SHD, SNS, SRE, SSR
Support Pedestals	SNS, SRE, SSR
Elastomeric Components	
Compressible Joints and Seals	EXP, FLB, SNS, SSR
Expansion Boots	EXP, FLB, SNS, SRE, SSR
Flexible Conduit Fittings	EN, SNS, SRE, SSR
Roof Membrane	EN, FLB, SNS, SRE, SSR

Table 2.4-13 (Continued)
Bulk Commodities
Components Subject to Aging Management Review

Component Type	Intended Function (as defined in Table 2.0-1)
Waterproofing Membrane	FLB, SNS, SSR
Waterstops	FLB, SNS, SSR
Fire Barrier Commodities Note: Masonry and concrete fire barriers, such as walls, ceilings, and floors, are evaluated under the "Masonry Block Walls" and "Reinforced Concrete: walls, floors, and ceilings" component groups with the respective structure.	
Fire Doors	FB, SNS, SRE, SSR
Fire Stops	FB, FLB, SPB, SNS, SRE, SSR
Fireproofing	FB, SNS, SRE, SSR
Fire Wraps	FB, SNS, SRE, SSR
Miscellaneous Materials	
Containment Penetration Insulation	SNS
Piping and Mechanical Equipment Insulation	SNS

2.5 SCOPING AND SCREENING RESULTS: ELECTRICAL AND INSTRUMENTATION AND CONTROLS SYSTEMS

The determination of electrical and instrumentation and controls (I&C) systems within the scope of license renewal is made through the application of the process described in Section 2.1. The results of the electrical and I&C systems scoping review are contained in Section 2.2.

Section 2.1 also provides the methodology for determining the components within the scope of 10 CFR 54.4 that meet the requirements contained in 10 CFR 54.21(a)(1). The components that meet these screening requirements are identified in this section. These identified components require an aging management review (AMR) for license renewal.

Components that support or interface with electrical and I&C components, for example, instrument racks, panels, cabinets, cable trays, conduit, and their supports (including foundations for outdoor equipment), are included in the civil-structural assessment documented in Section 2.4.

Information describing the electrical and I&C systems can be found in the Updated Safety Analysis Report (USAR) Chapter 7 for the instrumentation and control systems, USAR Chapter 8 for the electrical power systems, and USAR Section 8.2 for the station offsite power system. The Fire Hazards Analysis Report provides requirements regarding fire protection for electrical and I&C components. USAR Chapter 3 provides requirements regarding environmental qualification for electrical and I&C components.

2.5.1 ELECTRICAL AND I&C SCREENING PROCESS

The screening process identifies the electrical component commodity groups that are subject to AMR for in-scope plant systems that include electrical and I&C components. Electrical component commodity group identification is done in accordance with the requirements of 10 CFR 54.21(a) and the guidance of NEI 95-10, Appendix B. Electrical components that are active and electrical components that are replaced on a specified time schedule do not have a license renewal intended function and have been excluded from AMR. Only long-lived and passive components that perform a license renewal intended function are subject to AMR.

2.5.2 APPLICATION OF SCREENING CRITERIA 10 CFR 54.21(a)(1)(i) TO ELECTRICAL AND I&C COMPONENT COMMODITY GROUPS

The screening determination with respect to the passive criterion is taken directly from NEI 95-10. Appendix B of NEI 95-10 delineates which commodity groups are active and which are passive. The active components are excluded from further review, by the direction of 10 CFR 54.21(a)(1)(i).

Table 2.5.2-1 is a listing of the industry standard passive electrical component commodity groups and their generic intended functions. In the performance of the screening review, these commodity groups were taken as the base case. Specific Davis-Besse documents were reviewed to determine the applicability of the industry standard commodity groups (i.e., single-line drawings, maintenance rule functions, Chapter 7 and Chapter 8 of the USAR, the Fire Hazards Analysis Report, and electrical layout drawings, etc.). The screening review also evaluated the environmental qualification status of the electrical and I&C components. The screening review did not identify any additional commodity groups for evaluation – the list in Table 2.5.2-1 is complete.

Table 2.5.2-1
Industry Standard List of Passive Electrical Commodities

<table>
<tr><th>Passive Electrical Commodities</th><th>Intended Function</th></tr>
<tr><td>Insulated Cables and Connections -
(e.g., power, instrumentation, control, fiber optic cables, communication applications; connections include connectors, splices, terminal blocks, and electrical portions of electrical and I&C penetration assemblies)</td><td rowspan="5">Conduct electricity –
Provide electrical connection to specified portions of an electrical circuit to deliver voltage, current, or signals</td></tr>
<tr><td>Metal Enclosed Bus -
(e.g., iso-phase bus, non-segregated phase bus, segregated phase bus, and bus duct)</td></tr>
<tr><td>Switchyard Bus and Connections</td></tr>
<tr><td>Transmission Conductors and Connections</td></tr>
<tr><td>Uninsulated Ground Conductors and Connections</td></tr>
<tr><td>High-voltage Insulators -
(e.g., porcelain switchyard insulators, transmission line insulators)</td><td rowspan="2">Insulation (and support)</td></tr>
<tr><td>Fuse Holders</td></tr>
<tr><td>Tie Wraps</td><td>Support</td></tr>
</table>

2.5.3 ELIMINATION OF COMPONENT COMMODITY GROUPS WITH NO LICENSE RENEWAL INTENDED FUNCTIONS

The following electrical and I&C component commodity groups do not perform a license renewal function and are excluded from AMR, in accordance with 10 CFR 54.21(a)(1)(i).

2.5.3.1 Uninsulated Ground Conductors

Uninsulated ground conductors limit equipment damage and provide personnel protection in the event of a circuit failure.

Uninsulated ground conductors are not safety-related and their failure cannot cause the loss of a safety-related function. They are not required for any fire protection commitment, and they are not part of the station blackout or anticipated transients without scram evaluations. They are not included in the environmental qualification (EQ) program. Uninsulated ground conductors are not relied upon in safety analyses or plant evaluations to perform any function consistent with the requirements of 10 CFR 54.4(a)(3). Therefore, uninsulated ground conductors do not perform a license renewal intended function as described in 10 CFR 54.4 and are excluded from further license renewal evaluation.

2.5.3.2 Metal-Enclosed Bus

There is no metal-enclosed bus within the license renewal evaluation boundary. The in-scope bus components for the 13.8-kV and 4.16-kV electrical systems utilize cable bus.

2.5.3.3 Fuse Holders

Fuse holders are blocks of rigid insulation material with metallic clamps attached to the blocks to hold each end of the fuse. The clamps can be spring-loaded clips, or they can be bolt lugs.

The fuse holders evaluated for license renewal are those in passive, stand-alone applications. Fuse holders in active electrical panels (those containing active electrical components) are excluded. Based on review of Davis-Besse electrical drawings, the fuse documentation, and other engineering documents, the plant fuse holders are either part of an active electrical panel or are located in circuits that perform no license renewal intended function.

2.5.3.4 Tie Wraps

Tie wraps are used in cable installations (in panels, in tray, etc.) as cable ties. Tie wraps hold groups of cables together for restraint and for ease of maintenance. Tie wraps are used to bundle wires together and to keep the wire and cable runs neat and orderly. Tie wraps are used to restrain wires and cables within raceway to facilitate cable installation. There are no current license basis requirements for tie wraps at Davis-Besse. Tie wraps are not required to remain functional during and following design basis events. Tie wraps are not required for maintaining cable ampacity, ensuring the maintenance of minimum bend radius, or maintaining cables within vertical raceways. Tie wraps are not required for any seismic analysis. Therefore, tie wraps are not within the scope of license renewal at Davis-Besse.

2.5.4 APPLICATION OF SCREENING CRITERIA 10 CFR 54.21(a)(1)(ii) TO ELECTRICAL AND I&C COMPONENT COMMODITY GROUPS

The next step in the electrical screening process is to segregate the "long-lived" electrical components from those that are subject to replacement based on a qualified life or a specified time schedule. In general, components that are screened out of license renewal consideration based on the "long-lived" criterion are those included in the plant EQ program. Electrical components included in the plant EQ program have qualified lives and are replaced based on their qualified life determination, as discussed in Section 2.5.4.2. Therefore, environmentally qualified components do not meet the "long-lived" criterion of 10 CFR 54.21(a)(1)(ii) and are excluded from AMR. EQ evaluations that meet the criteria for a time-limited aging analysis are addressed in Section 4.4.

2.5.4.1 Electrical Portions of Electrical and I&C Penetration Assemblies

Some primary containment electrical penetrations are environmentally qualified. The electrical continuity of the environmentally qualified penetrations is managed under the EQ Program which is evaluated as a time-limited aging analysis as described in Section 4.4. The non-EQ electrical penetrations are subject to AMR. All the electrical penetrations have a structural function (pressure boundary) which is addressed in Section 2.4.1.

2.5.4.2 Insulated Cables and Connections in the EQ Program

The insulated cables and connections that are included in the plant EQ program have qualified lives and are replaced based on their qualified life determination. Therefore, insulated cables and connections that are included in the EQ program are managed under the EQ Program which is evaluated as a time-limited aging analysis as described in Section 4.4.

2.5.5 ELECTRICAL AND I&C COMPONENT COMMODITY GROUPS REQUIRING AN AGING MANAGEMENT REVIEW

The electrical and I&C component commodity groups that require AMR are listed in Table 2.5-1, along with their intended functions. Intended functions are defined in Table 2.0-1.

Table 3.6.2-1, Aging Management Review Results - Electrical and I&C Components, lists the results of the AMR.

Electrical and I&C component commodity groups that require an AMR are discussed in the following sections.

2.5.5.1 Non-Environmentally Qualified Insulated Cables and Connections

The non-EQ insulated cables and connections commodity group includes all in-scope electric power cables, control cables, and instrumentation cables that are not addressed by the EQ program, and those in-scope connections (e.g., splices, terminal blocks, electrical penetration assemblies, and electrical connectors) that are not addressed by the EQ program. Also included in this group are the metallic parts of electrical cable connections (typically bolted connections).

An insulated cable is an assembly consisting of one or more conductors (aluminum or copper) with a covering of insulation, and may include fillers and a jacket to cover the entire assembly. The assembly may also include a metallic shield. The jacket, filler, and metallic shield are not evaluated for the purposes of license renewal; the insulation is the only portion subject to evaluation.

Cable connectors are used to connect the cable conductors with other cables or with a variety of electrical devices (e.g., motors or instruments). Examples of connectors are compression fittings, fusion connectors (used primarily for uninsulated ground conductors), plug-in connectors, and terminal blocks (including fuse blocks).

Splices are used to connect cable conductors to penetration pigtails or to motor leads, and are also used to connect sections of cable during repair or replacement. Splices may also have been utilized during original cable installation.

A terminal block consists of an insulating base with fixed metallic points for landing wires (conductors) or for connecting terminal rings (lugs). Terminal blocks are installed in an enclosure such as a panel, control board, motor control center, terminal box, or other enclosure.

Electrical penetration assemblies are components utilized to carry electrical conductors through the Shield Building and Containment Vessel (via a canister-type configuration), while providing electrical continuity for the applicable circuits. The electrical penetrations consist of sealants, feed-throughs (the conductors), connections, and plates and other support sub-components.

The function of insulated cables and connections is to provide electrical connection to specified portions of an electrical circuit to deliver voltage, current, or signals. Non-EQ insulated cables and connections are passive, long-lived components. Therefore, non-

EQ insulated cables and connections meet the criteria of 10 CFR 54.21(a)(1) and are subject to an AMR.

2.5.5.2 Switchyard Bus and Connections

Switchyard bus is uninsulated, unenclosed, rigid electrical conductor used in plant switchyards and switching stations to connect two or more elements of an electrical power circuit. Portions of the switchyard bus equipment located in the plant switchyard (associated with the "J" and "K" buses and the switchyard circuit breakers) are within the license renewal evaluation boundary. The switchyard bus connections associated with these portions of bus are also in the license renewal scope.

The switchyard bus is connected to flexible connectors that are supported by insulators and ultimately by structural components such as concrete footings and structural steel.

The switchyard bus and connections provide electrical connection between the plant electrical system and the transmission grid to deliver voltage and current. Switchyard bus and connections are passive, long-lived components. Therefore, the switchyard bus and connections meet the criteria of 10 CFR 54.21(a)(1) and are subject to an AMR.

2.5.5.3 Transmission Conductors and Connections

Transmission conductors are category ACAR (aluminum conductor aluminum reinforced), stranded aluminum conductors wrapped around an aluminum wire core. They are uninsulated, high-voltage conductors used to carry loads in plant switchyards and in distribution applications. The connections are cast aluminum or galvanized steel, with stainless steel washers.

The section of transmission conductor within the scope of license renewal is located between startup transformers 01 and 02 and the plant switchyard, and also within the switchyard itself. The in-scope transmissions conductors are shown in Figure 2.5-1 (the conductor from the switchyard to the startup transformers).

The function of transmission conductors and connections is to provide electrical connection to specified portions of an electrical circuit to deliver voltage and current. Transmission conductors provide the supply of off-site power to the plant under station blackout conditions. Transmission conductors and connections are passive, long-lived components. Therefore, the transmission conductors and connections meet the criteria of 10 CFR 54.21(a)(1) and are subject to an AMR.

2.5.5.4 High-Voltage Insulators

A high-voltage insulator is a component uniquely designed to physically support a high-voltage conductor and to separate the conductor electrically from another conductor or object. The high-voltage insulators evaluated for license renewal include those associated with startup transformers 01 and 02, and the high-voltage insulators found in the in-scope portion of the plant switchyard.

There are two basic types of insulators: station post insulators, and strain (or suspension) insulators. Station post insulators are large and rigid and are used to support stationary equipment, such as short lengths of transmission conductors, switchyard bus, and disconnect switches. Strain insulators are used in applications where movement of the supported conductor is expected and allowed, including maintaining tensional support of transmission conductors between transmission towers or other supporting structures.

The high-voltage insulators within the license renewal scope are the station post insulators associated with startup transformers 01 and 02, and the high-voltage insulators (post and suspension insulators) associated with the 345-kV switchyard.

The function of high-voltage insulators is to insulate and support an electrical conductor (transmission conductor and switchyard bus). High voltage insulators are passive, long-lived components. Therefore, high voltage insulators meet the criteria of 10 CFR 54.21(a)(1) and are subject to an AMR.

2.5.6 EVALUATION BOUNDARIES

2.5.6.1 System Evaluation Boundaries

The evaluation boundaries for the electrical and I&C systems within the scope of license renewal include the entire system. Electrical and I&C component types within the boundaries of in-scope mechanical systems are also included within the electrical and I&C evaluation boundaries.

2.5.6.2 Station Blackout Recovery Path Evaluation Boundaries

The License Renewal Rule, 10 CFR 54.4(a)(3), requires that plant systems, structures, and components relied on for compliance with the NRC regulation on station blackout, 10 CFR 50.63, be included in the scope of license renewal. In April 2002, the NRC issued additional guidance on the (license renewal) scoping of equipment relied on to meet the requirements of 10 CFR 50.63 in the form of an Interim Staff Guidance (ISG) document (ISG-02). Subsequently, this guidance was incorporated into NUREG-1800, Revision 1.

Using the requirements of the License Renewal Rule, the guidance provided in NUREG-1800, the insights of ISG-02, and the current licensing basis documentation, the station blackout license renewal scoping boundary was established and the in-scope systems, structures, and components for station blackout were identified. The following paragraphs describe the station blackout license renewal off-site power recovery paths for Davis-Besse. USAR Sections 8.1.1 and 8.2 provide a detailed description of the offsite power system and offsite power pathways for Davis-Besse. USAR Figure 8.2-2 provides a simplified single-line diagram showing the switchyard configuration.

There are three independent sources of offsite power provided to the site - the Bayshore Line, the Lemoyne Line, and the Ohio Edison Line. These 345-kV lines enter the Davis-Besse switchyard, and form a ring bus configuration via the switchyard circuit breakers and the "J" and "K" buses in the switchyard. Startup transformers 01 and 02 provide the in-scope power pathways into the plant and to the safety buses, as shown in Figure 2.5-1.

Startup transformers 01 and 02 provide a step-down from 345-kV to 13.8-kV, and then the bus-tie transformers step the voltage down to 4.16-kV just prior to the pathway entering the Auxiliary Building. The 4.16-kV cable bus then enters the Auxiliary Building and is routed to the 4.16-kV essential buses C1 and D1. This configuration is shown in Figure 2.5-1. The power recovery pathway (into the plant) is comprised of transmission conductor (and connections) and switchyard bus (and connections). The in-scope structural items (towers and foundations) are evaluated in Section 2.4.12.

Within the switchyard, there are two 345-kV buses – the "J" (East) bus and the "K" (West) bus. The "J" bus is closest to the plant and the "K" bus is located on the farther side of the switchyard, closer to the grid. The current switchyard configuration includes circuit breakers ACB34560, ACB34561, ACB34562, ACB34563, and ACB34564 in a ring bus configuration. These circuit breakers and the switchyard buses are within the license renewal evaluation boundary. This configuration is shown in simplified graphical form in USAR Figure 8.2-2 and in Figure 2.5-1 below.

The control circuits and protective relays for the switchyard circuit breakers (and the equipment associated with the "J" and "K" buses), as well as disconnect switch ABS34625 are within the scope of license renewal. The switchyard Relay House, where the switchyard control circuits and relays are located, is within the scope of license renewal, and is addressed in Section 2.4.12.

Figure 2.5-1
Davis-Besse Station Blackout Recovery Path

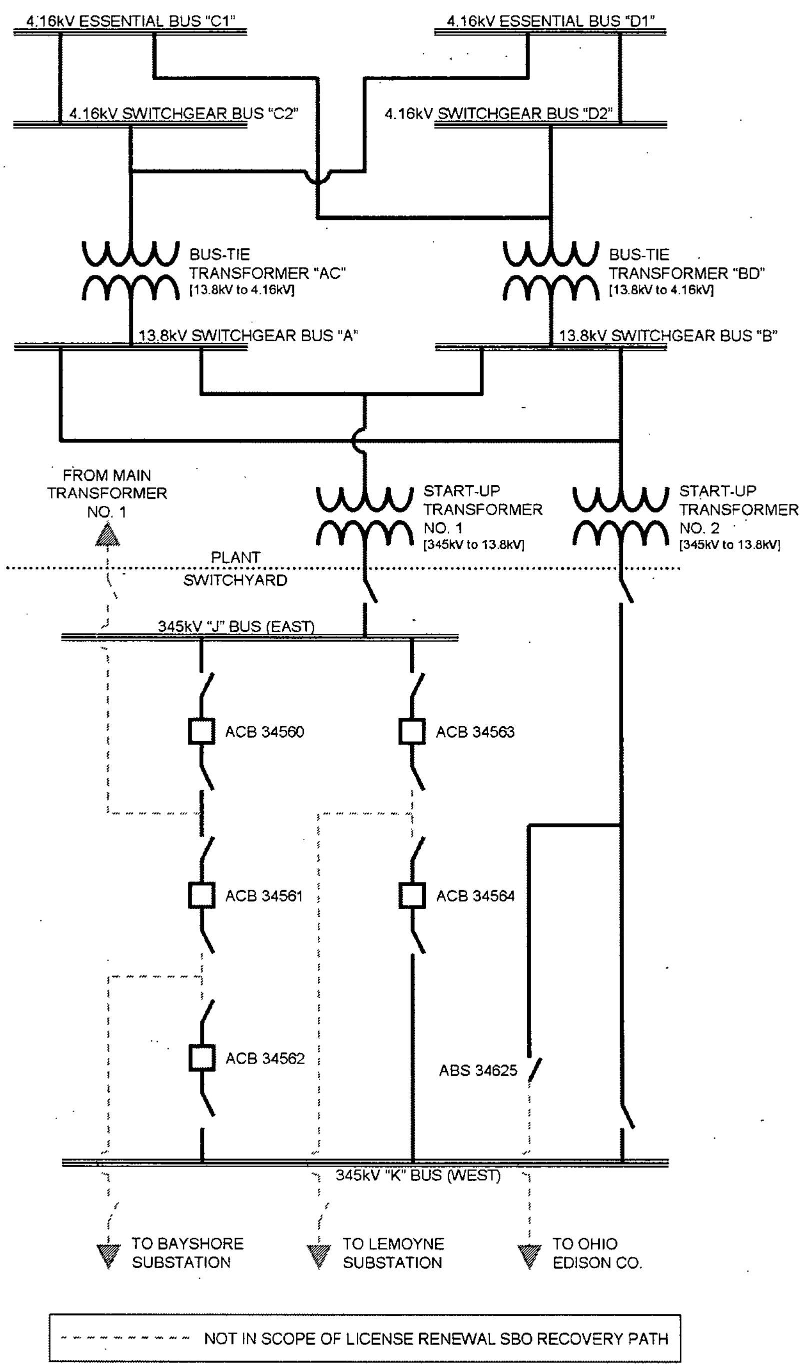

Table 2.5-1
Electrical and Instrumentation and Control System Components Subject to Aging Management Review

Component and Commodity Group	Intended Function (as defined in Table 2.0-1)
Non-EQ Insulated Cables and Connections includes non-EQ electrical penetration assemblies, non-EQ cable connections (metallic parts)	Conduct Electricity
Non-EQ Sensitive, High-Voltage, Low-Level Signal Instrument Cables and Connections	Conduct Electricity
Non-EQ Medium-Voltage Power Cables	Conduct Electricity
Switchyard Bus and Connections	Conduct Electricity
Transmission Conductors and Connections	Conduct Electricity
High-Voltage Insulators	Insulation (and support)

3.0 AGING MANAGEMENT REVIEW RESULTS

For those systems, structures, and components identified as being subject to an aging management review (AMR) in Section 2, 10 CFR 54.21(a)(3) requires demonstration that the effects of aging will be adequately managed so that their intended functions will be maintained consistent with the current licensing basis for the period of extended operation.

This section provides the results of the AMR of the systems, structures, and components determined, during the scoping and screening processes, to be subject to an AMR. Organization of this section is based on NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule, Revision 6." This section is organized as follows:

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

Results of the AMRs are presented in two types of tables:

Table 3.x.1 – where

'3' indicates the table pertains to a Section 3 AMR,

'x' indicates the table number from NUREG-1801, Volume 1; and

'1' indicates the first table type.

For example, in the Reactor Vessel, Internals, and Reactor Coolant System section, this table would be numbered 3.1.1, and in the Auxiliary Systems section, this table would be numbered 3.3.1. This table type will be referred to as "Table 1." These tables are derived from the corresponding tables in Volume 1 of NUREG-1801 and present summary information from the AMR results.

Table 3.x.2-y – where

'3' indicates Section 3 of the license renewal application (LRA);

'x' indicates the table number from NUREG-1801, Volume 1;

'2' indicates the second table type; and

'y' indicates the specific system, structure or commodity being addressed.

For example, within the Reactor Vessel, Internals, and Reactor Coolant System section, the AMR results for the Reactor Pressure Vessel are presented in Table 3.1.2-1. In the Engineered Safety Features section, the AMR results for the Containment Air Cooling and Recirculation System are presented in Table 3.2.2-1, and the AMR results for the Containment Spray System are presented in Table 3.2.2-2. This table type will be referred to as "Table 2." These tables present the results of the AMRs.

Table Descriptions and Usage

NUREG-1801 contains the NRC staff's generic evaluation of existing plant programs. It documents the technical basis for determining where existing plant programs are adequate without modification and where the programs should be augmented for the period of extended operation. The evaluation results documented in the report indicate that many of the existing plant programs are adequate to manage the aging effects for particular components or commodities within the scope of license renewal without change. NUREG-1801 also contains recommendations on the specific areas for which an existing program should be augmented for license renewal. In order to take full advantage of NUREG-1801, a comparison between the AMR results and the tables of NUREG-1801 has been made. The results of that comparison are provided in tables in this section.

The purpose of Table 1 (refer to Sample Table 1 below) is to provide a summary comparison of specific plant AMR details with the corresponding tables of NUREG-1801, Volume 1. The table is essentially the same as Tables 3.1-1 through 3.6-1 of NUREG-1800, except that the "ID" column has been renamed the "Item Number" column, the "component" column has been expanded to "component/commodity," the "Type" column has been deleted, and the "Related Item" column has been replaced by a "Discussion" column. The number in the "Item Number" column is the number in the "ID" column prefixed by the table number to provide the reviewer with a cross-reference from Table 1 to Table 2. The "Discussion" column is used to provide clarifying information. The following are examples of information that might be contained within the "Discussion" column.

- "Further Evaluation Recommended" – Information or reference to where that information is located.

- The name of a plant-specific program being used.
- Exceptions to NUREG-1801 assumptions.
- A discussion of how the line is consistent with the corresponding line item in NUREG-1801, Volume 1, when it may appear inconsistent.
- A discussion of how the item is different from the corresponding line item in NUREG-1801, Volume 1, when it may appear to be consistent (e.g., when there is exception taken to an aging management program that is listed in NUREG-1801).

The format of Table 1 provides a reviewer with a means of aligning a specific Table 1 row with the corresponding NUREG-1801, Volume 1 table row, thereby allowing for ease of consistency verification.

Sample Table 1

Table 3.x.1 Summary of Aging Management Programs for __ Evaluated in Chapter __ of NUREG-1801

Item Number	Component / Commodity	Aging Effect / Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.x.1-01					
3.x.1-02					
3.x.1-03					

Table 2 (refer to Sample Table 2 below) provides the detailed results of the AMRs for those components and commodities identified in Section 2 as being subject to AMR. There is a Table 2 for each system and structure in Section 2 that contains components and commodities subject to AMR. Table 2 consists of the following 10 columns:

Row No. – The first column provides a sequential row number for the rows in each table. The row number permits the easy identification of a specific line of AMR results within a table.

Component Type (or Component/Commodity) – The second column identifies the component and commodity types from Section 2 that are subject to AMR, listed in alphabetical order. During the screening process, some components were incorporated into commodity groups based on similarity of their design or materials of construction. Use of commodity groups made it possible to address an entire group of components with a single evaluation. In the AMRs described in the following sections, further definition of commodity groups was performed based on design, material, environmental, and functional characteristics in order to disposition an entire group with a single AMR.

Intended Function(s) – The third column contains the license renewal intended function (abbreviations are used for structural functions) for each listed component and commodity type. Definitions (and the corresponding abbreviations, where used) of intended functions are contained in Table 2.0-1.

Material – The fourth column lists the material of construction for each component and commodity type.

Environment – The fifth column lists the environment to which each component and commodity type is exposed. Internal and external environments are indicated. The process and ambient environments used in the AMRs are listed below in Table 3.0-1 and Table 3.0-2 respectively.

Aging Effect Requiring Management – As part of the AMR process, aging effects requiring management were identified for material and environment combinations; these aging effects are listed in the sixth column. The AMR methodology was based on generic industry guidance for determining aging effects for electrical, mechanical, and structural components and commodities based on the materials of construction and applicable environmental conditions. The material and environment-based rules in the industry guidance documents were derived from known age-related degradation mechanisms and industry operating experience. The aging effect determination was supplemented by review of Davis-Besse operating experience.

Aging Management Program – The aging management program used to manage the aging effects requiring management is identified in the seventh column of Table 2. Aging management programs are described in Appendix B.

NUREG-1801, Volume 2 Item – Each combination of component and commodity type, material, environment, aging effect requiring management, and aging management program that is listed in Table 2 was compared to NUREG-1801, Volume 2, with consideration given to the standard (generic) notes, to identify consistencies. When they were identified, consistencies were documented by noting the appropriate NUREG-1801, Volume 2 item number in column eight of Table 2. If there is no corresponding item number in NUREG-1801, Volume 2, the entry was indicated as "not applicable" (N/A). Thus, a reviewer can readily identify where there is correspondence between the plant-specific tables and the NUREG-1801, Volume 2 tables.

Table 1 Item – Each combination of component or commodity, material, environment, aging effect requiring management, and aging management program that has an identified NUREG-1801, Volume 2 item number also has a Table 3.x.1 line item reference number. The corresponding line item from Table 1 is listed in column nine of Table 2. If there is no corresponding item in NUREG-1801, Volume 1, the entry was indicated as "not applicable" (N/A). Therefore, the information from the two tables can be correlated.

Notes – To realize the full benefit of NUREG-1801, a series of notes is used to identify how the information in Table 2 aligns with the information in NUREG-1801, Volume 2. Notes designated with letters are industry standard (generic) notes from NEI 95-10. Additional information is provided in plant-specific notes, which are identified by a number. Plant-specific notes provide information or clarification regarding the AMR of the Table 2 line item. The generic and plant-specific notes are listed at the end of Sections 3.1 through 3.6. Section 3.1 uses plant-specific notes numbered in the 0100-series (e.g., 0101, 0102, etc.). Section 3.2 uses plant-specific notes numbered in the 0200-series; Section 3.3, in the 0300-series; Section 3.4, in the 0400-series; Section 3.5, in the 0500-series; and Section 3.6, in the 0600-series.

Generic notes A through E indicate that a comparison may be made between the Table 2 line item and NUREG-1801. Therefore, items associated with notes A through E will also contain a NUREG-1801, Volume 2 item and reference to a Table 1 item.

<u>Sample Table 2</u>

Table 3.x.2-y Aging Management Review Results–<System Name>

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG -1801, Volume 2 Item	Table 1 Item	Notes

<u>Service Environments</u>

Service (operating) environments for license renewal purposes are defined as the fluids and the ambient conditions of temperature, humidity, and radiation to which structures and components are expected to be exposed during normal plant operating conditions. Service environments include both process environments internal to components such as piping, valves, and tanks, and the ambient environments on the external surfaces of structures and components. External surfaces of certain mechanical components may also be exposed to predominantly internal environments, such as heat exchanger tubes and coils, or components that are submerged in fluid in a tank or a sump or in the fuel pool.

The service environments evaluated for Davis-Besse license renewal are described in Table 3.0-1 and Table 3.0-2 below, for process and ambient environments respectively. These environments were aligned with the corresponding terminology in Sections IV and IX of NUREG-1801, as much as was practical.

Table 3.0-1
Process Environments

Davis-Besse Environments	NUREG-1801 Environments	Description
• Dried air • Gas	• Dried air • Gas	Dried air is compressed air that has been filtered, compressed, and dried for use in plant equipment. Compressed air that has not been dried is considered to be air. Gas is a compressed gas such as carbon dioxide, Halon, hydrogen, nitrogen, Freon, or other refrigeration gases. Such gases are received in bulk and are dry and free of contaminants, except when used in a manner that allows contact with water or condensation, in which case the gas becomes moist.
• Air • Moist air	• Air - indoor uncontrolled • Moist air or condensation (internal)	Air and moist air are defined to be air environments that contain some amount of moisture or contaminants. This includes: 1) air for use in plant components before it has been dried (moisture content is enough to facilitate general corrosion of steel), or 2) process air in locations where condensation, water pooling, or accumulation of contaminants could occur (moisture content is enough to facilitate crevice and pitting corrosion in various metals, as well as general corrosion of steel), or 3) air-water interfaces where alternate wetting and drying can concentrate contaminants so that they become aggressive to metal, or 4) air contained in the space above the air-water interface inside a component that contains water.
• Closed cycle cooling water • Closed cycle cooling water > 60°C (> 140°F)	• Closed cycle cooling water • Closed cycle cooling water >60°C (>140°F)	Includes treated water, as defined below, which is from and returns to a closed source (e.g., a tank) that is not open to the elements, and is used for cooling of plant components. That is, demineralized water that may contain additives in a: 1) closed cooling water system such as the chilled water system, fuel pool cooling system, component cooling water system, and decay heat removal system; or 2) heat exchanger, cooler, or other component in another system that is served by cooling water from a closed system.

Table 3.0-1
Process Environments (continued)

Davis-Besse Environments	NUREG-1801 Environments	Description
• Fuel oil	• Fuel oil	Fuel oil is usually diesel grade number 2 that is used to fuel engines, such as for the emergency diesel generators and the diesel-driven fire pump. Fuel oil is typically stored in tanks that are open to the environment (through vents) and will therefore be exposed to moist air at the surface level and possibly subject to water contamination.
• Lubricating oil	• Lubricating oil	Lubricating oil is typical of oil used in bearings, gear boxes, etc., for lubrication. Lubricating oil environments do not typically contain significant amounts of water, but are conservatively assumed to contain some amount of water contamination for the purposes of aging management review.
• Raw water • Condensation	• Raw water • Condensation • Water - flowing • Water - flowing under foundation • Water - standing	Water from a lake, pond, river or other reservoir that is open to the elements. Raw water is considered to be rough-filtered and possibly treated with a biocide or other chemicals for control of micro- and macro-organisms. In addition, the contents of various sumps, tanks and other drainage components are considered to be raw water environments, as is the potable water environment, since their contents are not treated or controlled by a credited site program and may contain unknown contaminants. The internal environment of drain pans and drain piping associated with air-handling units, fan cooler units, and moisture separators is untreated and uncontrolled water, resulting from the condensation of moisture from the ventilation air environment.

Table 3.0-1
Process Environments (continued)

Davis-Besse Environments	NUREG-1801 Environments	Description
• Borated reactor coolant	• Reactor coolant • Reactor coolant >250°C (>482°F) • Reactor coolant and secondary feedwater / steam • Air with reactor coolant leakage • Air with reactor coolant leakage (internal)	Treated water, as defined below, that is in the Reactor Coolant System and systems that are directly connected to it (Class 1 portions) at or near normal operating temperature.
• Borated reactor coolant with neutron fluence	• Reactor coolant and neutron flux • Reactor coolant >250°C (>482°F) and neutron flux	The same as the borated reactor coolant environment with the added condition of neutron radiation (E, which represents average neutron energy, greater than 1MeV) in excess of 1.0 E+17 neutrons per square centimeter (n/cm^2). This environment is unique to the region of the reactor pressure vessel immediately around the reactor core and the beltline region of the reactor vessel. This region is above 482°F during normal operation, and all components with high neutron fluence also experience reactor coolant temperatures.

Table 3.0-1
Process Environments (continued)

Davis-Besse Environments	NUREG-1801 Environments	Description
• Steam • Treated water • Treated water > 60°C (> 140°F) • Treated borated water • Treated borated water > 60°C (> 140°F)	• Steam • Treated water • Treated water >60°C (>140°F) • Treated borated water • Treated borated water >60°C (>140°F) • Secondary feedwater • Secondary feedwater / steam • Treated borated water >250°C (>482°F) • Water - standing	Treated water is filtered and chemically treated demineralized water that may be deaerated, treated with a biocide, antifreeze agent, corrosion inhibitor, dispersant, boric acid, or a combination of these treatments. This environment includes both the liquid and steam phase of chemically treated water, and the boric acid solution dissolved in treated water. The closed cycle cooling water and borated reactor coolant environments, defined above, are subsets of the treated water environment.

Table 3.0-2
Ambient Environments

Davis-Besse Environment	NUREG-1801 Environments	Description
• Adverse localized environment caused by exposure to moisture and voltage • Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen	• Adverse localized environment caused by exposure to moisture and voltage • Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen • Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen or >60-year service limiting temperature • Adverse localized environment caused by heat, radiation, oxygen, moisture, or voltage	Environment that could exist in limited plant areas caused by heat, moisture, oxygen, radiation, or voltage. Used for electrical evaluations only.

Table 3.0-2
Ambient Environments (continued)

Davis-Besse Environment	NUREG-1801 Environments	Description
• Air-indoor • Air-indoor uncontrolled • Air with borated water leakage • Air with steam or water leakage • Condensation	• Air - indoor • Air - indoor uncontrolled • Air with borated water leakage • Air with steam or water leakage • Condensation (internal / external) • Air - indoor uncontrolled >35°C (>95°F) • Air with leaking secondary-side water and/or steam • Air with metal temperature up to 288°C (550°F) • Any • Air • Air - indoor controlled • Moist air or condensation (internal) • System temperature up to 288°C (550°F) • System temperature up to 340°C (644°F) • Various	Equipment and components located in buildings or structures such that they are sheltered from external weather conditions are in an indoor air environment. Components in systems with external surface temperatures below ambient conditions have the potential to be wet due to the formation of condensation. Components in systems with high external surface temperatures (greater than dew point) are considered to be dry. Other component surfaces are exposed to moist ambient air (where moisture content is sufficient to facilitate general corrosion of steel), with the exception of surfaces in the control room envelope. Indoor air may be conditioned by filtering, heating, cooling, dehumidification, or some combination. However, for aging management review purposes, the environment is considered to be "uncontrolled" (where moisture content is sufficient to facilitate general corrosion of steel). This environment (identified as air-indoor uncontrolled) is also used for the air inside heating, ventilation, and air conditioning components; for components that are vented or otherwise open to ambient conditions; and for components that are isolated and empty. Indoor air that is humidity-controlled (e.g., air-conditioned) is identified as air-indoor controlled; however, for the Davis-Besse aging management review process, all indoor air environments are evaluated as air-indoor uncontrolled environments. The evaluation of the air-indoor uncontrolled environment considers the potential for high temperatures, humidity, and radiation, where applicable. The air-indoor uncontrolled environment also includes consideration of the potential for aggressive contaminants on surfaces and structural components, including external air-water interfaces where alternate wetting and drying can concentrate contaminants such that they become aggressive to metal. Evaluation of the indoor air environment includes consideration of the potential for leakage of borated water and its affect on susceptible materials. For evaluations of structural components and commodities, the indoor environment is referred to as air-indoor.

Table 3.0-2
Ambient Environments (continued)

Davis-Besse Environment	NUREG-1801 Environments	Description
• Air-outdoor • Air with borated water leakage	• Air - outdoor • Air with borated water leakage • Condensation (internal / external) • Any • Various • Water - flowing	Equipment and components located in the outdoor air environment are exposed to heat, cold, various forms of precipitation, and the effects of sunlight. This outdoor air environment is a moist air environment with the potential for accumulation of aggressive contaminants. Components in systems with external surface temperatures the same or higher than ambient conditions due to normal system operation are considered to be mostly dry with occasional short term wetting from precipitation. Components in systems with external surface temperatures below ambient conditions also have the potential for prolonged wetting due to the formation of condensation. Davis-Besse is located in a temperate, lakeshore climate environment. There are no nearby major industrial plants that could raise the possibility of exposure to sulfates or chlorides, but the groundwater at the site contains sulfates and dissolved solids in relatively high concentrations, so these stressors must be addressed as part of the aging management review. Because Davis-Besse is located in a temperate, lakeshore climate environment with moderate rainfall where airborne particle concentrations are comparatively low, air pollution and potential surface contamination of the high-voltage insulators in the switchyard is not significant. The lakeshore environment creates the potential for conditions of lake-effect snow and icing which may affect equipment located at the intake structure and in the yard. Evaluation of the outdoor air environment includes consideration of the potential for leakage of borated water and its affect on susceptible materials. For evaluations of structural components and commodities, the outdoor environment is referred to as air-outdoor.
• Soil • Water-flowing • Structural backfill	• Soil • Water - flowing • Water - flowing under foundation • Groundwater / Soil • Any • Various	The buried environment is defined as equipment or components beneath ground level in contact with soil and potentially subject to groundwater. Components that are buried are normally coated and wrapped to prevent the soil and groundwater from contacting the component surface. However, no credit for this coating/wrap is explicitly taken in the identification of aging effects requiring evaluation. For structural evaluations, a beneath ground level environment is referred to as either soil or structural backfill. The below grade environment has the potential for groundwater, which may be referred to as water-flowing. Coatings, if present, are not credited.

Table 3.0-2
Ambient Environments (continued)

Davis-Besse Environment	NUREG-1801 Environments	Description
• Concrete	• Concrete	The concrete environment is defined for components that are embedded (encased) in concrete, which forms a tight seal around the external surfaces of the component.

3.1 AGING MANAGEMENT OF REACTOR VESSEL, INTERNALS, REACTOR COOLANT SYSTEM AND REACTOR COOLANT PRESSURE BOUNDARY, AND STEAM GENERATORS

3.1.1 INTRODUCTION

Section 3.1 provides the results of the aging management reviews (AMRs) for those components identified in Section 2.3.1, Reactor Pressure Vessel, Reactor Vessel Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators, as subject to AMR. The systems or portions of systems are described in the indicated sections.

- Reactor Pressure Vessel (Section 2.3.1.1)
- Reactor Vessel Internals (Section 2.3.1.2)
- Reactor Coolant System and Reactor Coolant Pressure Boundary (Section 2.3.1.3)
- Steam Generators (Section 2.3.1.4)

Table 3.1.1, Summary of Aging Management Programs for Reactor Pressure Vessel, Reactor Vessel Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801, provides the summary of the programs evaluated in NUREG-1801 that are applicable to component and commodity groups in this section. Text addressing summary items requiring further evaluation is provided in Section 3.1.2.2.

3.1.2 RESULTS

The following tables summarize the results of the AMR for systems in the Reactor Pressure Vessel, Reactor Vessel Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators area.

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Table 3.1.2-4 Aging Management Review Results – Steam Generators

3.1.2.1 Materials, Environments, Aging Effects Requiring Management, and Aging Management Programs

The materials from which specific components and commodities are fabricated, the environments to which they are exposed, the aging effects requiring management, and the aging management programs (AMPs) used to manage these aging effects are provided for each of the above systems in the following sections.

3.1.2.1.1 Reactor Pressure Vessel

Materials

The materials of construction for the subject mechanical components of the reactor pressure vessel are:

- Nickel alloy
- Stainless steel
- Steel
- Steel with stainless steel cladding

Environments

Subject mechanical components of the reactor pressure vessel are exposed to the following normal operating environments:

- Air with borated water leakage
- Air with steam or water leakage
- Borated reactor coolant
- Borated reactor coolant with neutron fluence

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the reactor pressure vessel:

- Cracking - due to Fatigue, Flaw Growth, Primary Water Stress Corrosion Cracking (PWSCC), Stress Corrosion Cracking (SCC), Stress Corrosion Cracking/Intergranular Attack (SCC/IGA) and Underclad Cracking (UCC)
- Loss of material

- Loss of preload
- Reduction in fracture toughness

Aging Management Programs

The following aging management programs address the aging effects requiring management for the reactor pressure vessel:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Fatigue Monitoring Program (fatigue time-limited aging analyses (TLAAs))
- Inservice Inspection Program
- Nickel-Alloy Management Program
- Nickel-Alloy Reactor Vessel Closure Head Nozzles Program
- PWR Water Chemistry Program
- Reactor Head Closure Studs Program
- Reactor Vessel Surveillance Program

3.1.2.1.2 Reactor Vessel Internals

Materials

The materials of construction for the subject mechanical components of the reactor vessel internals are:

- Cast austenitic stainless steel
- Nickel alloy
- Stainless steel

Environments

Subject mechanical components of the reactor vessel internals are exposed to the following normal operating environments:

- Borated reactor coolant
- Borated reactor coolant with neutron fluence

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the reactor vessel internals:

- Change in dimension
- Cracking - due to Fatigue, Flaw Growth, SCC/IGA, and Irradiation Assisted Stress Corrosion Cracking (IASCC)
- Loss of material
- Loss of preload
- Reduction in fracture toughness

Aging Management Programs

The following aging management programs address the aging effects requiring management for the reactor vessel internals:

- Fatigue Monitoring Program (fatigue TLAAs)
- PWR Reactor Vessel Internals Program
- PWR Water Chemistry Program

3.1.2.1.3 Reactor Coolant System and Reactor Coolant Pressure Boundary

Materials

The materials of construction for subject mechanical components of the Reactor Coolant System (RCS) and Reactor Coolant Pressure Boundary (RCPB) are:

- Cast austenitic stainless steel
- Nickel alloy
- Stainless steel
- Steel
- Steel with stainless steel cladding

Environments

Subject mechanical components of the RCS and RCPB are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Borated reactor coolant
- Borated reactor coolant > 250°C (> 482°F)
- Closed cycle cooling water
- Lubricating oil

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of RCS and RCPB:

- Cracking - due to Fatigue, Flaw Growth, PWSCC, SCC and SCC/IGA
- Loss of material
- Loss of preload
- Reduction in fracture toughness
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the RCS and RCPB:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- Fatigue Monitoring Program (fatigue TLAAs)
- Inservice Inspection
- Lubricating Oil Analysis
- Nickel-Alloy Management Program
- One-Time Inspection
- PWR Water Chemistry Program

- Small Bore Class 1 Piping Inspection

3.1.2.1.4 Steam Generators

Materials

The materials of construction for subject items of the Steam Generators are:

- Nickel alloy
- Steel
- Steel with nickel alloy cladding
- Steel with stainless steel backing
- Steel with stainless steel cladding

Environments

Subject items of the Steam Generators are exposed to the following normal operating environments:

- Air with borated water leakage
- Air with steam or water leakage
- Borated reactor coolant
- Treated water

Aging Effects Requiring Management

The following aging effects require management for the subject items of the Steam Generators:

- Cracking - due to Fatigue, Flaw Growth, PWSCC, SCC, SCC/IGA
- Denting
- Ligament cracking
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject items of the Steam Generators:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Fatigue Monitoring Program (fatigue TLAAs)
- Flow-Accelerated Corrosion (FAC) Program
- Inservice Inspection Program
- Nickel-Alloy Management Program
- One-Time Inspection
- PWR Water Chemistry Program
- Steam Generator Tube Integrity Program

3.1.2.2 Aging Management Review Results for Which Further Evaluation is Recommended by NUREG-1801

For the Reactor Pressure Vessel, Reactor Vessel Internals, Reactor Coolant System and Pressure Boundary, and Steam Generators, those items requiring further evaluation are addressed in the following sections.

3.1.2.2.1 Cumulative Fatigue Damage

Fatigue is a time-limited aging analysis as defined in 10 CFR 54.3. Time limited aging analyses are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluations of the fatigue time-limited aging analyses are addressed in Section 4.

3.1.2.2.2 Loss of Material due to General, Pitting, and Crevice Corrosion

3.1.2.2.2.1 Steel PWR Steam Generator Shell Assembly-Secondary Feedwater and Steam; Steel BWR Top Head and Top Head Nozzles-Reactor Coolant

Loss of material due to general, pitting, and crevice corrosion could occur in the steel pressurized water reactor (PWR) steam generator shell assembly exposed to secondary feedwater and steam. Loss of material due to general, pitting, and crevice corrosion in the Davis-Besse steel steam generator shell assemblies that are exposed to secondary feedwater and steam is managed by the PWR Water Chemistry Program. The PWR Water Chemistry Program manages loss of material through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material.

Loss of material due to general, pitting, and crevice corrosion for steel top head enclosures exposed to reactor coolant is applicable to BWR plants only.

3.1.2.2.2.2 Stainless Steel BWR Isolation Condenser Components – Reactor Coolant

Loss of material of boiling water reactor (BWR) isolation condenser components is applicable to BWR plants only.

3.1.2.2.2.3 Stainless Steel, Nickel Alloy, and Steel with Stainless Steel or Nickel Alloy Cladding Flanges, Nozzles, Penetrations, Pressure Housings, Safe Ends, and Vessel Shells, Heads, and Welds – Reactor Coolant

Loss of material of BWR reactor vessel and reactor coolant pressure boundary components is applicable to BWR plants only.

3.1.2.2.2.4 Steel PWR Steam Generator Upper and Lower Shell and Transition Cone-Secondary Feedwater and Steam

Loss of material due to general, pitting, and crevice corrosion could occur in Westinghouse Model 44 and 51 Steam Generators. Davis-Besse does not have Westinghouse Model 44 and 51 steam generators; therefore, this item is not applicable to Davis-Besse.

3.1.2.2.3 Loss of Fracture Toughness due to Neutron Irradiation Embrittlement

3.1.2.2.3.1 Ferritic Materials-Neutron Fluence greater than $10^{17} n/cm^2$ (E >1 MeV)

Certain aspects of neutron irradiation embrittlement are TLAAs as defined in 10 CFR 54.3. TLAAs are required to be evaluated in accordance with 10 CFR 54.21(c). The evaluation of this TLAA is addressed separately in Section 4.2.

3.1.2.2.3.2 Reactor Vessel Beltline Shell, Nozzle, and Welds-Reactor Coolant and Neutron Flux

Reduction of fracture toughness due to radiation embrittlement could occur for reactor vessel beltline region materials exposed to reactor coolant and neutron flux. A reactor vessel materials surveillance program manages radiation embrittlement of the reactor vessel beltline materials. The Davis-Besse Reactor Vessel Surveillance Program and the results of its evaluation for license renewal are presented in Appendix B.

3.1.2.2.4 Cracking due to Stress Corrosion Cracking (SCC) and Intergranular Stress Corrosion Cracking (IGSCC)

3.1.2.2.4.1 Stainless Steel and Nickel Alloy BWR Top Head Enclosure Vessel Flange Leak Detection Lines

Cracking of BWR vessel leak detection lines is applicable to BWR plants only.

3.1.2.2.4.2 Stainless Steel BWR Isolation Condenser Components – Reactor Coolant

Cracking of isolation condenser components is applicable to BWR plants only.

3.1.2.2.5 Crack Growth due to Cyclic Loading

Crack growth due to cyclic loading (i.e., underclad cracking) is a TLAA as defined in 10 CFR 54.3. TLAAs are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluation of crack growth due to cyclic loading as a TLAA for the Davis-Besse Reactor Vessel is discussed in Section 4.2.

3.1.2.2.6 Loss of Fracture Toughness due to Neutron Irradiation Embrittlement and Void Swelling

Loss of fracture toughness due to neutron irradiation embrittlement and void swelling could occur in stainless steel and nickel alloy reactor vessel internals components exposed to reactor coolant and neutron flux. At Davis-Besse, reduction in fracture toughness due to radiation embrittlement for stainless steel and nickel alloy reactor vessel internals components that are exposed to reactor coolant and neutron flux will be managed by the PWR Reactor Vessel Internals Program. Further evaluation for change in dimension due to void swelling is addressed in Section 3.1.2.2.15.

3.1.2.2.7 Cracking due to Stress Corrosion Cracking

3.1.2.2.7.1 Stainless Steel Reactor Vessel Flange Leak Detection Lines and Bottom-Mounted Instrument Guide Tubes – Reactor Coolant

Cracking due to SCC could occur in the PWR stainless steel reactor vessel flange leak detection lines and bottom-mounted instrument guide tubes exposed to reactor coolant. SCC for the Davis-Besse incore piping and flange leak detection piping is managed by the PWR Water Chemistry Program and will also be managed by the Small Bore Class 1 Piping Inspection.

3.1.2.2.7.2 Cast Austenitic Stainless Steel (CASS) Piping, Piping Components, and Piping Elements – Reactor Coolant

Cracking due to SCC could occur in Class 1 PWR CASS piping and components exposed to reactor coolant. Davis-Besse has no Class 1 CASS piping or fittings exposed to reactor coolant; therefore, this item is not applicable to Davis-Besse. For CASS valve bodies and pump casings exposed to reactor coolant see Table 3.1.1, Item 3.1.1-68.

3.1.2.2.8 Cracking due to Cyclic Loading

3.1.2.2.8.1 Stainless Steel BWR Jet Pump Sensing Lines – Reactor Coolant

Cracking of BWR jet pump sensing lines is applicable to BWR plants only.

3.1.2.2.8.2 Steel and Stainless Steel BWR Isolation Condenser Components-Reactor Coolant

Cracking of BWR isolation condenser components is applicable to BWR plants only.

3.1.2.2.9 Loss of Preload due to Stress Relaxation

Loss of preload due to stress relaxation could occur in stainless steel and nickel alloy PWR reactor vessel internals screws and bolts exposed to reactor coolant. Loss of preload for the Davis-Besse internals screws and bolts will be managed by the PWR Reactor Vessel Internals Program.

3.1.2.2.10 Loss of Material due to Erosion

Loss of material due to erosion could occur in steel steam generator feedwater impingement plates and supports exposed to secondary feedwater. Davis-Besse has no feedwater impingement plates; therefore, this item is not applicable to Davis-Besse.

3.1.2.2.11 Cracking due to Flow-Induced Vibration of BWR Steam Dryers

Cracking of BWR steam dryer components is applicable to BWR plants only.

3.1.2.2.12 Cracking due to Stress Corrosion Cracking and Irradiation-Assisted Stress Corrosion Cracking (IASCC)

Cracking due to SCC and IASCC could occur in PWR stainless steel reactor internals exposed to reactor coolant. At Davis-Besse, cracking due to SCC and IASCC in stainless steel reactor internals that are exposed to reactor coolant is managed by the PWR Water Chemistry Program and will also be managed by the PWR Reactor Vessel Internals Program.

3.1.2.2.13 Cracking due to Primary Water Stress Corrosion Cracking (PWSCC)

Cracking due to PWSCC could occur in PWR components made with nickel alloy and steel with nickel alloy cladding exposed to reactor coolant. Cracking due to SCC (including PWSCC) in Davis-Besse PWR components made with nickel alloy is managed by the Inservice Inspection Program, Nickel-Alloy Management Program, and PWR Water Chemistry Program.

3.1.2.2.14 Wall Thinning due to Flow-Accelerated Corrosion

Wall thinning due to flow-accelerated corrosion could occur in steel feedwater inlet rings and supports. The Davis-Besse once-through steam generators have no feedwater inlet rings; therefore, this item is not applicable to Davis-Besse.

3.1.2.2.15 Changes in Dimension due to Void Swelling

Changes in dimensions due to void swelling could occur in stainless steel and nickel alloy PWR reactor internal components exposed to reactor coolant. Changes in dimensions due to void swelling for Davis-Besse stainless steel and nickel alloy reactor internals components that are exposed to reactor coolant will be managed by the PWR Reactor Vessel Internals Program.

3.1.2.2.16 Cracking due to Stress Corrosion Cracking and Primary Water Stress Corrosion Cracking

3.1.2.2.16.1 Stainless Steel or Nickel-Alloy Steam Generator Components – Reactor Coolant

Cracking due to SCC could occur on the primary coolant side of stainless steel, stainless steel clad, and nickel-alloy clad components. Cracking due to SCC (including PWSCC) on the primary coolant side of Davis-Besse stainless steel, stainless steel clad, and nickel-alloy clad components is managed by the Inservice Inspection Program, Nickel-Alloy Management Program and PWR Water Chemistry Program.

3.1.2.2.16.2 Stainless Steel and Nickel-Alloy Pressurizer Spray Heads – Reactor Coolant

Cracking due to SCC could occur on stainless steel pressurizer spray heads. At Davis-Besse, the pressurizer spray head has no intended function; therefore, this item is not applicable to Davis-Besse.

3.1.2.2.17 Cracking due to Stress Corrosion Cracking, Primary Water Stress Corrosion Cracking, and Irradiation-Assisted Stress Corrosion Cracking

Cracking due to SCC, PWSCC, and IASCC could occur in PWR stainless steel and nickel alloy reactor vessel internals components. At Davis-Besse, cracking due to SCC or IASCC for stainless steel and nickel alloy reactor vessel internals components is managed by the PWR Water Chemistry Program and will also be managed by the PWR Reactor Vessel Internals Program. Cracking due to PWSCC is not identified as an aging effect requiring management for these components.

3.1.2.2.18 Quality Assurance for Aging Management of Nonsafety-Related Components

See Appendix B, Section B.1.3, for a discussion of FirstEnergy Nuclear Operating Company quality assurance procedures and administrative controls for aging management programs.

3.1.2.3 Time-Limited Aging Analyses

The time-limited aging analyses identified below are associated with the Reactor Pressure Vessel, Reactor Vessel Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators components. The section of the application that contains the time-limited aging analysis review results is indicated in parentheses.

1. Class 1 Metal Fatigue (Section 4.3.2)
2. Reactor Vessel Neutron Embrittlement (Section 4.2)
3. Underclad Cracking (Section 4.2.6)

3.1.3 CONCLUSIONS

The Reactor Pressure Vessel, Reactor Vessel Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators components and commodities subject to AMR have been identified in accordance with 10 CFR 54.21. The aging management programs selected to manage the effects of aging for the mechanical components and commodities are identified in the following tables and Section 3.1.2.1. A description of the aging management programs is provided in Appendix B, along with the demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the demonstration provided in Appendix B, the effects of aging associated with the Reactor Pressure Vessel, Reactor Vessel Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators components and commodities will be managed so that there is reasonable assurance that the intended functions will be maintained consistent with the current licensing basis during the period of extended operation.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-01	BWR only				
3.1.1-02	BWR only				
3.1.1-03	BWR only				
3.1.1-04	BWR only				
3.1.1-05	Stainless steel and nickel alloy reactor vessel internals components	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA	Consistent with NUREG-1801. Fatigue of metal components is addressed as a TLAA in Section 4.3. Further evaluation is documented in Section 3.1.2.2.1.
3.1.1-06	Nickel Alloy tubes and sleeves in a reactor coolant and secondary feedwater/steam environment	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA	Consistent with NUREG-1801. Fatigue of metal components is addressed as a TLAA in Section 4.3. Further evaluation is documented in Section 3.1.2.2.1.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-07	Steel and stainless steel reactor coolant pressure boundary closure bolting, head closure studs, support skirts and attachment welds, pressurizer relief tank components, steam generator components, piping and components external surfaces and bolting	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA	Consistent with NUREG-1801. Fatigue of metal components is addressed as a TLAA in Section 4.3. Further evaluation is documented in Section 3.1.2.2.1.
3.1.1-08	Steel; stainless steel; and nickel-alloy reactor coolant pressure boundary piping, piping components, piping elements; flanges; nozzles and safe ends; pressurizer vessel shell heads and welds; heater sheaths and sleeves; penetrations; and thermal sleeves	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c) and environmental effects are to be addressed for Class 1 components	Yes, TLAA	Consistent with NUREG-1801. Fatigue of metal components is addressed as a TLAA in Section 4.3. Further evaluation is documented in Section 3.1.2.2.1.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-09	Steel; stainless steel; steel with nickel-alloy or stainless steel cladding; nickel-alloy reactor vessel components: flanges; nozzles; penetrations; pressure housings; safe ends; thermal sleeves; vessel shells, heads and welds	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c) and environmental effects are to be addressed for Class 1 components	Yes, TLAA	Consistent with NUREG-1801, Fatigue of metal components is addressed as a TLAA in Section 4.3. Further evaluation is documented in Section 3.1.2.2.1.
3.1.1-10	Steel; stainless steel; steel with nickel-alloy or stainless steel cladding; nickel-alloy steam generator components (flanges; penetrations; nozzles; safe ends, lower heads and welds)	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c) and environmental effects are to be addressed for Class 1 components	Yes, TLAA	Consistent with NUREG-1801. Fatigue of metal components is addressed as a TLAA in Section 4.3. Further evaluation is documented in Section 3.1.2.2.1.
3.1.1-11	BWR only				

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-12	Steel steam generator shell assembly exposed to secondary feedwater and steam	Loss of material due to general, pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material in steel steam generator components exposed to treated water (feedwater and steam) will be managed by the PWR Water Chemistry Program. The One-Time Inspection will verify the effectiveness of the PWR Water Chemistry Program. Further evaluation is documented in Section 3.1.2.2.2.1.
3.1.1-13	BWR only				
3.1.1-14	BWR only				
3.1.1-15	BWR only				

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-16	Steel steam generator upper and lower shell and transition cone exposed to secondary feedwater and steam	Loss of material due to general, pitting and crevice corrosion	Inservice Inspection (IWB, IWC, and IWD), and Water Chemistry and, for Westinghouse Model 44 and 51 S/G, if general and pitting corrosion of the shell is known to exist, additional inspection procedures are to be developed.	Yes, detection of aging effects is to be evaluated	Not applicable. Davis-Besse does not have Westinghouse Model 44 or 51 steam generators. Further evaluation is documented in Section 3.1.2.2.2.4.
3.1.1-17	Steel (with or without stainless steel cladding) reactor vessel beltline shell, nozzles, and welds	Loss of fracture toughness due to neutron irradiation embrittlement	TLAA, evaluated in accordance with Appendix G of 10 CFR Part 50 and RG 1.99. The applicant may choose to demonstrate that the materials of the nozzles are not controlling for the TLAA evaluations.	Yes, TLAA	Consistent with NUREG-1801. Reduction in fracture toughness due to radiation embrittlement is evaluated as a TLAA in Section 4.2. Further evaluation is documented in Section 3.1.2.2.3.1.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-18	Steel (with or without stainless steel cladding) reactor vessel beltline shell, nozzles, and welds; safety injection nozzles	Loss of fracture toughness due to neutron irradiation embrittlement	Reactor Vessel Surveillance	Yes, plant specific	Consistent with NUREG-1801. Reduction in fracture toughness due to radiation embrittlement of the reactor vessel beltline materials is managed by the Reactor Vessel Surveillance Program. The TLAA associated with embrittlement of the reactor vessel are discussed in Section 4.2. Further evaluation is documented in Section 3.1.2.2.3.2.
3.1.1-19	BWR only				
3.1.1-20	BWR only				

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-21	Reactor vessel shell fabricated of SA508-Cl 2 forgings clad with stainless steel using a high-heat-input welding process	Crack growth due to cyclic loading	TLAA	Yes, TLAA	Consistent with NUREG-1801. The TLAA associated with underclad cracking of SA 508, Class 2 steel is discussed in Section 4.2. Further evaluation is documented in Section 3.1.2.2.5.
3.1.1-22	Stainless steel and nickel alloy reactor vessel internals components exposed to reactor coolant and neutron flux	Loss of fracture toughness due to neutron irradiation embrittlement, void swelling	FSAR supplement commitment to (1) participate in industry RVI aging programs (2) implement applicable results (3) submit for NRC approval > 24 months before the extended period an RVI inspection plan based on industry recommendation.	No, but licensee commitment to be confirmed	Consistent with NUREG-1801, but a different program is used. Reduction in fracture toughness due to radiation embrittlement for stainless steel and nickel alloy reactor vessel internals components that are exposed to reactor coolant and neutron flux will be managed by the PWR Reactor Vessel Internals Program. Change in dimension due to void swelling is addressed in Item 3.1.1-33. Further evaluation is documented in Section 3.1.2.2.6.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-23	Stainless steel reactor vessel closure head flange leak detection line and bottom-mounted instrument guide tubes	Cracking due to stress corrosion cracking	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801. Stress corrosion cracking for the Davis-Besse incore monitoring piping and flange leakage detection piping is managed by the PWR Water Chemistry Program and will be verified by the Small Bore Class 1 Piping Inspection. Further evaluation is documented in Section 3.1.2.2.7.1.
3.1.1-24	Class 1 cast austenitic stainless steel piping, piping components, and piping elements exposed to reactor coolant	Cracking due to stress corrosion cracking	Water Chemistry and, for CASS components that do not meet the NUREG-0313 guidelines, a plant specific aging management program	Yes, plant specific	Not applicable. Davis-Besse has no Class 1 cast austenitic stainless steel piping or fittings exposed to reactor coolant. Further evaluation is documented in Section 3.1.2.2.7.2.
3.1.1-25	BWR only				
3.1.1-26	BWR only				

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-27	Stainless steel and nickel alloy reactor vessel internals screws, bolts, tie rods, and hold-down springs	Loss of preload due to stress relaxation	FSAR supplement commitment to (1) participate in industry RVI aging programs (2) implement applicable results (3) submit for NRC approval > 24 months before the extended period an RVI inspection plan based on industry recommendation.	No, but licensee commitment to be confirmed	Consistent with NUREG-1801, but a different program is used. Loss of preload due to stress relaxation in reactor vessel internals screws and bolts exposed to reactor coolant will be managed by the PWR Reactor Vessel Internals Program. Further evaluation is documented in Section 3.1.2.2.9.
3.1.1-28	Steel steam generator feedwater impingement plate and support exposed to secondary feedwater	Loss of material due to erosion	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Not applicable. Davis-Besse does not have feedwater impingement plates. Class 1 feedwater components susceptible to flow accelerated corrosion use Item 3.1.1-59. See discussion in further evaluation Section 3.1.2.2.10.
3.1.1-29	BWR only				

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-30	Stainless steel reactor vessel internals components (e.g., Upper internals assembly, RCCA guide tube assemblies, Baffle/former assembly, Lower internal assembly, shroud assemblies, Plenum cover and plenum cylinder, Upper grid assembly, Control rod guide tube (CRGT) assembly, Core support shield assembly, Core barrel assembly, Lower grid assembly, Flow distributor assembly, Thermal shield, Instrumentation support structures)	Cracking due to stress corrosion cracking, irradiation-assisted stress corrosion cracking	Water Chemistry and FSAR supplement commitment to (1) participate in industry RVI aging programs (2) implement applicable results (3) submit for NRC approval > 24 months before the extended period an RVI inspection plan based on industry recommendation.	No, but licensee commitment needs to be confirmed	Consistent with NUREG-1801. Cracking due to SCC and IASCC in reactor internals is managed by the PWR Water Chemistry Program and will also be managed by the PWR Reactor Vessel Internals Program. Further evaluation is documented in Section 3.1.2.2.12.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-31	Nickel alloy and steel with nickel-alloy cladding piping, piping component, piping elements, penetrations, nozzles, safe ends, and welds (other than reactor vessel head); pressurizer heater sheaths, sleeves, diaphragm plate, manways and flanges; core support pads/core guide lugs	Cracking due to primary water stress corrosion cracking	Inservice Inspection (IWB, IWC, and IWD) and Water Chemistry and FSAR supp commitment to implement applicable plant commitments to (1) NRC Orders, Bulletins, and Generic Letters associated with nickel alloys and (2) staff-accepted industry guidelines.	No, but licensee commitment needs to be confirmed	Consistent with NUREG-1801. Cracking due to SCC (including PWSCC) in nickel alloy components is managed by the Inservice Inspection Program, PWR Water Chemistry Program, and Nickel-Alloy Management Program. Further evaluation is documented in Section 3.1.2.2.13.
3.1.1-32	Steel steam generator feedwater inlet ring and supports	Wall thinning due to flow-accelerated corrosion	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Not applicable. Davis-Besse once-through steam generators have no feedwater inlet rings. Further evaluation is documented in Section 3.1.2.2.14.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-33	Stainless steel and nickel alloy reactor vessel internals components	Changes in dimensions due to void swelling	FSAR supplement commitment to (1) participate in industry RVI aging programs (2) implement applicable results (3) submit for NRC approval > 24 months before the extended period an RVI inspection plan based on industry recommendation.	No, but licensee commitment to be confirmed	Changes in dimensions due to void swelling will be managed by the PWR Reactor Vessel Internals Program. Further evaluation is documented in Section 3.1.2.2.15.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-34	Stainless steel and nickel alloy reactor control rod drive head penetration pressure housings	Cracking due to stress corrosion cracking and primary water stress corrosion cracking	Inservice Inspection (IWB, IWC, and IWD) and Water Chemistry and for nickel alloy, FSAR supplement commitment to implement applicable plant commitments to (1) NRC Orders, Bulletins and Generic Letters associated with nickel alloys and (2) staff-accepted industry guidelines.	No, but licensee commitment needs to be confirmed	Consistent with NUREG-1801. Cracking due to SCC in the stainless steel CRD flanges is managed by the Inservice Inspection Program and PWR Water Chemistry Program. Davis-Besse has no nickel alloy components that refer to this item. Further evaluation is documented in Section 3.1.2.2.16.1.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-35	Steel with stainless steel or nickel alloy cladding primary side components; steam generator upper and lower heads, tubesheets and tube-to-tube sheet welds	Cracking due to stress corrosion cracking and primary water stress corrosion cracking	Inservice Inspection (IWB, IWC, and IWD) and Water Chemistry and for nickel alloy, FSAR supplement commitment to implement applicable plant commitments to (1) NRC Orders, Bulletins and Generic Letters associated with nickel alloys and (2) staff-accepted industry guidelines.	No, but licensee commitment needs to be confirmed	Consistent with NUREG-1801. Cracking due to SCC (including PWSCC) in steel steam generator components with stainless steel or nickel alloy cladding is managed by the Inservice Inspection Program and PWR Water Chemistry Program. Davis-Besse has no nickel-alloy components that refer to this item. Further evaluation is documented in Section 3.1.2.2.16.1.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-36	Nickel alloy, stainless steel pressurizer spray head	Cracking due to stress corrosion cracking and primary water stress corrosion cracking	Water Chemistry and One-Time Inspection and, for nickel alloy welded spray heads, provide commitment in FSAR supplement to submit AMP delineating commitments to Orders, Bulletins, or Generic Letters that inspect stipulated components for cracking of wetted surfaces.	No, unless licensee commitment needs to be confirmed	Not applicable. The Davis-Besse pressurizer spray nozzle has no license renewal function and thus is not in the scope of license renewal. Further evaluation is documented in Section 3.1.2.2.16.2.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-37	Stainless steel and nickel alloy reactor vessel internals components (e.g., Upper internals assembly, RCCA guide tube assemblies, Lower internal assembly, CEA shroud assemblies, Core shroud assembly, Core support shield assembly, Core barrel assembly, Lower grid assembly, Flow distributor assembly)	Cracking due to stress corrosion cracking, primary water stress corrosion cracking, irradiation-assisted stress corrosion cracking	Water Chemistry and FSAR supplement commitment to (1) participate in industry RVI aging programs (2) implement applicable results (3) submit for NRC approval > 24 months before the extended period an RVI inspection plan based on industry recommendation.	No, but licensee commitment needs to be confirmed	Consistent with NUREG-1801. Cracking due to SCC and IASCC for stainless steel and nickel alloy reactor vessel internals components is managed by the PWR Water Chemistry Program and will also be managed by the PWR Reactor Vessel Internals Program. Further evaluation is documented in Section 3.1.2.2.17.
3.1.1-38	BWR only				
3.1.1-39	BWR only				
3.1.1-40	BWR only				
3.1.1-41	BWR only				
3.1.1-42	BWR only				
3.1.1-43	BWR only				

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-44	BWR only				
3.1.1-45	BWR only				
3.1.1-46	BWR only				
3.1.1-47	BWR only				
3.1.1-48	BWR only				
3.1.1-49	BWR only				
3.1.1-50	BWR only				
3.1.1-51	BWR only				
3.1.1-52	Steel and stainless steel reactor coolant pressure boundary (RCPB) pump and valve closure bolting, manway and holding bolting, flange bolting, and closure bolting in high-pressure and high-temperature systems	Cracking due to stress corrosion cracking, loss of material due to wear, loss of preload due to thermal effects, gasket creep, and self-loosening	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Cracking, loss of material, and loss of preload for Class 1 pressure boundary bolting are managed by the Bolting Integrity Program.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-53	Steel piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to general, pitting and crevice corrosion	Closed-Cycle Cooling Water System	No	Not applicable. Davis-Besse has no Class 1 steel components exposed to closed cycle cooling water.
3.1.1-54	Copper alloy piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	Not applicable. Davis-Besse has no Class 1 copper alloy components.
3.1.1-55	Cast austenitic stainless steel Class 1 pump casings, and valve bodies and bonnets exposed to reactor coolant >250 °C (>482 °F)	Loss of fracture toughness due to thermal aging embrittlement	Inservice inspection (IWB, IWC, and IWD). Thermal aging susceptibility screening is not necessary, inservice inspection requirements are sufficient for managing these aging effects. ASME Code Case N-481 also provides an alternative for pump casings.	No	Consistent with NUREG-1801. Reduction in fracture toughness due to thermal embrittlement in cast austenitic stainless steel Class 1 pump casings and valve bodies is managed by the Inservice Inspection Program.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-56	Copper alloy >15% Zn piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to selective leaching	Selective Leaching of Materials	No	Not applicable. Davis-Besse has no Class 1 copper alloy components.
3.1.1-57	Cast austenitic stainless steel Class 1 piping, piping component, and piping elements and CRD pressure housings exposed to reactor coolant >250 °C (>482 °F)	Loss of fracture toughness due to thermal aging embrittlement	Thermal Aging Embrittlement of CASS	No	Not applicable. Davis-Besse has no CASS piping. CASS pump casings and valve bodies are addressed in Item Number 3.1.1-55.
3.1.1-58	Steel reactor coolant pressure boundary external surfaces exposed to air with borated water leakage	Loss of material due to Boric acid corrosion	Boric Acid Corrosion	No	Consistent with NUREG-1801 Loss of material due to boric acid corrosion on steel Class 1 components exposed to air with borated water leakage is managed by the Boric Acid Corrosion Program.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-59	Steel steam generator steam nozzle and safe end, feedwater nozzle and safe end, AFW nozzles and safe ends exposed to secondary feedwater/steam	Wall thinning due to flow-accelerated corrosion	Flow-Accelerated Corrosion	No	Consistent with NUREG-1801. Loss of material due to flow-accelerated corrosion in the Davis-Besse Feedwater System is managed by the Flow-Accelerated Corrosion (FAC) Program.
3.1.1-60	Stainless steel flux thimble tubes (with or without chrome plating)	Loss of material due to Wear	Flux Thimble Tube Inspection	No	Not applicable. Davis-Besse has no flux thimble tubes.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-61	Stainless steel, steel pressurizer integral support exposed to air with metal temperature up to 288°C (550°F)	Cracking due to cyclic loading	Inservice Inspection (IWB, IWC, and IWD)	No	Consistent with NUREG-1801. Davis-Besse manages cracking due to flaw growth (cyclic loading) of the pressurizer support plate assembly using the Inservice Inspection Program. In addition, Davis-Besse manages cracking due to flaw growth of the CRD bolts and nut rings using the Inservice Inspection Program, and refers to this line item as it is the same material, environment and aging effect combination.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-62	Stainless steel, steel with stainless steel cladding reactor coolant system cold leg, hot leg, surge line, and spray line piping and fittings exposed to reactor coolant	Cracking due to cyclic loading	Inservice Inspection (IWB, IWC, and IWD)	No	Consistent with NUREG-1801. Cracking due to flaw growth (cyclic loading) of stainless steel, steel with stainless steel cladding and nickel alloy pressure boundary and support components is managed by the Inservice Inspection Program. Cracking due to flaw growth (cyclic loading) of stainless steel and nickel alloy reactor vessel internals components exposed to reactor coolant will be managed by the PWR Reactor Vessel Internals Program.
3.1.1-63	Steel reactor vessel flange, stainless steel and nickel alloy reactor vessel internals exposed to reactor coolant (e.g., upper and lower internals assembly, CEA shroud assembly, core support barrel, upper grid assembly, core support shield assembly, lower grid assembly)	Loss of material due to Wear	Inservice Inspection (IWB, IWC, and IWD)	No	Consistent with NUREG-1801, but a different aging management program is assigned. Loss of material for stainless steel reactor vessel internals will be managed by the PWR Reactor Vessel Internals Program.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-64	Stainless steel and steel with stainless steel or nickel alloy cladding pressurizer components	Cracking due to stress corrosion cracking, primary water stress corrosion cracking	Inservice Inspection (IWB, IWC, and IWD) and Water Chemistry	No	Consistent with NUREG-1801. Cracking due to SCC/IGA is managed for stainless steel or steel with stainless steel cladding pressure boundary components by a combination of the PWR Water Chemistry Program and the Inservice Inspection Program.
3.1.1-65	Nickel alloy reactor vessel upper head and control rod drive penetration nozzles, instrument tubes, head vent pipe (top head), and welds	Cracking due to primary water stress corrosion cracking	Inservice Inspection (IWB, IWC, and IWD) and Water Chemistry and Nickel-Alloy Penetration Nozzles Welded to the Upper Reactor Vessel Closure Heads of Pressurized Water Reactors	No	Consistent with NUREG-1801. Cracking due to PWSCC and SCC/IGA of the CRD nozzles is managed by a combination of the PWR Water Chemistry Program, the Nickel-Alloy Reactor Vessel Closure Head Nozzle Program, and the Inservice Inspection Program.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-66	Steel steam generator secondary manways and handholds (cover only) exposed to air with leaking secondary-side water and/or steam	Loss of material due to erosion	Inservice Inspection (IWB, IWC, and IWD) for Class 2 components	No	Not applicable. Loss of material due to erosion was not identified as an aging effect requiring management for the steam generator secondary side manways and handholes.
3.1.1-67	Steel with stainless steel or nickel alloy cladding; or stainless steel pressurizer components exposed to reactor coolant	Cracking due to cyclic loading	Inservice Inspection (IWB, IWC, and IWD), and Water Chemistry	No	Consistent with NUREG-1801. Cracking due to flaw growth (cyclic loading) for pressurizer components is managed by the Inservice Inspection Program.
3.1.1-68	Stainless steel, steel with stainless steel cladding Class 1 piping, fittings, pump casings, valve bodies, nozzles, safe ends, manways, flanges, CRD housing; pressurizer heater sheaths, sleeves, diaphragm plate; pressurizer relief tank components, reactor coolant system cold leg, hot leg, surge line, and spray line piping and fittings	Cracking due to stress corrosion cracking	Inservice Inspection (IWB, IWC, and IWD), and Water Chemistry	No	Consistent with NUREG-1801. Cracking due to SCC/IGA is managed by a combination of the PWR Water Chemistry Program and the Inservice Inspection Program.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-69	Stainless steel, nickel alloy safety injection nozzles, safe ends, and associated welds and buttering exposed to reactor coolant	Cracking due to stress corrosion cracking, primary water stress corrosion cracking	Inservice Inspection (IWB, IWC, and IWD), and Water Chemistry	No	Consistent with NUREG-1801. Cracking due to SCC/IGA in stainless steel or steel with stainless steel cladding components is managed by a combination of the PWR Water Chemistry Program and the Inservice Inspection Program.
3.1.1-70	Stainless steel; steel with stainless steel cladding Class 1 piping, fittings and branch connections < NPS 4 exposed to reactor coolant	Cracking due to stress corrosion cracking, thermal and mechanical loading	Inservice Inspection (IWB, IWC, and IWD), Water chemistry, and One-Time Inspection of ASME Code Class 1 Small-bore Piping	No	Consistent with NUREG-1801. Cracking due to SCC/IGA and flaw growth (cyclic loading) is managed by a combination of the PWR Water Chemistry Program, the Inservice Inspection Program, and the Small Bore Class 1 Pipe Inspection.
3.1.1-71	High-strength low alloy steel closure head stud assembly exposed to air with reactor coolant leakage	Cracking due to stress corrosion cracking; loss of material due to wear	Reactor Head Closure Studs	No	Consistent with NUREG-1801. Cracking and loss of material for the reactor vessel head closure studs are managed by the Reactor Head Closure Studs Program.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-72	Nickel alloy steam generator tubes and sleeves exposed to secondary feedwater/ steam	Cracking due to OD stress corrosion cracking and intergranular attack, loss of material due to fretting and wear	Steam Generator Tube Integrity and Water Chemistry	No	Consistent with NUREG-1801. Cracking due to SCC/IGA and loss of material for nickel-alloy steam generator tubes and sleeves is managed by a combination of the PWR Water Chemistry Program and the Steam Generator Tube Integrity Program.
3.1.1-73	Nickel alloy steam generator tubes, repair sleeves, and tube plugs exposed to reactor coolant	Cracking due to primary water stress corrosion cracking	Steam Generator Tube Integrity and Water Chemistry	No	Consistent with NUREG-1801. Cracking due to SCC/IGA and PWSCC for nickel-alloy steam generator tubes and sleeves, and tube plugs is managed by a combination of the PWR Water Chemistry Program and the Steam Generator Tube Integrity Program.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-74	Chrome plated steel, stainless steel, nickel alloy steam generator anti-vibration bars exposed to secondary feedwater/ steam	Cracking due to stress corrosion cracking, loss of material due to crevice corrosion and fretting	Steam Generator Tube Integrity and Water Chemistry	No	Not applicable. Davis-Besse has once-through steam generators and the item applies only to recirculating steam generators.
3.1.1-75	Nickel alloy once-through steam generator tubes exposed to secondary feedwater/ steam	Denting due to corrosion of carbon steel tube support plate	Steam Generator Tube Integrity and Water Chemistry	No	Consistent with NUREG-1801. Denting of nickel-alloy steam generator tubes and sleeves is managed by a combination of the PWR Water Chemistry Program and the Steam Generator Tube Integrity Program.
3.1.1-76	Steel steam generator tube support plate, tube bundle wrapper exposed to secondary feedwater/steam	Loss of material due to erosion, general, pitting, and crevice corrosion, ligament cracking due to corrosion	Steam Generator Tube Integrity and Water Chemistry	No	Consistent with NUREG-1801. Loss of material and ligament cracking of the tube support plates is managed by a combination of the Steam Generator Tube Integrity Program and the PWR Water Chemistry Program.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-77	Nickel alloy steam generator tubes and sleeves exposed to phosphate chemistry in secondary feedwater/ steam	Loss of material due to wastage and pitting corrosion	Steam Generator Tube Integrity and Water Chemistry	No	Not applicable. Davis-Besse does not use phosphate chemistry in the steam generators.
3.1.1-78	Steel steam generator tube support lattice bars exposed to secondary feedwater/ steam	Wall thinning due to flow-accelerated corrosion	Steam Generator Tube Integrity and Water Chemistry	No	Not applicable. Davis-Besse steam generators have tube support plates (Item 3.1.1-76) rather than lattice bars.
3.1.1-79	Nickel alloy steam generator tubes exposed to secondary feedwater/ steam	Denting due to corrosion of steel tube support plate	Steam Generator Tube Integrity; Water Chemistry and, for plants that could experience denting at the upper support plates, evaluate potential for rapidly propagating cracks and then develop and take corrective actions consistent with Bulletin 88-02.	No	Not applicable. Denting of steam generator tubes is addressed in Item Number 3.1.1-75.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-80	Cast austenitic stainless steel reactor vessel internals (e.g., upper internals assembly, lower internal assembly, CEA shroud assemblies, control rod guide tube assembly, core support shield assembly, lower grid assembly)	Loss of fracture toughness due to thermal aging and neutron irradiation embrittlement	Thermal Aging and Neutron Irradiation Embrittlement of CASS	No	Consistent with NUREG-1801, but a different aging management program is assigned. Reduction in fracture toughness due to radiation and thermal embrittlement of cast austenitic stainless steel reactor vessel internals will be managed by the PWR Reactor Vessel Internals Program.
3.1.1-81	Nickel alloy or nickel-alloy clad steam generator divider plate exposed to reactor coolant	Cracking due to primary water stress corrosion cracking	Water Chemistry	No	Not applicable. Davis-Besse steam generators do not have divider plates.
3.1.1-82	Stainless steel steam generator primary side divider plate exposed to reactor coolant	Cracking due to stress corrosion cracking	Water Chemistry	No	Not applicable. Davis-Besse steam generators do not have divider plates.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-83	Stainless steel; steel with nickel-alloy or stainless steel cladding; and nickel-alloy reactor vessel internals and reactor coolant pressure boundary components exposed to reactor coolant	Loss of material due to pitting and crevice corrosion	Water Chemistry	No	Consistent with NUREG-1801. Loss of material for components exposed to reactor coolant is managed by the PWR Water Chemistry Program.
3.1.1-84	Nickel alloy steam generator components such as, secondary side nozzles (vent, drain, and instrumentation) exposed to secondary feedwater/ steam	Cracking due to stress corrosion cracking	Water Chemistry and One-Time Inspection or Inservice Inspection (IWB, IWC, and IWD).	No	Consistent with NUREG-1801. Cracking due to SCC/IGA of nickel-alloy steam generator components (other than the tubes and sleeves addressed in Item 3.1.1-72) is managed by a combination of the PWR Water Chemistry Program and the Inservice Inspection Program.
3.1.1-85	Nickel alloy piping, piping components, and piping elements exposed to air – indoor uncontrolled (external)	None	None	N/A - No AEM or AMP	Not applicable. Air-indoor uncontrolled is not used as an external environment for Class 1 components; they all have the harsher environment of air with borated water leakage.

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, Reactor Coolant System and Reactor Coolant Pressure Boundary, and Steam Generators Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-86	Stainless steel piping, piping components, and piping elements exposed to air – indoor uncontrolled (External); air with borated water leakage; concrete; gas	None	None	N/A - No AEM or AMP	Consistent with NUREG-1801. Davis-Besse agrees that stainless steel components exposed to air with borated water leakage have no aging effects requiring management.
3.1.1-87	Steel piping, piping components, and piping elements in concrete	None	None	N/A - No AEM or AMP	Not applicable. Davis-Besse has no Class 1 piping embedded in concrete.

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bottom Head	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
2	Bottom Head	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
3	Bottom Head	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-15	3.1.1-69	C
4	Bottom Head	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-15	3.1.1-69	C
5	Bottom Head	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
6	Bottom Head	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	IV.A2-13	3.1.1-58	A

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Closure Studs, Nuts, and Washers	Pressure boundary	Steel	Air with borated water leakage (External)	Cracking - Fatigue	TLAA	IV.A2-4	3.1.1-07	A
8	Closure Studs, Nuts, and Washers	Pressure boundary	Steel	Air with borated water leakage (External)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-16	3.1.1-61	C 0102
9	Closure Studs, Nuts, and Washers	Pressure boundary	Steel	Air with borated water leakage (External)	Cracking - SCC	Reactor Head Closure Studs	IV.A2-2	3.1.1-71	A
10	Closure Studs, Nuts, and Washers	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Reactor Head Closure Studs	IV.A2-3	3.1.1-71	A
11	Core Flooding Nozzle Safe Ends	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
12	Core Flooding Nozzle Safe Ends	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
13	Core Flooding Nozzle Safe Ends	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-15	3.1.1-69	A
14	Core Flooding Nozzle Safe Ends	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-15	3.1.1-69	A
15	Core Flooding Nozzle Safe Ends	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
16	Core Flooding Nozzle Safe Ends	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
17	Core Flooding Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
18	Core Flooding Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
19	Core Flooding Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-15	3.1.1-69	C

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
20	Core Flooding Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-15	3.1.1-69	C
21	Core Flooding Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
22	Core Flooding Nozzles	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	IV.A2-13	3.1.1-58	A
23	Core Guide Lugs	Support	Nickel Alloy	Borated reactor coolant (External)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A 0101
24	Core Guide Lugs	Support	Nickel Alloy	Borated reactor coolant (External)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0101 0102 0103
25	Core Guide Lugs	Support	Nickel Alloy	Borated reactor coolant (External)	Cracking - SCC/IGA, PWSCC	PWR Water Chemistry	IV.A2-12	3.1.1-31	A 0101
26	Core Guide Lugs	Support	Nickel Alloy	Borated reactor coolant (External)	Cracking - SCC/IGA, PWSCC	Inservice Inspection	IV.A2-12	3.1.1-31	A 0101

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
27	Core Guide Lugs	Support	Nickel Alloy	Borated reactor coolant (External)	Cracking - SCC/IGA, PWSCC	Nickel-Alloy Management	IV.A2-12	3.1.1-31	A 0101 0110
28	Core Guide Lugs	Support	Nickel Alloy	Borated reactor coolant (External)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A 0101
29	CRD Bolts	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	C
30	CRD Bolts	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-16	3.1.1-61	C 0102
31	CRD Bolts	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking - SCC/IGA	Bolting Integrity	IV.A2-6	3.1.1-52	B
32	CRD Bolts	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	IV.A2-7	3.1.1-52	B

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
33	CRD Bolts	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of preload	Bolting Integrity	IV.A2-8	3.1.1-52	B
34	CRD flanges	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
35	CRD flanges	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
36	CRD flanges	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-11	3.1.1-34	C
37	CRD flanges	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-11	3.1.1-34	C
38	CRD flanges	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
39	CRD flanges	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
40	CRD Nut Rings	Pressure boundary	Steel	Air with borated water leakage (External)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
41	CRD Nut Rings	Pressure boundary	Steel	Air with borated water leakage (External)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-16	3.1.1-61	C 0102
42	CRD Nut Rings	Pressure boundary	Steel	Air with borated water leakage (External)	Cracking - SCC	Bolting Integrity	IV.A2-6	3.1.1-52	B
43	CRD Nut Rings	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.A2-13	3.1.1-58	A
44	CRD nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
45	CRD nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
46	CRD nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - SCC/IGA, PWSCC	PWR Water Chemistry	IV.A2-9	3.1.1-65	A
47	CRD nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - SCC/IGA, PWSCC	Inservice Inspection	IV.A2-9	3.1.1-65	A
48	CRD nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - SCC/IGA, PWSCC	Nickel-Alloy Reactor Vessel Closure Head Nozzles	IV.A2-9	3.1.1-65	A
49	CRD nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
50	CRD nozzles	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	C 0103
51	Incore instrument nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
52	Incore instrument nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
53	Incore instrument nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - SCC/IGA, PWSCC	PWR Water Chemistry	IV.A2-19	3.1.1-31	A
54	Incore instrument nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - SCC/IGA, PWSCC	Inservice Inspection	IV.A2-19	3.1.1-31	A
55	Incore instrument nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - SCC/IGA, PWSCC	Nickel-Alloy Management	IV.A2-19	3.1.1-31	A 0110
56	Incore instrument nozzles	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
57	Incore instrument nozzles	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	C 0103
58	Inlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
59	Inlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
60	Inlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-15	3.1.1-69	C
61	Inlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-15	3.1.1-69	C
62	Inlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
63	Inlet Nozzles	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	IV.A2-13	3.1.1-58	A
64	Outlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
65	Outlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
66	Outlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-15	3.1.1-69	C

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
67	Outlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-15	3.1.1-69	C
68	Outlet Nozzles	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
69	Outlet Nozzles	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	IV.A2-13	3.1.1-58	A
70	Shell (Beltline Plates)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant with neutron fluence (Internal)	Reduction in Fracture Toughness	Reactor Vessel Surveillance	IV.A2-24	3.1.1-18	A
71	Shell (Beltline Plates)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant with neutron fluence (Internal)	Reduction in Fracture Toughness	TLAA	IV.A2-23	3.1.1-17	A

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
72	Shell (Beltline Welds)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant with neutron fluence (Internal)	Reduction in Fracture Toughness	Reactor Vessel Surveillance	IV.A2-24	3.1.1-18	A
73	Shell (Beltline Welds)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant with neutron fluence (Internal)	Reduction in Fracture Toughness	TLAA	IV.A2-23	3.1.1-17	A
74	Shell (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
75	Shell (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
76	Shell (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-15	3.1.1-69	C
77	Shell (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-15	3.1.1-69	C

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
78	Shell (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - UCC	TLAA	IV.A2-22	3.1.1-21	C 0105
79	Shell (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
80	Shell (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	IV.A2-13	3.1.1-58	A
81	Shell (Shell Rings)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
82	Shell (Shell Rings)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
83	Shell (Shell Rings)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-15	3.1.1-69	C
84	Shell (Shell Rings)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-15	3.1.1-69	C

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
85	Shell (Shell Rings)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - UCC	TLAA	IV.A2-22	3.1.1-21	A 0105
86	Shell (Shell Rings)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
87	Shell (Shell Rings)	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	IV.A2-13	3.1.1-58	A
88	Upper Head (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
89	Upper Head (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
90	Upper Head (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-15	3.1.1-69	C

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
91	Upper Head (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-15	3.1.1-69	C
92	Upper Head (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
93	Upper Head (Closure Flange)	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	IV.A2-13	3.1.1-58	A
94	Upper Head (Dome)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.A2-21	3.1.1-09	A
95	Upper Head (Dome)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
96	Upper Head (Dome)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-15	3.1.1-69	C

Table 3.1.2-1 Aging Management Review Results – Reactor Pressure Vessel

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
97	Upper Head (Dome)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.A2-15	3.1.1-69	C
98	Upper Head (Dome)	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of material	PWR Water Chemistry	IV.A2-14	3.1.1-83	A
99	Upper Head (Dome)	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	IV.A2-13	3.1.1-58	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (LCB - original)	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-17	3.1.1-33	E
2	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (LCB - original)	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
3	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (LCB - original)	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
4	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (LCB - original)	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-20	3.1.1-37	E
5	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (LCB - original)	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-20	3.1.1-37	A
6	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (LCB - original)	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
7	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (LCB - original)	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-19	3.1.1-27	E
8	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (LCB - original)	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-16	3.1.1-22	E
9	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (UCB and LCB - replacement)	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-30	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
10	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (UCB and LCB - replacement)	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
11	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (UCB and LCB - replacement)	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102 0103
12	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (UCB and LCB - replacement)	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-32	3.1.1-37	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
13	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (UCB and LCB - replacement)	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-32	3.1.1-37	A
14	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (UCB and LCB - replacement)	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
15	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (UCB and LCB - replacement)	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-33	3.1.1-27	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
16	CSA, Core Support Shield, Bolt - Core Support Shield to Core Barrel (UCB and LCB - replacement)	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-31	3.1.1-22	E
17	CSA, Core Support Shield, Cylinder and Flanges, Reinforcing Rings/Nozzles, Misc. Parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-17	3.1.1-33	E
18	CSA, Core Support Shield, Cylinder and Flanges, Reinforcing Rings/Nozzles, Misc. Parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
19	CSA, Core Support Shield, Cylinder and Flanges, Reinforcing Rings/Nozzles, Misc. Parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
20	CSA, Core Support Shield, Cylinder and Flanges, Reinforcing Rings/Nozzles, Misc. Parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-18	3.1.1-30	E
21	CSA, Core Support Shield, Cylinder and Flanges, Reinforcing Rings/Nozzles, Misc. Parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-18	3.1.1-30	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
22	CSA, Core Support Shield, Cylinder and Flanges, Reinforcing Rings/Nozzles, Misc. Parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
23	CSA, Core Support Shield, Cylinder and Flanges, Reinforcing Rings/Nozzles, Misc. Parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Reactor Vessel Internals	IV.B4-15	3.1.1-63	E
24	CSA, Core Support Shield, Cylinder and Flanges, Reinforcing Rings/Nozzles, Misc. Parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-16	3.1.1-22	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
25	CSA, Core Barrel, Bolts and Screws - Baffle-to-Former and Baffle-to-baffle	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-8	3.1.1-33	E
26	CSA, Core Barrel, Bolts and Screws - Baffle-to-Former and Baffle-to-baffle	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
27	CSA, Core Barrel, Bolts and Screws - Baffle-to-Former and Baffle-to-baffle	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
28	CSA, Core Barrel, Bolts and Screws - Baffle-to-Former and Baffle-to-baffle	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-7	3.1.1-30	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
29	CSA, Core Barrel, Bolts and Screws - Baffle-to-Former and Baffle-to-baffle	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-7	3.1.1-30	A
30	CSA, Core Barrel, Bolts and Screws - Baffle-to-Former and Baffle-to-baffle	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
31	CSA, Core Barrel, Bolts and Screws - Baffle-to-Former and Baffle-to-baffle	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-9	3.1.1-27	E
32	CSA, Core Barrel, Bolts and Screws - Baffle-to-Former and Baffle-to-baffle	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-1	3.1.1-22	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
33	CSA, Core Barrel; Bolt - Core Barrel-to-Former	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-11	3.1.1-33	E
34	CSA, Core Barrel; Bolt - Core Barrel-to-Former	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
35	CSA, Core Barrel; Bolt - Core Barrel-to-Former	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
36	CSA, Core Barrel; Bolt - Core Barrel-to-Former	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-13	3.1.1-37	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
37	CSA, Core Barrel; Bolt - Core Barrel-to-Former	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-13	3.1.1-37	C
38	CSA, Core Barrel; Bolt - Core Barrel-to-Former	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
39	CSA, Core Barrel; Bolt - Core Barrel-to-Former	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-9	3.1.1-27	E
40	CSA, Core Barrel; Bolt - Core Barrel-to-Former	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-12	3.1.1-22	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
41	CSA, Core Barrel; Bolt - Thermal Shield (UTS) and Lower Internals to Core Barrel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-11	3.1.1-33	E
42	CSA, Core Barrel; Bolt - Thermal Shield (UTS) and Lower Internals to Core Barrel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
43	CSA, Core Barrel; Bolt - Thermal Shield (UTS) and Lower Internals to Core Barrel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
44	CSA, Core Barrel; Bolt - Thermal Shield (UTS) and Lower Internals to Core Barrel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-13	3.1.1-37	E
45	CSA, Core Barrel; Bolt - Thermal Shield (UTS) and Lower Internals to Core Barrel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-13	3.1.1-37	A
46	CSA, Core Barrel; Bolt - Thermal Shield (UTS) and Lower Internals to Core Barrel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
47	CSA, Core Barrel; Bolt - Thermal Shield (UTS) and Lower Internals to Core Barrel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-14	3.1.1-27	E
48	CSA, Core Barrel; Bolt - Thermal Shield (UTS) and Lower Internals to Core Barrel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-12	3.1.1-22	E
49	CSA, Core Barrel; Cylinder, Flange, Plate, Formers, Pin, Ring, Dowel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-11	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
50	CSA, Core Barrel; Cylinder, Flange, Plate, Formers, Pin, Ring, Dowel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
51	CSA, Core Barrel; Cylinder, Flange, Plate, Formers, Pin, Ring, Dowel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
52	CSA, Core Barrel; Cylinder, Flange, Plate, Formers, Pin, Ring, Dowel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-10	3.1.1-30	E
53	CSA, Core Barrel; Cylinder, Flange, Plate, Formers, Pin, Ring, Dowel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-10	3.1.1-30	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
54	CSA, Core Barrel; Cylinder, Flange, Plate, Formers, Pin, Ring, Dowel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
55	CSA, Core Barrel; Cylinder, Flange, Plate, Formers, Pin, Ring, Dowel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-12	3.1.1-22	E
56	CSA, Lower Grid; Bolt - Lower Internals Assembly-to-Thermal Shield (LTS)	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-30	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
57	CSA, Lower Grid; Bolt - Lower Internals Assembly-to-Thermal Shield (LTS)	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
58	CSA, Lower Grid; Bolt - Lower Internals Assembly-to-Thermal Shield (LTS)	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102 0103
59	CSA, Lower Grid; Bolt - Lower Internals Assembly-to-Thermal Shield (LTS)	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-32	3.1.1-37	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
60	CSA, Lower Grid; Bolt - Lower Internals Assembly-to-Thermal Shield (LTS)	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-32	3.1.1-37	A
61	CSA, Lower Grid; Bolt - Lower Internals Assembly-to-Thermal Shield (LTS)	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
62	CSA, Lower Grid; Bolt - Lower Internals Assembly-to-Thermal Shield (LTS)	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-33	3.1.1-27	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
63	CSA, Lower Grid; Bolt - Lower Internals Assembly-to-Thermal Shield (LTS)	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-31	3.1.1-22	E
64	CSA, Lower Grid; Bolt, Screw, Washer	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-30	3.1.1-33	E
65	CSA, Lower Grid; Bolt, Screw, Washer	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
66	CSA, Lower Grid; Bolt, Screw, Washer	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
67	CSA, Lower Grid; Bolt, Screw, Washer	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-32	3.1.1-37	E
68	CSA, Lower Grid; Bolt, Screw, Washer	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-32	3.1.1-37	A
69	CSA, Lower Grid; Bolt, Screw, Washer	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
70	CSA, Lower Grid; Bolt, Screw, Washer	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-33	3.1.1-27	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
71	CSA, Lower Grid; Bolt, Screw, Washer	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-31	3.1.1-22	E
72	CSA, Lower Grid; Compression Collar and Dowel	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-30	3.1.1-33	E
73	CSA, Lower Grid; Compression Collar and Dowel	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
74	CSA, Lower Grid; Compression Collar and Dowel	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102 0103

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
75	CSA, Lower Grid; Compression Collar and Dowel	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-32	3.1.1-37	E
76	CSA, Lower Grid; Compression Collar and Dowel	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-32	3.1.1-37	A
77	CSA, Lower Grid; Compression Collar and Dowel	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
78	CSA, Lower Grid; Compression Collar and Dowel	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-31	3.1.1-22	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
79	CSA, Lower Grid; Forging, Flange, Plate, and piece parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-30	3.1.1-33	E
80	CSA, Lower Grid; Forging, Flange, Plate, and piece parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
81	CSA, Lower Grid; Forging, Flange, Plate, and piece parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
82	CSA, Lower Grid; Forging, Flange, Plate, and piece parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-29	3.1.1-30	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
83	CSA, Lower Grid; Forging, Flange, Plate, and piece parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-29	3.1.1-30	A
84	CSA, Lower Grid; Forging, Flange, Plate, and piece parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
85	CSA, Lower Grid; Forging, Flange, Plate, and piece parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-31	3.1.1-22	E
86	CSA, Lower Grid; Fuel Assembly Support Pad and Guide Block	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-30	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
87	CSA, Lower Grid; Fuel Assembly Support Pad and Guide Block	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
88	CSA, Lower Grid; Fuel Assembly Support Pad and Guide Block	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
89	CSA, Lower Grid; Fuel Assembly Support Pad and Guide Block	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-29	3.1.1-30	E
90	CSA, Lower Grid; Fuel Assembly Support Pad and Guide Block	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-29	3.1.1-30	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
91	CSA, Lower Grid; Fuel Assembly Support Pad and Guide Block	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
92	CSA, Lower Grid; Fuel Assembly Support Pad and Guide Block	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Reactor Vessel Internals	IV.B4-27	3.1.1-63	E
93	CSA, Lower Grid; Fuel Assembly Support Pad and Guide Block	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-31	3.1.1-22	E
94	CSA, Flow Distributor; Clamping Ring, Dowel, Flange, Plate, Clip	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-23	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
95	CSA, Flow Distributor; Clamping Ring, Dowel, Flange, Plate, Clip	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
96	CSA, Flow Distributor; Clamping Ring, Dowel, Flange, Plate, Clip	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
97	CSA, Flow Distributor; Clamping Ring, Dowel, Flange, Plate, Clip	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-22	3.1.1-30	E
98	CSA, Flow Distributor; Clamping Ring, Dowel, Flange, Plate, Clip	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-22	3.1.1-30	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
99	CSA, Flow Distributor; Clamping Ring, Dowel, Flange, Plate, Clip	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
100	CSA, Flow Distributor; Clamping Ring, Dowel, Flange, Plate, Clip	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Reactor Vessel Internals	IV.B4-15	3.1.1-63	E
101	CSA, Flow Distributor; Clamping Ring, Dowel, Flange, Plate, Clip	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-24	3.1.1-22	E
102	CSA, Flow Distributor; Head	Flow control	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-23	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
103	CSA, Flow Distributor; Head	Flow control	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
104	CSA, Flow Distributor; Head	Flow control	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
105	CSA, Flow Distributor; Head	Flow control	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-22	3.1.1-30	E
106	CSA, Flow Distributor; Head	Flow control	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-22	3.1.1-30	A
107	CSA, Flow Distributor; Head	Flow control	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
108	CSA, Flow Distributor; Head	Flow control	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-24	3.1.1-22	E
109	CSA, Flow Distributor; Bolt - Shell Forging-to-Flow Distributor	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-23	3.1.1-33	E
110	CSA, Flow Distributor; Bolt - Shell Forging-to-Flow Distributor	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
111	CSA, Flow Distributor; Bolt - Shell Forging-to-Flow Distributor	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
112	CSA, Flow Distributor; Bolt - Shell Forging-to-Flow Distributor	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-25	3.1.1-37	E
113	CSA, Flow Distributor; Bolt - Shell Forging-to-Flow Distributor	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-25	3.1.1-37	A
114	CSA, Flow Distributor; Bolt - Shell Forging-to-Flow Distributor	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
115	CSA, Flow Distributor; Bolt - Shell Forging-to-Flow Distributor	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-26	3.1.1-27	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
116	CSA, Flow Distributor; Bolt - Shell Forging-to-Flow Distributor	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-24	3.1.1-22	E
117	CSA, Thermal Shield; Shield, Dowel, Restraint	Shielding	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-39	3.1.1-33	E
118	CSA, Thermal Shield; Shield, Dowel, Restraint	Shielding	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
119	CSA, Thermal Shield; Shield, Dowel, Restraint	Shielding	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
120	CSA, Thermal Shield; Shield, Dowel, Restraint	Shielding	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-40	3.1.1-30	E
121	CSA, Thermal Shield; Shield, Dowel, Restraint	Shielding	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-40	3.1.1-30	A
122	CSA, Thermal Shield; Shield, Dowel, Restraint	Shielding	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
123	CSA, Thermal Shield; Shield, Dowel, Restraint	Shielding	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-41	3.1.1-22	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
124	CSA, Incore Guide Tube Assembly; Spider	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-23	3.1.1-33	E
125	CSA, Incore Guide Tube Assembly; Spider	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
126	CSA, Incore Guide Tube Assembly; Spider	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
127	CSA, Incore Guide Tube Assembly; Spider	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-29	3.1.1-30	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
128	CSA, Incore Guide Tube Assembly; Spider	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-29	3.1.1-30	A
129	CSA, Incore Guide Tube Assembly; Spider	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
130	CSA, Incore Guide Tube Assembly; Spider	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-28	3.1.1-80	E
131	CSA, Incore Guide Tube Assembly; Tube, Gusset, Clip, Nut and Washer	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-23	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
132	CSA, Incore Guide Tube Assembly; Tube, Gusset, Clip, Nut and Washer	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
133	CSA, Incore Guide Tube Assembly; Tube, Gusset, Clip, Nut and Washer	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
134	CSA, Incore Guide Tube Assembly; Tube, Gusset, Clip, Nut and Washer	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-29	3.1.1-30	E
135	CSA, Incore Guide Tube Assembly; Tube, Gusset, Clip, Nut and Washer	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-29	3.1.1-30	C

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
136	CSA, Incore Guide Tube Assembly; Tube, Gusset, Clip, Nut and Washer	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
137	CSA, Incore Guide Tube Assembly; Tube, Gusset, Clip, Nut and Washer	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-24	3.1.1-22	E
138	CSA, Vent Valve Assembly; Valve Body	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-17	3.1.1-33	E
139	CSA, Vent Valve Assembly; Valve Body	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
140	CSA, Vent Valve Assembly; Valve Body	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
141	CSA, Vent Valve Assembly; Valve Body	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-18	3.1.1-30	E
142	CSA, Vent Valve Assembly; Valve Body	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-18	3.1.1-30	A
143	CSA, Vent Valve Assembly; Valve Body	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
144	CSA, Vent Valve Assembly; Valve Body	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-21	3.1.1-80	E
145	CSA, Vent Valve Assembly; Vent Valve Parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-17	3.1.1-33	E
146	CSA, Vent Valve Assembly; Vent Valve Parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
147	CSA, Vent Valve Assembly; Vent Valve Parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
148	CSA, Vent Valve Assembly; Vent Valve Parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-18	3.1.1-30	E
149	CSA, Vent Valve Assembly; Vent Valve Parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-18	3.1.1-30	A
150	CSA, Vent Valve Assembly; Vent Valve Parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
151	CSA, Vent Valve Assembly; Vent Valve Parts	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Reactor Vessel Internals	IV.B4-15	3.1.1-63	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
152	CSA, Vent Valve Assembly; Vent Valve Parts	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-16	3.1.1-22	E
153	Plenum Cover Base Block, Bolt, Locking cup, Lifting Lug	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
154	Plenum Cover Base Block, Bolt, Locking cup, Lifting Lug	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
155	Plenum Cover Base Block, Bolt, Locking cup, Lifting Lug	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - SCC/IGA	PWR Reactor Vessel Internals	IV.B4-34	3.1.1-30	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
156	Plenum Cover Base Block, Bolt, Locking cup, Lifting Lug	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.B4-34	3.1.1-30	A
157	Plenum Cover Base Block, Bolt, Locking cup, Lifting Lug	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
158	Plenum Cover Rib Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
159	Plenum Cover Rib Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
160	Plenum Cover Rib Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - SCC/IGA	PWR Reactor Vessel Internals	IV.B4-44	3.1.1-30	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
161	Plenum Cover Rib Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.B4-44	3.1.1-30	A
162	Plenum Cover Rib Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Reactor Vessel Internals	IV.B4-42	3.1.1-63	E
163	Plenum Cover Rib Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
164	Plenum Cover Flange, Plate, Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
165	Plenum Cover Flange, Plate, Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
166	Plenum Cover Flange, Plate, Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - SCC/IGA	PWR Reactor Vessel Internals	IV.B4-34	3.1.1-30	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
167	Plenum Cover Flange, Plate, Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.B4-34	3.1.1-30	A
168	Plenum Cover Flange, Plate, Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
169	Plenum CRGT; Pipe, Flange, Tube, Tube Sector	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-3	3.1.1-33	E
170	Plenum CRGT; Pipe, Flange, Tube, Tube Sector	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
171	Plenum CRGT; Pipe, Flange, Tube, Tube Sector	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
172	Plenum CRGT; Pipe, Flange, Tube, Tube Sector	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-2	3.1.1-30	E
173	Plenum CRGT; Pipe, Flange, Tube, Tube Sector	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-2	3.1.1-30	A
174	Plenum CRGT; Pipe, Flange, Tube, Tube Sector	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
175	Plenum CRGT; Pipe, Flange, Tube, Tube Sector	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-46	3.1.1-22	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
176	Plenum CRGT; Spacer Casting	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-3	3.1.1-33	E
177	Plenum CRGT; Spacer Casting	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
178	Plenum CRGT; Spacer Casting	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
179	Plenum CRGT; Spacer Casting	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-2	3.1.1-30	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
180	Plenum CRGT; Spacer Casting	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-2	3.1.1-30	A
181	Plenum CRGT; Spacer Casting	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
182	Plenum CRGT; Spacer Casting	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-4	3.1.1-80	E
183	Plenum CRGT; Screw, Washer, and Dowel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-3	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
184	Plenum CRGT; Screw, Washer, and Dowel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
185	Plenum CRGT; Screw, Washer, and Dowel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
186	Plenum CRGT; Screw, Washer, and Dowel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-5	3.1.1-30	E
187	Plenum CRGT; Screw, Washer, and Dowel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-5	3.1.1-30	A
188	Plenum CRGT; Screw, Washer, and Dowel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
189	Plenum CRGT; Screw, Washer, and Dowel	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-6	3.1.1-27	E
190	Plenum CRGT; Screw, Washer, and Dowel	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-46	3.1.1-22	E
191	Plenum Cylinder; Cylinder and Flange	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-35	3.1.1-33	E
192	Plenum Cylinder; Cylinder and Flange	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
193	Plenum Cylinder; Cylinder and Flange	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
194	Plenum Cylinder; Cylinder and Flange	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-34	3.1.1-30	E
195	Plenum Cylinder; Cylinder and Flange	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-34	3.1.1-30	A
196	Plenum Cylinder; Cylinder and Flange	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
197	Plenum Cylinder; Cylinder and Flange	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-46	3.1.1-22	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
198	Plenum Cylinder; Reinforcing Plate	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-35	3.1.1-33	E
199	Plenum Cylinder; Reinforcing Plate	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
200	Plenum Cylinder; Reinforcing Plate	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
201	Plenum Cylinder; Reinforcing Plate	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-34	3.1.1-30	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
202	Plenum Cylinder; Reinforcing Plate	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-34	3.1.1-30	A
203	Plenum Cylinder; Reinforcing Plate	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
204	Plenum Cylinder; Reinforcing Plate	Support	Cast Austenitic Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-4	3.1.1-80	E
205	Plenum Cylinder; Screw, Bolt, and Locking cup	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-35	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
206	Plenum Cylinder; Screw, Bolt, and Locking cup	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
207	Plenum Cylinder; Screw, Bolt, and Locking cup	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
208	Plenum Cylinder; Screw, Bolt, and Locking cup	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-36	3.1.1-30	E
209	Plenum Cylinder; Screw, Bolt, and Locking cup	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-36	3.1.1-30	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
210	Plenum Cylinder; Screw, Bolt, and Locking cup	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
211	Plenum Cylinder; Screw, Bolt, and Locking cup	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of preload	PWR Reactor Vessel Internals	IV.B4-14	3.1.1-27	E
212	Plenum Cylinder; Screw, Bolt, and Locking cup	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-46	3.1.1-22	E
213	Plenum Upper Grid; Dowel	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-17	3.1.1-33	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
214	Plenum Upper Grid; Dowel	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
215	Plenum Upper Grid; Dowel	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102 0103
216	Plenum Upper Grid; Dowel	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-13	3.1.1-37	E
217	Plenum Upper Grid; Dowel	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-13	3.1.1-37	C
218	Plenum Upper Grid; Dowel	Support	Nickel Alloy	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
219	Plenum Upper Grid; Dowel	Support	Nickel Alloy	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-12	3.1.1-22	E
220	Plenum Upper Grid; Fuel Assembly Support Pad	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-45	3.1.1-33	E
221	Plenum Upper Grid; Fuel Assembly Support Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
222	Plenum Upper Grid; Fuel Assembly Support Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
223	Plenum Upper Grid; Fuel Assembly Support Pad	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-44	3.1.1-30	E
224	Plenum Upper Grid; Fuel Assembly Support Pad	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-44	3.1.1-30	A
225	Plenum Upper Grid; Fuel Assembly Support Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
226	Plenum Upper Grid; Fuel Assembly Support Pad	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Reactor Vessel Internals	IV.B4-42	3.1.1-63	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
227	Plenum Upper Grid; Fuel Assembly Support Pad	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-46	3.1.1-22	E
228	Plenum Upper Grid; Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-45	3.1.1-33	E
229	Plenum Upper Grid; Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
230	Plenum Upper Grid; Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
231	Plenum Upper Grid; Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-44	3.1.1-30	E
232	Plenum Upper Grid; Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-44	3.1.1-30	A
233	Plenum Upper Grid; Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
234	Plenum Upper Grid; Ring and Rib	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-46	3.1.1-22	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
235	Plenum Upper Grid Screw and Pin	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Change in dimension	PWR Reactor Vessel Internals	IV.B4-45	3.1.1-33	E
236	Plenum Upper Grid Screw and Pin	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - fatigue	TLAA	IV.B4-37	3.1.1-05	A
237	Plenum Upper Grid Screw and Pin	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Cracking - flaw growth	PWR Reactor Vessel Internals	IV.C2-26	3.1.1-62	E 0102
238	Plenum Upper Grid Screw and Pin	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Reactor Vessel Internals	IV.B4-43	3.1.1-30	E

Table 3.1.2-2 Aging Management Review Results – Reactor Vessel Internals									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
239	Plenum Upper Grid Screw and Pin	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Cracking - IASCC, SCC/IGA	PWR Water Chemistry	IV.B4-43	3.1.1-30	A
240	Plenum Upper Grid Screw and Pin	Support	Stainless Steel	Borated Reactor Coolant (Internal)	Loss of material	PWR Water Chemistry	IV.B4-38	3.1.1-83	A
241	Plenum Upper Grid Screw and Pin	Support	Stainless Steel	Borated Reactor Coolant with Neutron Fluence (Internal)	Reduction in fracture toughness	PWR Reactor Vessel Internals	IV.B4-46	3.1.1-22	E

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking - Fatigue	TLAA	IV.C2-10	3.1.1-07	A 0111
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking - SCC/IGA	Bolting Integrity	IV.C2-7	3.1.1-52	B
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	H
4	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of preload	Bolting Integrity	IV.C2-8	3.1.1-52	B
5	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking - Fatigue	TLAA	IV.C2-10	3.1.1-07	A 0111

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
6	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking - SCC	Bolting Integrity	IV.C2-7	3.1.1-52	B
7	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A
8	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	V.E-6	3.2.1-22	B
9	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of preload	Bolting Integrity	IV.C2-8	3.1.1-52	B
10	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking - Fatigue	TLAA	IV.C2-10	3.1.1-07	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
11	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking - SCC/IGA	Bolting Integrity	IV.C2-7	3.1.1-52	B
12	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	H
13	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of preload	Bolting Integrity	IV.C2-8	3.1.1-52	B
14	CRDM Motor Tube Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	C
15	CRDM Motor Tube Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
16	CRDM Motor Tube Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-27	3.1.1-68	C

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
17	CRDM Motor Tube Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-27	3.1.1-68	C
18	CRDM Motor Tube Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	C
19	CRDM Motor Tube Assembly	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	C
20	Drain Pan	Pressure boundary	Stainless Steel	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis	V.D1-24	3.2.1-06	C
21	Drain Pan	Pressure boundary	Stainless Steel	Lubricating Oil (Internal)	Loss of Material	One-Time Inspection	V.D1-24	3.2.1-06	C
22	Drain Pan	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
23	Flexible Connection	Pressure boundary	Stainless Steel	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis	V.D1-24	3.2.1-06	C
24	Flexible Connection	Pressure boundary	Stainless Steel	Lubricating Oil (Internal)	Loss of Material	One-Time Inspection	V.D1-24	3.2.1-06	C

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
25	Flexible Connection	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
26	Flow Element	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
27	Flow Element	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	A 0102
28	Flow Element	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-27	3.1.1-68	A
29	Flow Element	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-27	3.1.1-68	A
30	Flow Element	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
31	Flow Element	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
32	Flow Element	Throttling	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
33	Flow Element	Throttling	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	A 0102
34	Flow Element	Throttling	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-27	3.1.1-68	A
35	Flow Element	Throttling	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-27	3.1.1-68	A
36	Flow Element	Throttling	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
37	Flow Element	Throttling	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A
38	Orifice < 4 inches	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	IV.E-2	3.1.1-86	A 0109

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
39	Orifice < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
40	Orifice < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Inservice Inspection	IV.C2-1	3.1.1-70	A 0102
41	Orifice < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	PWR Water Chemistry	IV.C2-1	3.1.1-70	A 0102
42	Orifice < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Small Bore Class 1 Piping Inspection	IV.C2-1	3.1.1-70	A 0102
43	Orifice < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
44	Orifice < 4 inches	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
45	Orifice < 4 inches	Throttling	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	IV.E-2	3.1.1-86	A 0109

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
46	Orifice < 4 inches	Throttling	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
47	Orifice < 4 inches	Throttling	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Inservice Inspection	IV.C2-1	3.1.1-70	A 0102
48	Orifice < 4 inches	Throttling	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	PWR Water Chemistry	IV.C2-1	3.1.1-70	A 0102
49	Orifice < 4 inches	Throttling	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Small Bore Class 1 Piping Inspection	IV.C2-1	3.1.1-70	A 0102
50	Orifice < 4 inches	Throttling	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
51	Orifice < 4 inches	Throttling	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
52	Piping	Pressure boundary	Steel	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis	VII.G-26	3.3.1-15	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
53	Piping	Pressure boundary	Steel	Lubricating Oil (Internal)	Loss of Material	One-Time Inspection	VII.G-26	3.3.1-15	A
54	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
55	Piping - Cold Leg and Hot Leg	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
56	Piping - Cold Leg and Hot Leg	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	A 0102
57	Piping - Cold Leg and Hot Leg	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-27	3.1.1-68	A
58	Piping - Cold Leg and Hot Leg	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-27	3.1.1-68	A
59	Piping - Cold Leg and Hot Leg	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
60	Piping - Cold Leg and Hot Leg	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A
61	Piping - DMW	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
62	Piping - DMW	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103
63	Piping - DMW	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Inservice Inspection	IV.C2-13	3.1.1-31	A
64	Piping - DMW	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.C2-13	3.1.1-31	A 0110
65	Piping - DMW	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.C2-13	3.1.1-31	A
66	Piping - DMW	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
67	Piping - DMW	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A 0103
68	Piping < 4 inches	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	IV.E-2	3.1.1-86	A 0109
69	Piping < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
70	Piping < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Inservice Inspection	IV.C2-1	3.1.1-70	A 0102
71	Piping < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	PWR Water Chemistry	IV.C2-1	3.1.1-70	A 0102
72	Piping < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Small Bore Class 1 Piping Inspection	IV.C2-1	3.1.1-70	A 0102
73	Piping < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
74	Piping < 4 inches	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
75	Piping <4 inches RV flange leakage	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	IV.E-2	3.1.1-86	A 0109
76	Piping <4 inches RV flange leakage	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
77	Piping <4 inches RV flange leakage	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
78	Piping <4 inches RV flange leakage	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-5	3.1.1-23	E
79	Piping <4 inches RV flange leakage	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Small Bore Class 1 Piping Inspection	IV.A2-5	3.1.1-23	E
80	Piping <4 inches RV flange leakage	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
81	Piping <4 inches RV flange leakage	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
82	Piping <4 inches Incore monitoring	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
83	Piping <4 inches Incore monitoring	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
84	Piping <4 inches Incore monitoring	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.A2-1	3.1.1-23	E
85	Piping <4 inches Incore monitoring	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Small Bore Class 1 Piping Inspection	IV.A2-1	3.1.1-23	E
86	Piping <4 inches Incore monitoring	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
87	Piping <4 inches Incore monitoring	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
88	Piping < 4 inches	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C 0109
89	Piping < 4 inches	Structural integrity	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	VII.E1-16	3.3.1-02	C
90	Piping < 4 inches	Structural integrity	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	VII.E1-20	3.3.1-90	C
91	Piping < 4 inches	Structural integrity	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
92	Piping < 4 inches	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
93	Piping >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
94	Piping >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	A 0102

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
95	Piping >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-2	3.1.1-68	A
96	Piping >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-2	3.1.1-68	A
97	Piping >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
98	Piping >= 4 inches	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
99	Pressurizer Heater Belt Forgings	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
100	Pressurizer Heater Belt Forgings	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-18	3.1.1-67	A 0102
101	Pressurizer Heater Belt Forgings	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-19	3.1.1-64	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
102	Pressurizer Heater Belt Forgings	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-19	3.1.1-64	A
103	Pressurizer Heater Belt Forgings	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
104	Pressurizer Heater Belt Forgings	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A
105	Pressurizer Heater Bundle Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A 0108
106	Pressurizer Heater Bundle Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-18	3.1.1-67	A 0102 0108
107	Pressurizer Heater Bundle Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-20	3.1.1-68	A 0108
108	Pressurizer Heater Bundle Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-20	3.1.1-68	A 0108

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
109	Pressurizer Heater Bundle Assembly	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A 0108
110	Pressurizer Heater Bundle Cover Plate	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A 0101
111	Pressurizer Manway Cover	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A 0101
112	Pressurizer Manway Forging	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	C
113	Pressurizer Manway Forging	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-18	3.1.1-67	A 0102
114	Pressurizer Manway Forging	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-19	3.1.1-64	A
115	Pressurizer Manway Forging	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-19	3.1.1-64	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
116	Pressurizer Manway Forging	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
117	Pressurizer Manway Forging	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A
118	Pressurizer Manway Insert	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A 0108
119	Pressurizer Manway Insert	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-18	3.1.1-67	A 0102 0108
120	Pressurizer Manway Insert	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-19	3.1.1-64	A 0108
121	Pressurizer Manway Insert	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-19	3.1.1-64	A 0108
122	Pressurizer Manway Insert	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A 0108

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
123	Pressurizer Relief Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
124	Pressurizer Relief Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Inservice Inspection	IV.C2-1	3.1.1-70	C 0102
125	Pressurizer Relief Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	PWR Water Chemistry	IV.C2-1	3.1.1-70	C 0102
126	Pressurizer Relief Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Small Bore Class 1 Piping Inspection	IV.C2-1	3.1.1-70	C 0102
127	Pressurizer Relief Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
128	Pressurizer Relief Nozzle Safe End	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
129	Pressurizer Relief, Spray, and Surge Nozzle	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
130	Pressurizer Relief, Spray, and Surge Nozzle	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-18	3.1.1-67	A 0102
131	Pressurizer Relief, Spray, and Surge Nozzle	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-19	3.1.1-64	A
132	Pressurizer Relief, Spray, and Surge Nozzle	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-19	3.1.1-64	A
133	Pressurizer Relief, Spray, and Surge Nozzle	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
134	Pressurizer Relief, Spray, and Surge Nozzle	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
135	Pressurizer Relief, Spray, and Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
136	Pressurizer Relief, Spray, and Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103
137	Pressurizer Relief, Spray, and Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Inservice Inspection	IV.C2-24	3.1.1-31	A
138	Pressurizer Relief, Spray, and Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.C2-24	3.1.1-31	A 0110
139	Pressurizer Relief, Spray, and Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.C2-24	3.1.1-31	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
140	Pressurizer Relief, Spray, and Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
141	Pressurizer Relief, Spray, and Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A 0103
142	Pressurizer Shell and Heads	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
143	Pressurizer Shell and Heads	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-18	3.1.1-67	A 0102
144	Pressurizer Shell and Heads	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-19	3.1.1-64	A
145	Pressurizer Shell and Heads	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-19	3.1.1-64	A
146	Pressurizer Shell and Heads	Pressure boundary	Steel w. SS Cladding	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
147	Pressurizer Shell and Heads	Pressure boundary	Steel w. SS Cladding	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A
148	Pressurizer Spray Nozzle Safe End	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
149	Pressurizer Spray Nozzle Safe End	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103
150	Pressurizer Spray Nozzle Safe End	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Inservice Inspection	IV.C2-24	3.1.1-31	C
151	Pressurizer Spray Nozzle Safe End	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.C2-24	3.1.1-31	C 0110
152	Pressurizer Spray Nozzle Safe End	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.C2-24	3.1.1-31	C
153	Pressurizer Spray Nozzle Safe End	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
154	Pressurizer Spray Nozzle Safe End	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A 0103
155	Pressurizer Spray Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
156	Pressurizer Spray Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103
157	Pressurizer Spray Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Inservice Inspection	IV.C2-24	3.1.1-31	A
158	Pressurizer Spray Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.C2-24	3.1.1-31	A 0110
159	Pressurizer Spray Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.C2-24	3.1.1-31	A
160	Pressurizer Spray Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
161	Pressurizer Spray Nozzle Weld	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A 0103
162	Pressurizer Support Plate Assembly	Support	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A 0101
163	Pressurizer Support Plate Assembly	Support	Steel	Air with borated water leakage (External)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-16	3.1.1-61	A 0102 0111
164	Pressurizer Support Plate Assembly	Support	Steel	Air with borated water leakage (External)	Cracking - Fatigue	TLAA	IV.C2-10	3.1.1-07	A 0111
165	Pressurizer Surge and Spray Nozzle Thermal Sleeve	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
166	Pressurizer Surge and Spray Nozzle Thermal Sleeve	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-18	3.1.1-67	A 0102
167	Pressurizer Surge and Spray Nozzle Thermal Sleeve	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-19	3.1.1-64	A
168	Pressurizer Surge and Spray Nozzle Thermal Sleeve	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-19	3.1.1-64	A
169	Pressurizer Surge and Spray Nozzle Thermal Sleeve	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
170	Pressurizer Surge and Spray Nozzle Thermal Sleeve	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
171	Pressurizer Surge Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
172	Pressurizer Surge Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-18	3.1.1-67	A 0102
173	Pressurizer Surge Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-19	3.1.1-64	A
174	Pressurizer Surge Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-19	3.1.1-64	A
175	Pressurizer Surge Nozzle Safe End	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
176	Pressurizer Surge Nozzle Safe End	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
177	Pressurizer Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
178	Pressurizer Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103
179	Pressurizer Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Inservice Inspection	IV.C2-24	3.1.1-31	A
180	Pressurizer Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.C2-24	3.1.1-31	A 0110
181	Pressurizer Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.C2-24	3.1.1-31	A
182	Pressurizer Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
183	Pressurizer Surge Nozzle Weld	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A 0103
184	Pressurizer Vent, Sampling, Level Sensing, and Thermowell Nozzle and Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
185	Pressurizer Vent, Sampling, Level Sensing, and Thermowell Nozzle and Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
186	Pressurizer Vent, Sampling, Level Sensing, and Thermowell Nozzle and Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Inservice Inspection	IV.C2-24	3.1.1-31	A
187	Pressurizer Vent, Sampling, Level Sensing, and Thermowell Nozzle and Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.C2-24	3.1.1-31	A 0110
188	Pressurizer Vent, Sampling, Level Sensing, and Thermowell Nozzle and Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.C2-24	3.1.1-31	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
189	Pressurizer Vent, Sampling, Level Sensing, and Thermowell Nozzle and Weld	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
190	Pressurizer Vent, Sampling, Level Sensing, and Thermowell Nozzle and Weld	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A 0103
191	RC Pump Case and Cover	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
192	RC Pump Case and Cover	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
193	RC Pump Case and Cover	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-5	3.1.1-68	A
194	RC Pump Case and Cover	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-5	3.1.1-68	A
195	RC Pump Case and Cover	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
196	RC Pump Case and Cover	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant > 250°C (> 482°F) (Internal)	Reduction in fracture toughness	Inservice Inspection	IV.C2-6	3.1.1-55	A
197	RC Pump Case and Cover	Pressure boundary	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
198	RC Pump Driver Mount	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.C2-9	3.1.1-58	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
199	RC Pump Seal Cooling Heat Exchanger Tube (Inner)	Heat transfer	Nickel Alloy	Borated reactor coolant (Internal)	Reduction in heat transfer	PWR Water Chemistry	N/A	N/A	H
200	RC Pump Seal Cooling Heat Exchanger Tube (Inner)	Heat transfer	Nickel Alloy	Closed cycle cooling water (External)	Reduction in heat transfer	Closed Cooling Water Chemistry	V.A-13	3.2.1-30	B 0103
201	RC Pump Seal Cooling Heat Exchanger Tube (Inner)	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
202	RC Pump Seal Cooling Heat Exchanger Tube (Inner)	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103
203	RC Pump Seal Cooling Heat Exchanger Tube (Inner)	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.C2-13	3.1.1-31	E 0110 0112

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
204	RC Pump Seal Cooling Heat Exchanger Tube (Inner)	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.C2-13	3.1.1-31	C 0112
205	RC Pump Seal Cooling Heat Exchanger Tube (Inner)	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
206	RC Pump Seal Cooling Heat Exchanger Tube (Inner)	Pressure boundary	Nickel Alloy	Closed cycle cooling water (External)	Loss of Material	Closed Cooling Water Chemistry	V.A-7	3.2.1-28	B 0103
207	RC Pump Seal Cooling Heat Exchanger Tube (Outer)	Heat transfer	Nickel Alloy	Closed cycle cooling water (Internal)	Reduction in heat transfer	Closed Cooling Water Chemistry	V.A-13	3.2.1-30	B 0103
208	RC Pump Seal Cooling Heat Exchanger Tube (Outer)	Pressure boundary	Nickel Alloy	Closed cycle cooling water (Internal)	Loss of Material	Closed Cooling Water Chemistry	V.A-7	3.2.1-28	B 0103

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
209	RC Pump Seal Cooling Heat Exchanger Tube (Outer)	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A 0103
210	Tank (DB-T156-1 & DB-T156-2)	Pressure boundary	Steel	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis	VII.G-27	3.3.1-16	A
211	Tank (DB-T156-1 & DB-T156-2)	Pressure boundary	Steel	Lubricating Oil (Internal)	Loss of Material	One-Time Inspection	VII.G-27	3.3.1-16	A
212	Tank (DB-T156-1 & DB-T156-2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
213	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C 0109
214	Tubing	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
215	Tubing	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Inservice Inspection	IV.C2-1	3.1.1-70	C 0102

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
216	Tubing	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	PWR Water Chemistry	IV.C2-1	3.1.1-70	C 0102
217	Tubing	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Small Bore Class 1 Piping Inspection	IV.C2-1	3.1.1-70	C 0102
218	Tubing	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
219	Tubing	Pressure boundary	Stainless Steel	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis	V.D1-24	3.2.1-06	A
220	Tubing	Pressure boundary	Stainless Steel	Lubricating Oil (Internal)	Loss of Material	One-Time Inspection	V.D1-24	3.2.1-06	A
221	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
222	Tubing	Structural integrity	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	VII.E1-16	3.3.1-02	C

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
223	Tubing	Structural integrity	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	VII.E1-20	3.3.1-90	C
224	Tubing	Structural integrity	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
225	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
226	Valve Body	Pressure boundary	Steel	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis	VII.G-26	3.3.1-15	A
227	Valve Body	Pressure boundary	Steel	Lubricating Oil (Internal)	Loss of Material	One-Time Inspection	VII.G-26	3.3.1-15	A
228	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
229	Valve Body < 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A

Table 3.1.2-3	Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
230	Valve Body < 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Inservice Inspection	IV.C2-1	3.1.1-70	A 0102
231	Valve Body < 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	PWR Water Chemistry	IV.C2-1	3.1.1-70	A 0102
232	Valve Body < 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Small Bore Class 1 Piping Inspection	IV.C2-1	3.1.1-70	A 0102
233	Valve Body < 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
234	Valve Body < 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant > 250°C (> 482°F) (Internal)	Reduction in fracture toughness	Inservice Inspection	IV.C2-6	3.1.1-55	A
235	Valve Body < 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
236	Valve Body < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
237	Valve Body < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Inservice Inspection	IV.C2-1	3.1.1-70	A 0102
238	Valve Body < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	PWR Water Chemistry	IV.C2-1	3.1.1-70	A 0102
239	Valve Body < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth, SCC/IGA	Small Bore Class 1 Piping Inspection	IV.C2-1	3.1.1-70	A 0102
240	Valve Body < 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
241	Valve Body < 4 inches	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
242	Valve Body < 4 inches	Structural integrity	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	VII.E1-16	3.3.1-02	C

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
243	Valve Body < 4 inches	Structural integrity	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	VII.E1-20	3.3.1-90	C
244	Valve Body < 4 inches	Structural integrity	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
245	Valve Body < 4 inches	Structural integrity	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
246	Valve Body < 4 inches	Structural integrity	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	VII.E1-16	3.3.1-02	C
247	Valve Body < 4 inches	Structural integrity	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	VII.E1-20	3.3.1-90	C
248	Valve Body < 4 inches	Structural integrity	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
249	Valve Body < 4 inches	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
250	Valve Body >= 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
251	Valve Body >= 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
252	Valve Body >= 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-5	3.1.1-68	A
253	Valve Body >= 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-5	3.1.1-68	A
254	Valve Body >= 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
255	Valve Body >= 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Borated reactor coolant > 250°C (> 482°F) (Internal)	Reduction in fracture toughness	Inservice Inspection	IV.C2-6	3.1.1-55	A

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
256	Valve Body >= 4 inches	Pressure boundary	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A
257	Valve Body >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.C2-25	3.1.1-08	A
258	Valve Body >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
259	Valve Body >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.C2-5	3.1.1-68	A
260	Valve Body >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.C2-5	3.1.1-68	A
261	Valve Body >= 4 inches	Pressure boundary	Stainless Steel	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	A
262	Valve Body >= 4 inches	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	A

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking - Fatigue	TLAA	IV.C2-10	3.1.1-07	A
2	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking - SCC	Bolting Integrity	IV.C2-7	3.1.1-52	B
3	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of Material	Bolting Integrity	V.E-6	3.2.1-22	B
4	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A
5	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of Preload	Bolting Integrity	IV.D2-6	3.1.1-52	B

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
6	Primary Side; Drain Nozzle	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.D2-3	3.1.1-10	A
7	Primary Side; Drain Nozzle	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103
8	Primary Side; Drain Nozzle	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Inservice Inspection	IV.D2-2	3.1.1-31	A
9	Primary Side; Drain Nozzle	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.D2-2	3.1.1-31	A 0110
10	Primary Side; Drain Nozzle	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.D2-2	3.1.1-31	A
11	Primary Side; Drain Nozzle	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	C
12	Primary Side; Drain Nozzle	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	C 0103

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
13	Primary Side; Manway and Inspection Opening Cover and Backing Plate	Pressure boundary	Steel w. SS backing	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.D2-3	3.1.1-10	A
14	Primary Side; Manway and Inspection Opening Cover and Backing Plate	Pressure boundary	Steel w. SS backing	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
15	Primary Side; Manway and Inspection Opening Cover and Backing Plate	Pressure boundary	Steel w. SS backing	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.D2-4	3.1.1-35	C
16	Primary Side; Manway and Inspection Opening Cover and Backing Plate	Pressure boundary	Steel w. SS backing	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.D2-4	3.1.1-35	C

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
17	Primary Side; Manway and Inspection Opening Cover and Backing Plate	Pressure boundary	Steel w. SS backing	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	C
18	Primary Side; Manway and Inspection Opening Cover and Backing Plate	Pressure boundary	Steel w. SS backing	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A
19	Primary Side; Nozzle Dam Retaining Ring	Support	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.D2-3	3.1.1-10	A 0101
20	Primary Side; Nozzle Dam Retaining Ring	Support	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0101 0102 0103
21	Primary Side; Nozzle Dam Retaining Ring	Support	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Inservice Inspection	IV.D2-2	3.1.1-31	A 0101

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
22	Primary Side; Nozzle Dam Retaining Ring	Support	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.D2-2	3.1.1-31	A 0101 0110
23	Primary Side; Nozzle Dam Retaining Ring	Support	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.D2-2	3.1.1-31	A 0101
24	Primary Side; Nozzle Dam Retaining Ring	Support	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	C 0101
25	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.D2-15	3.1.1-06	A
26	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102 0103
27	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.D2-14	3.1.1-73	A
28	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Steam Generator Tube Integrity	IV.D2-14	3.1.1-73	A

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
29	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	C
30	Primary Side; Tube and Sleeve	Heat transfer	Nickel Alloy	Borated reactor coolant (Internal)	Reduction in Heat Transfer	PWR Water Chemistry	N/A	N/A	H
31	Primary Side; Tube and Sleeve	Heat transfer	Nickel Alloy	Borated reactor coolant (Internal)	Reduction in Heat Transfer	Steam Generator Tube Integrity	N/A	N/A	H
32	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Treated water (External)	Cracking - SCC/IGA	PWR Water Chemistry	IV.D2-16	3.1.1-72	A
33	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Treated water (External)	Cracking - SCC/IGA	Steam Generator Tube Integrity	IV.D2-16	3.1.1-72	A
34	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Treated water (External)	Cracking - SCC/IGA	PWR Water Chemistry	IV.D2-17	3.1.1-72	A
35	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Treated water (External)	Cracking - SCC/IGA	Steam Generator Tube Integrity	IV.D2-17	3.1.1-72	A

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
36	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Treated water (External)	Denting	PWR Water Chemistry	IV.D2-13	3.1.1-75	A
37	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Treated water (External)	Denting	Steam Generator Tube Integrity	IV.D2-13	3.1.1-75	A
38	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Treated water (External)	Loss of Material	PWR Water Chemistry	IV.D2-18	3.1.1-72	A
39	Primary Side; Tube and Sleeve	Pressure boundary	Nickel Alloy	Treated water (External)	Loss of Material	Steam Generator Tube Integrity	IV.D2-18	3.1.1-72	A
40	Primary Side; Tube and Sleeve	Heat Transfer	Nickel Alloy	Treated water (External)	Reduction in Heat Transfer	PWR Water Chemistry	N/A	N/A	H
41	Primary Side; Tube and Sleeve	Heat Transfer	Nickel Alloy	Treated water (External)	Reduction in Heat Transfer	Steam Generator Tube Integrity	N/A	N/A	H
42	Primary Side; Tube Plug	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.D2-15	3.1.1-06	C 0101

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
43	Primary Side; Tube Plug	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0101 0102 0103
44	Primary Side; Tube Plug	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.D2-12	3.1.1-73	A 0101
45	Primary Side; Tube Plug	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Steam Generator Tube Integrity	IV.D2-12	3.1.1-73	A 0101
46	Primary Side; Tube Plug	Pressure boundary	Nickel Alloy	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	C 0101
47	Primary Side; Upper and Lower Head, Inlet and Outlet Nozzle	Pressure boundary	Steel w. SS cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.D2-3	3.1.1-10	A
48	Primary Side; Upper and Lower Head, Inlet and Outlet Nozzle	Pressure boundary	Steel w. SS cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
49	Primary Side; Upper and Lower Head, Inlet and Outlet Nozzle	Pressure boundary	Steel w. SS cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.D2-4	3.1.1-35	A
50	Primary Side; Upper and Lower Head, Inlet and Outlet Nozzle	Pressure boundary	Steel w. SS cladding	Borated reactor coolant (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.D2-4	3.1.1-35	A
51	Primary Side; Upper and Lower Head, Inlet and Outlet Nozzle	Pressure boundary	Steel w. SS cladding	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	C
52	Primary Side; Upper and Lower Head, Inlet and Outlet Nozzle	Pressure boundary	Steel w. SS cladding	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A
53	Primary Side; Upper and Lower Tubesheet	Pressure boundary	Steel w. Nickel Alloy Cladding	Borated reactor coolant (Internal)	Cracking - Fatigue	TLAA	IV.D2-3	3.1.1-10	A

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
54	Primary Side; Upper and Lower Tubesheet	Pressure boundary	Steel w. Nickel Alloy Cladding	Borated reactor coolant (Internal)	Cracking - Flaw Growth	Inservice Inspection	IV.C2-26	3.1.1-62	C 0102
55	Primary Side; Upper and Lower Tubesheet	Pressure boundary	Steel w. Nickel Alloy Cladding	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Inservice Inspection	IV.D2-4	3.1.1-35	A
56	Primary Side; Upper and Lower Tubesheet	Pressure boundary	Steel w. Nickel Alloy Cladding	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	Nickel-Alloy Management	IV.D2-4	3.1.1-35	A 0110
57	Primary Side; Upper and Lower Tubesheet	Pressure boundary	Steel w. Nickel Alloy Cladding	Borated reactor coolant (Internal)	Cracking - PWSCC, SCC/IGA	PWR Water Chemistry	IV.D2-4	3.1.1-35	A
58	Primary Side; Upper and Lower Tubesheet	Pressure boundary	Steel w. Nickel Alloy Cladding	Borated reactor coolant (Internal)	Loss of Material	PWR Water Chemistry	IV.C2-15	3.1.1-83	C
59	Primary Side; Upper and Lower Tubesheet	Pressure boundary	Steel w. Nickel Alloy Cladding	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
60	Primary Side; Upper and Lower Tubesheet	Pressure boundary	Steel w. Nickel Alloy Cladding	Treated water (External)	Loss of Material	One-Time Inspection	IV.D2-8	3.1.1-12	C
61	Primary Side; Upper and Lower Tubesheet	Pressure boundary	Steel w. Nickel Alloy Cladding	Treated water (External)	Loss of Material	PWR Water Chemistry	IV.D2-8	3.1.1-12	C
62	Secondary Side; AFW Header, Riser, Weldneck, and Blind Flange	Pressure boundary	Steel	Treated water (Internal)	Cracking - Fatigue	TLAA	IV.D2-10	3.1.1-07	C
63	Secondary Side; AFW Header, Riser, Weldneck, and Blind Flange	Pressure boundary	Steel	Treated water (Internal)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H
64	Secondary Side; AFW Header, Riser, Weldneck, and Blind Flange	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	One-Time Inspection	IV.D2-8	3.1.1-12	C

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
65	Secondary Side; AFW Header, Riser, Weldneck, and Blind Flange	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	PWR Water Chemistry	IV.D2-8	3.1.1-12	C
66	Secondary Side; AFW Header, Riser, Weldneck, and Blind Flange	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A
67	Secondary Side; AFW Thermal Sleeve, AFW Header Transition Section	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - Fatigue	TLAA	IV.D2-15	3.1.1-06	C
68	Secondary Side; AFW Thermal Sleeve, AFW Header Transition Section	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
69	Secondary Side; AFW Thermal Sleeve, AFW Header Transition Section	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.D2-9	3.1.1-84	C
70	Secondary Side; AFW Thermal Sleeve, AFW Header Transition Section	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.D2-9	3.1.1-84	C
71	Secondary Side; AFW Thermal Sleeve, AFW Header Transition Section	Pressure boundary	Nickel Alloy	Treated water (Internal)	Loss of Material	Inservice Inspection	VIII.B1-1	3.4.1-37	A

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
72	Secondary Side; AFW Thermal Sleeve, AFW Header Transition Section	Pressure boundary	Nickel Alloy	Treated water (Internal)	Loss of Material	PWR Water Chemistry	VIII.B1-1	3.4.1-37	A
73	Secondary Side; AFW Header Transition Section	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	C 0103
74	Secondary Side; Baffle (Shroud), Closure Ring, Support Ring, and Base Ring	Support	Steel	Treated water (External)	Cracking - Fatigue	TLAA	IV.D2-10	3.1.1-07	C 0101
75	Secondary Side; Baffle (Shroud), Closure Ring, Support Ring, and Base Ring	Support	Steel	Treated water (External)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H 0101

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
76	Secondary Side; Baffle (Shroud), Closure Ring, Support Ring, and Base Ring	Support	Steel	Treated water (External)	Loss of Material	One-Time Inspection	IV.D2-8	3.1.1-12	C 0101
77	Secondary Side; Baffle (Shroud), Closure Ring, Support Ring, and Base Ring	Support	Steel	Treated water (External)	Loss of Material	PWR Water Chemistry	IV.D2-8	3.1.1-12	C 0101
78	Secondary Side; Manway and Handhole Cover	Pressure boundary	Steel	Treated water (Internal)	Cracking - Fatigue	TLAA	IV.D2-10	3.1.1-07	A
79	Secondary Side; Manway and Handhole Cover	Pressure boundary	Steel	Treated water (Internal)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H
80	Secondary Side; Manway and Handhole Cover	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	One-Time Inspection	IV.D2-8	3.1.1-12	C

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
81	Secondary Side; Manway and Handhole Cover	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	PWR Water Chemistry	IV.D2-8	3.1.1-12	C
82	Secondary Side; Manway and Handhole Cover	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A
83	Secondary Side; MFW Header Support Plate and Gusset	Support	Steel	Air with borated water leakage (External)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H
84	Secondary Side; MFW Header Support Plate and Gusset	Support	Steel	Air with borated water leakage (External)	Cracking - Fatigue	TLAA	IV.C2-10	3.1.1-07	A
85	Secondary Side; MFW Header Support Plate and Gusset	Support	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
86	Secondary Side; MFW Header	Pressure boundary	Steel	Treated water (Internal)	Cracking - Fatigue	TLAA	IV.D2-10	3.1.1-07	C
87	Secondary Side; MFW Header	Pressure boundary	Steel	Treated water (Internal)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H
88	Secondary Side; MFW Header	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	Flow-Accelerated Corrosion (FAC)	IV.D2-7	3.1.1-59	C
89	Secondary Side; MFW Header	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	One-Time Inspection	IV.D2-8	3.1.1-12	C
90	Secondary Side; MFW Header	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	PWR Water Chemistry	IV.D2-8	3.1.1-12	C
91	Secondary Side; MFW Header	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A
92	Secondary Side; MFW Spray Head	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - Fatigue	TLAA	IV.D2-15	3.1.1-06	C 0101

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
93	Secondary Side; MFW Spray Head	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H 0101
94	Secondary Side; MFW Spray Head	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.D2-9	3.1.1-84	C 0101
95	Secondary Side; MFW Spray Head	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.D2-9	3.1.1-84	C 0101
96	Secondary Side; MFW Spray Head	Pressure boundary	Nickel Alloy	Treated water (Internal)	Loss of Material	Inservice Inspection	VIII.B1-1	3.4.1-37	A 0101
97	Secondary Side; MFW Spray Head	Pressure boundary	Nickel Alloy	Treated water (Internal)	Loss of Material	PWR Water Chemistry	VIII.B1-1	3.4.1-37	A 0101
98	Secondary Side; Nozzle	Pressure boundary	Steel	Treated water (Internal)	Cracking - Fatigue	TLAA	IV.D2-10	3.1.1-07	A
99	Secondary Side; Nozzle	Pressure boundary	Steel	Treated water (Internal)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H
100	Secondary Side; Nozzle	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	One-Time Inspection	IV.D2-8	3.1.1-12	C
101	Secondary Side; Nozzle	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	PWR Water Chemistry	IV.D2-8	3.1.1-12	C

Table 3.1.2-4 Aging Management Review Results – Steam Generators									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
102	Secondary Side; Nozzle	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A
103	Secondary Side; Nozzle	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - Fatigue	TLAA	IV.D2-15	3.1.1-06	C
104	Secondary Side; Nozzle	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H
105	Secondary Side; Nozzle	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - SCC/IGA	Inservice Inspection	IV.D2-9	3.1.1-84	A
106	Secondary Side; Nozzle	Pressure boundary	Nickel Alloy	Treated water (Internal)	Cracking - SCC/IGA	PWR Water Chemistry	IV.D2-9	3.1.1-84	A
107	Secondary Side; Nozzle	Pressure boundary	Nickel Alloy	Treated water (Internal)	Loss of Material	Inservice Inspection	VIII.B1-1	3.4.1-37	A
108	Secondary Side; Nozzle	Pressure boundary	Nickel Alloy	Treated water (Internal)	Loss of Material	PWR Water Chemistry	VIII.B1-1	3.4.1-37	A
109	Secondary Side; Nozzle	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	IV.E-3	3.1.1-86	C 0103
110	Secondary Side; Pipe Cap	Pressure boundary	Steel	Treated water (Internal)	Cracking - Fatigue	TLAA	IV.D2-10	3.1.1-07	C

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
111	Secondary Side; Pipe Cap	Pressure boundary	Steel	Treated water (Internal)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H
112	Secondary Side; Pipe Cap	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	One-Time Inspection	IV.D2-8	3.1.1-12	C
113	Secondary Side; Pipe Cap	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	PWR Water Chemistry	IV.D2-8	3.1.1-12	C
114	Secondary Side; Pipe Cap	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A
115	Secondary Side; Shell	Pressure boundary	Steel	Treated water (Internal)	Cracking - Fatigue	TLAA	IV.D2-10	3.1.1-07	C
116	Secondary Side; Shell	Pressure boundary	Steel	Treated water (Internal)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H
117	Secondary Side; Shell	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	One-Time Inspection	IV.D2-8	3.1.1-12	A
118	Secondary Side; Shell	Pressure boundary	Steel	Treated water (Internal)	Loss of Material	PWR Water Chemistry	IV.D2-8	3.1.1-12	A
119	Secondary Side; Shell	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A

Table 3.1.2-4 Aging Management Review Results – Steam Generators									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
120	Secondary Side; Tube Support Plate	Support	Steel	Treated water (External)	Cracking - Fatigue	TLAA	IV.D2-10	3.1.1-07	C 0101
121	Secondary Side; Tube Support Plate	Support	Steel	Treated water (External)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H 0101
122	Secondary Side; Tube Support Plate	Support	Steel	Treated water (External)	Ligament Cracking	PWR Water Chemistry	IV.D2-11	3.1.1-76	A 0101
123	Secondary Side; Tube Support Plate	Support	Steel	Treated water (External)	Ligament Cracking	Steam Generator Tube Integrity	IV.D2-11	3.1.1-76	A 0101
124	Secondary Side; Tube Support Plate	Support	Steel	Treated water (External)	Loss of Material	PWR Water Chemistry	IV.D2-11	3.1.1-76	A 0101
125	Secondary Side; Tube Support Rod and Spacer	Support	Steel	Treated water (External)	Cracking - Fatigue	TLAA	IV.D2-10	3.1.1-07	C 0101
126	Secondary Side; Tube Support Rod and Spacer	Support	Steel	Treated water (External)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H 0101

Table 3.1.2-4 Aging Management Review Results – Steam Generators

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
127	Secondary Side; Tube Support Rod and Spacer	Support	Steel	Treated water (External)	Loss of Material	One-Time Inspection	IV.D2-8	3.1.1-12	C 0101
128	Secondary Side; Tube Support Rod and Spacer	Support	Steel	Treated water (External)	Loss of Material	PWR Water Chemistry	IV.D2-8	3.1.1-12	C 0101
129	Support Skirt	Support	Steel	Air with borated water leakage (External)	Cracking - Fatigue	TLAA	IV.C2-10	3.1.1-07	A 0101
130	Support Skirt	Support	Steel	Air with borated water leakage (External)	Cracking - Flaw Growth	Inservice Inspection	N/A	N/A	H 0101
131	Support Skirt	Support	Steel	Air with borated water leakage (External)	Loss of Material	Boric Acid Corrosion	IV.D2-1	3.1.1-58	A 0101

Generic Notes:	
A	Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
B	Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
C	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
D	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
E	Consistent with NUREG-1801 item for material, environment, and aging effect, but a different aging management program is credited or NUREG-1801 identifies a plant-specific aging management program.
F	Material not in NUREG-1801 for this component.
G	Environment not in NUREG-1801 for this component and material.
H	Aging effect not in NUREG-1801 for this component, material and environment combination.
I	Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.
J	Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-Specific Notes:	
0101	These components have only one environment.
0102	Cracking due to flaw growth is considered to be same as or similar to cracking due to cyclic or thermal and mechanical loading. For reactor vessel internals the aging management program is the PWR Reactor Vessel Internals Program.
0103	For the aging effects in these line items, nickel alloy is equivalent to stainless steel; therefore the stainless steel components were used as a match.
0104	Not used.
0105	Cracking due to underclad cracking (UCC), identified in NUREG-1801 as crack growth due to cyclic loading, is an applicable aging effect for stainless steel clad SA-508 Class 2 steel components.
0106	Not used.
0107	Not used.
0108	Heater sheaths, sleeves, diaphragm plates, etc. are internal to the Pressurizer and are exposed only to borated reactor coolant.
0109	This environment is the same as the NUREG-1801 environment except that it is an internal environment rather than an external environment.
0110	The Nickel Alloy Management Program satisfies the NUREG-1801 requirement to provide a commitment in the FSAR supplement to submit a plant-specific AMP to implement applicable (1) Bulletins and Generic Letters and (2) staff-accepted industry guidelines.
0111	The NUREG-1801 environment for these items is "System Temperature up to 340°C (644°F)" or "Air with metal temperature up to 288°C (550°F)". The environments of "Air with steam or water leakage" and "Air with borated water leakage" include the effects of the system temperature on these components, and thus this environment is considered to match the NUREG-1801 environment.
0112	Inservice Inspection (ISI) is not appropriate to the inner heat exchanger tube. The tube is inaccessible and no inspections are performed.

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3.2 AGING MANAGEMENT OF ENGINEERED SAFETY FEATURES SYSTEMS

3.2.1 INTRODUCTION

Section 3.2 provides the results of the aging management reviews (AMRs) for those components identified in Section 2.3.2, Engineered Safety Features Systems, as subject to AMR. The systems or portions of systems are described in the indicated sections of the application.

- Containment Air Cooling and Recirculation System (Section 2.3.2.1)
- Containment Spray System (Section 2.3.2.2)
- Core Flooding System (Section 2.3.2.3)
- Decay Heat Removal and Low Pressure Injection System (Section 2.3.2.4)
- High Pressure Injection System (Section 2.3.2.5)

Table 3.2.1, Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801, provides the summary of the programs evaluated in NUREG-1801 that are applicable to component and commodity groups in this section. Text addressing summary items requiring further evaluation is provided in Section 3.2.2.2.

3.2.2 RESULTS

The following tables summarize the results of the AMR for the Engineered Safety Features (ESF) Systems.

Table 3.2.2-1	Aging Management Review Results – Containment Air Cooling and Recirculation System
Table 3.2.2-2	Aging Management Review Results – Containment Spray System
Table 3.2.2-3	Aging Management Review Results – Core Flooding System
Table 3.2.2-4	Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System
Table 3.2.2-5	Aging Management Review Results – High Pressure Injection System

3.2.2.1 Materials, Environments, Aging Effects Requiring Management, and Aging Management Programs

The materials from which specific components and commodities are fabricated, the environments to which they are exposed, the aging effects requiring management, and the aging management programs (AMPs) used to manage these aging effects are provided for each of the above systems in the following sections.

3.2.2.1.1 Containment Air Cooling and Recirculation System

Materials

The materials of construction for subject mechanical components of the Containment Air Cooling and Recirculation System are:

- Copper alloy
- Elastomer
- Stainless steel
- Steel

Environments

Subject mechanical components of the Containment Air Cooling and Recirculation System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Condensation
- Raw water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Containment Air Cooling and Recirculation System:

- Cracking
- Hardening and loss of strength
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Containment Air Cooling and Recirculation System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program
- One-Time Inspection
- Open-Cycle Cooling Water Program

3.2.2.1.2 Containment Spray System

Materials

The materials of construction for subject mechanical components of the Containment Spray System are:

- Stainless steel
- Steel

Environments

Subject mechanical components of the Containment Spray System are exposed to the following normal operating environments:

- Air
- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Moist air
- Treated borated water
- Treated borated water > 60°C (> 140°F)

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Containment Spray System

- Cracking
- Loss of material

- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Containment Spray System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program
- One-Time Inspection
- PWR Water Chemistry Program

3.2.2.1.3 Core Flooding System

Materials

The materials of construction for subject mechanical components of the Core Flooding System are:

- Nickel alloy
- Stainless steel
- Steel

Environments

Subject mechanical components of the Core Flooding System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Gas
- Moist Air
- Treated borated water
- Treated water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Core Flooding System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Core Flooding System

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program
- One-Time Inspection
- PWR Water Chemistry Program

3.2.2.1.4 Decay Heat Removal and Low Pressure Injection System

Materials

The materials of construction for subject mechanical components of the Decay Heat Removal and Low Pressure Injection System are:

- Aluminum
- Cast austenitic stainless steel
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Decay Heat Removal and Low Pressure Injection System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air-outdoor
- Air with borated water leakage

- Air with steam or water leakage
- Closed cycle cooling water
- Lubricating oil
- Moist air
- Steam
- Treated borated water
- Treated borated water > 60°C (> 140°F)

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Decay Heat Removal and Low Pressure Injection System:

- Cracking
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Decay Heat Removal and Low Pressure Injection System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program
- Lubricating Oil Analysis Program
- One-Time Inspection
- PWR Water Chemistry Program
- Selective Leaching Inspection

3.2.2.1.5 High Pressure Injection System

Materials

The materials of construction for subject mechanical components of the High Pressure Injection System are:

- Cast austenitic stainless steel
- Copper alloy > 15% Zn
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the High Pressure Injection System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air-outdoor
- Air with borated water leakage
- Air with steam or water leakage
- Closed cycle cooling water
- Lubricating oil
- Treated borated water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the High Pressure Injection System:

- Cracking
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the High Pressure Injection System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program
- Lubricating Oil Analysis Program
- One-Time Inspection
- PWR Water Chemistry Program
- Selective Leaching Inspection

3.2.2.2 Aging Management Review Results for Which Further Evaluation is Recommended by NUREG-1801

For the ESF Systems, those items requiring further evaluation are addressed in the following sections.

3.2.2.2.1 Cumulative Fatigue Damage

Fatigue is a time-limited aging analysis, as defined in 10 CFR 54.3. Time-limited aging analyses are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluations of the fatigue time-limited aging analyses are addressed in Section 4.

3.2.2.2.2 Loss of Material Due to Cladding Breach

Loss of material due to cladding breach could occur for pressurized water reactor (PWR) steel pump casings with stainless steel cladding exposed to treated borated water. At Davis-Besse, there are no steel pump casings with stainless steel cladding exposed to treated borated water in the ESF Systems that are subject to aging management review; therefore, this item is not applicable to Davis-Besse.

3.2.2.2.3 Loss of Material Due to Pitting and Crevice Corrosion

3.2.2.2.3.1 Stainless Steel Piping, Piping Components, and Piping Elements – Treated Water

Loss of material due to pitting and crevice corrosion could occur for internal surfaces of stainless steel containment isolation piping, piping components, and piping elements exposed to treated water. At Davis-Besse, loss of material due to pitting and crevice corrosion for stainless steel containment isolation piping, piping components, and piping elements exposed to treated water in the ESF Systems is managed by the PWR Water

Chemistry Program. The PWR Water Chemistry Program manages loss of material through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material.

3.2.2.2.3.2 Stainless Steel Piping, Piping Components, and Piping Elements – Soil

Loss of material from pitting and crevice corrosion could occur for stainless steel piping, piping components, and piping elements exposed to soil. At Davis-Besse, the ESF Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to soil and subject to aging management review; therefore, this item is not applicable to Davis-Besse.

3.2.2.2.3.3 Stainless Steel and Aluminum BWR Piping, Piping Components, and Piping Elements – Treated Water

Loss of material for boiling water reactor (BWR) piping and components is applicable to BWR plants only.

3.2.2.2.3.4 Stainless Steel and Copper Alloy Piping, Piping Components, and Piping Elements – Lubricating Oil

Loss of material from pitting and crevice corrosion could occur for stainless steel and copper alloy piping, piping components, and piping elements exposed to lubricating oil. At Davis-Besse, loss of material for stainless steel piping and components in the reactor coolant pump oil collection system, and for copper alloy heat exchanger components in the ESF Systems, that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material.

3.2.2.2.3.5 Partially Encased Stainless Steel Tanks – Raw Water

Loss of material from pitting and crevice corrosion could occur for partially encased stainless steel tanks exposed to raw water due to cracking of the perimeter seal from weathering. At Davis-Besse, the ESF Systems do not contain partially encased stainless steel tanks that are subject to aging management review; therefore, this item is not applicable to Davis-Besse.

3.2.2.2.3.6 Stainless Steel Piping, Piping Components, Piping Elements, and Tanks – Internal Condensation

Loss of material from pitting and crevice corrosion could occur for stainless steel piping, piping components, piping elements, and tanks exposed to internal condensation. Moist air is enveloped by the NUREG-1801 Chapter IX definition of condensation. At

Davis-Besse, loss of material for stainless steel piping, piping components, piping elements, and tanks that are exposed internally to moist air will be detected and characterized by the One-Time Inspection.

3.2.2.2.4 Reduction of Heat Transfer due to Fouling

3.2.2.2.4.1 Steel, Stainless Steel, and Copper Alloy Heat Exchanger Tubes – Lubricating Oil

Reduction of heat transfer due to fouling could occur for steel, stainless steel, and copper alloy heat exchanger tubes exposed to lubricating oil. At Davis-Besse, reduction in heat transfer due to fouling for gray cast iron (steel) and copper alloy heat exchanger components in the ESF Systems, and for stainless steel and copper alloy heat exchanger components in the Auxiliary Systems, that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages reduction in heat transfer through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage reduction in heat transfer.

3.2.2.2.4.2 Stainless Steel Heat Exchanger Tubes – Treated Water

Reduction of heat transfer due to fouling could occur for stainless steel heat exchanger tubes exposed to treated water. At Davis-Besse, reduction in heat transfer due to fouling for stainless steel heat exchanger tubes in the ESF Systems that are exposed to treated water is managed by the PWR Water Chemistry Program. The PWR Water Chemistry Program manages reduction in heat transfer through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage reduction in heat transfer.

3.2.2.2.5 Hardening and Loss of Strength due to Elastomer Degradation

Hardening and loss of strength due to elastomer degradation in seals and components associated with BWR Standby Gas Treatment System ductwork and filters are applicable to BWR plants only.

3.2.2.2.6 Loss of Material Due to Erosion

Loss of material due to erosion could occur in the stainless steel high pressure safety injection pump miniflow recirculation orifice exposed to treated borated water. At Davis-Besse, the safety-related high pressure injection pump is not used for normal charging and is normally in standby. Normal charging is provided by the nonsafety-related makeup pump. Loss of material due to erosion in the makeup pump miniflow recirculation orifices, and for the high pressure injection pump miniflow recirculation orifice, that are exposed to treated borated water is managed by the PWR Water Chemistry Program through periodic monitoring and control of contaminants.

The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material.

3.2.2.2.7 Loss of Material due to General Corrosion, and Fouling

Loss of material due to general corrosion and fouling for BWR steel drywell and suppression chamber components is applicable to BWR plants only.

3.2.2.2.8 Loss of Material due to General, Pitting, and Crevice Corrosion

3.2.2.2.8.1 Steel BWR Piping, Piping Components, and Piping Elements - Treated Water

Loss of material due to general, pitting and crevice corrosion for BWR steel piping and components exposed to treated water is applicable to BWR plants only.

3.2.2.2.8.2 Steel Piping, Piping Components, and Piping Elements – Treated Water

Loss of material due to general, pitting, and crevice corrosion could occur for the internal surfaces of steel containment isolation piping, piping components, and piping elements exposed to treated water. At Davis-Besse, the ESF Systems do not contain steel containment isolation piping, piping components, or piping elements that are exposed to treated water and subject to aging management review; therefore, this item is not applicable to Davis-Besse.

3.2.2.2.8.3 Steel Piping, Piping Components, and Piping Elements – Lubricating Oil

Loss of material due to general, pitting and crevice corrosion could occur for steel piping, piping components, and piping elements exposed to lubricating oil. At Davis-Besse, loss of material due to general, pitting, and crevice corrosion for steel (including gray cast iron) piping, piping components, and piping elements in the ESF Systems that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material.

This item is also applied to steel (including gray cast iron) heat exchanger components and steel tanks, and to loss of material due to selective leaching for gray cast iron components that are exposed to lubricating oil.

3.2.2.2.9 Loss of Material due to General, Pitting, Crevice, and Microbiologically-Influenced Corrosion (MIC)

Loss of material due to general, pitting, crevice, and MIC could occur for steel (with or without coating or wrapping) piping, piping components, and piping elements buried in soil. At Davis-Besse, the ESF Systems do not contain steel (with or without coating or wrapping) piping, piping components, or piping elements that are buried in soil and subject to aging management review; therefore, this item is not applicable to Davis-Besse.

3.2.2.2.10 Quality Assurance for Aging Management of Nonsafety-Related Components

See Appendix B, Section B.1.3, for a discussion of FirstEnergy Nuclear Operating Company quality assurance procedures and administrative controls for aging management programs.

3.2.2.3 Time-Limited Aging Analyses

The time-limited aging analyses identified below are associated with the Engineered Safety Features Systems components. The section of the application that contains the time-limited aging analyses review results is indicated in parentheses.

- Metal Fatigue (Section 4.3, Metal Fatigue)

3.2.3 CONCLUSIONS

The Engineered Safety Features Systems components and commodities subject to AMR have been identified in accordance with 10 CFR 54.21. The aging management programs selected to manage the effects of aging for the mechanical components and commodities are identified in the following tables and Section 3.2.2.1. A description of the aging management programs is provided in Appendix B, along with the demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the demonstration provided in Appendix B, the effects of aging associated with the Engineered Safety Features Systems components and commodities will be managed so that there is reasonable assurance that the intended functions will be maintained consistent with the current licensing basis for the period of extended operation.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-01	Steel and stainless steel piping, piping components, and piping elements in emergency core cooling system	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA	Fatigue is a time limited aging analysis (TLAA). Further evaluation is documented in Section 3.2.2.2.1.
3.2.1-02	Steel with stainless steel cladding pump casing exposed to treated borated water	Loss of material/ cladding breach	A plant-specific aging management program is to be evaluated. Reference NRC Information Notice 94-63, "Boric Acid Corrosion of Charging Pump Casings Caused by Cladding Cracks."	Yes, verify that plant-specific program addresses cladding breach	Not applicable. The ESF Systems do not contain steel pump casings with stainless steel cladding that are exposed to treated borated water and subject to aging management review. Further evaluation is documented in Section 3.2.2.2.2.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-03	Stainless steel containment isolation piping and components internal surfaces exposed to treated water	Loss of material due to pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to pitting and crevice corrosion in stainless steel containment isolation piping, piping components, and piping elements that are exposed to treated water is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. Further evaluation is documented in Section 3.2.2.2.3.1.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-04	Stainless steel piping, piping components, and piping elements exposed to soil	Loss of material due to pitting and crevice corrosion	A plant-specific aging management program is to be evaluated.	Yes, plant-specific	Not applicable. The ESF Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to soil and subject to aging management review. Further evaluation is documented in Section 3.2.2.2.3.2.
3.2.1-05	BWR only				

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-06	Stainless steel and copper alloy piping, piping components, and piping elements exposed to lubricating oil	Loss of material due to pitting and crevice corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material in stainless steel piping, piping components, and piping elements that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. The ESF Systems do not contain copper alloy piping, piping components, or piping elements that are exposed to lubricating oil and subject to aging management review. However, this item is applied to copper alloy heat exchanger components. Further evaluation is documented in Section 3.2.2.2.3.4.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-07	Partially encased stainless steel tanks with breached moisture barrier exposed to raw water	Loss of material due to pitting and crevice corrosion	A plant-specific aging management program is to be evaluated for pitting and crevice corrosion of tank bottoms because moisture and water can egress under the tank due to cracking of the perimeter seal from weathering.	Yes, plant-specific	Not applicable. The ESF Systems do not contain partially encased stainless steel tanks that are subject to aging management review. Further evaluation is documented in Section 3.2.2.2.3.5.
3.2.1-08	Stainless steel piping, piping components, piping elements, and tank internal surfaces exposed to condensation (internal)	Loss of material due to pitting and crevice corrosion	A plant-specific aging management program is to be evaluated.	Yes, plant-specific	Consistent with NUREG-1801. Loss of material due to pitting and crevice corrosion in stainless steel piping, piping components, piping elements, and tanks that are exposed to moist air (internal) will be detected and characterized by the One-Time Inspection. Further evaluation is documented in Section 3.2.2.2.3.6.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-09	Steel, stainless steel, and copper alloy heat exchanger tubes exposed to lubricating oil	Reduction of heat transfer due to fouling	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Reduction in heat transfer due to fouling for stainless steel and copper alloy heat exchanger tubes, and for gray cast iron (steel) cooler housings that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage reduction in heat transfer. Further evaluation is documented in Section 3.2.2.2.4.1.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-10	Stainless steel heat exchanger tubes exposed to treated water	Reduction of heat transfer due to fouling	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Reduction in heat transfer due to fouling for stainless steel heat exchanger tubes that are exposed to treated water is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage reduction in heat transfer. Further evaluation is documented in Section 3.2.2.2.4.2.
3.2.1-11	BWR only				

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-12	Stainless steel high-pressure safety injection (charging) pump miniflow orifice exposed to treated borated water	Loss of material due to erosion	A plant-specific aging management program is to be evaluated for erosion of the orifice due to extended use of the centrifugal HPSI pump for normal charging.	Yes, plant specific	Not applicable. At Davis-Besse, the high pressure injection pump is not used for normal charging. Normal charging is provided by the makeup pump. For loss of material due to erosion in the high pressure injection and makeup pump miniflow recirculation orifices, refer to Item Number 3.2.1-49. Further evaluation is documented in Section 3.2.2.2.6.
3.2.1-13	BWR only				
3.2.1-14	BWR only				
3.2.1-15	Steel containment isolation piping, piping components, and piping elements internal surfaces exposed to treated water	Loss of material due to general, pitting, and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Not applicable. The ESF Systems do not contain steel containment isolation piping, piping components, or piping elements that are exposed to treated water and subject to aging management review. Further evaluation is documented in Section 3.2.2.2.8.2.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-16	Steel piping, piping components, and piping elements exposed to lubricating oil	Loss of material due to general, pitting, and crevice corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to general, pitting and crevice corrosion in steel (including gray cast iron) piping, piping components, and piping elements that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. This item is also applied to steel (including gray cast iron) heat exchanger components and steel tanks, and to loss of material due to selective leaching for gray cast iron components that are exposed to lubricating oil. Further evaluation is documented in Section 3.2.2.2.8.3.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-17	Steel (with or without coating or wrapping) piping, piping components, and piping elements buried in soil	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion	Buried Piping and Tanks Surveillance or Buried Piping and Tanks Inspection	No Yes, detection of aging effects and operating experience are to be further evaluated	Not applicable. The ESF Systems do not contain steel (with or without coating or wrapping) piping, piping components, or piping elements that are buried in soil and subject to aging management review. Further evaluation is documented in Section 3.2.2.2.9.
3.2.1-18	BWR only				
3.2.1-19	BWR only				
3.2.1-20	BWR only				
3.2.1-21	High-strength steel closure bolting exposed to air with steam or water leakage	Cracking due to cyclic loading, stress corrosion cracking	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Cracking in high-strength steel bolting that is exposed to air with steam or water leakage is managed by the Bolting Integrity Program.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-22	Steel closure bolting exposed to air with steam or water leakage	Loss of material due to general corrosion	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Loss of material in steel bolting that is exposed to air with steam or water leakage is managed by the Bolting Integrity Program.
3.2.1-23	Steel bolting and closure bolting exposed to air – outdoor (external) or air – indoor uncontrolled (external)	Loss of material due to general, pitting, and crevice corrosion	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Loss of material in steel bolting that is exposed to air-indoor uncontrolled (external) is managed by the Bolting Integrity Program. The ESF Systems do not contain steel bolting that is exposed to air-outdoor (external) and subject to aging management review.
3.2.1-24	Steel closure bolting exposed to air – indoor uncontrolled (external)	Loss of preload due to thermal effects, gasket creep, and self-loosening	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Loss of preload for steel bolting that is exposed to air-indoor uncontrolled (external) is managed by the Bolting Integrity Program.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-25	Stainless steel piping, piping components, and piping elements exposed to closed cycle cooling water >60 °C (>140 °F)	Cracking due to stress corrosion cracking	Closed-Cycle Cooling Water System	No	Not applicable. The ESF Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to closed cycle cooling water > 60°C (> 140°F) and subject to aging management review.
3.2.1-26	Steel piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to general, pitting, and crevice corrosion	Closed-Cycle Cooling Water System	No	Not applicable. The ESF Systems do not contain steel piping, piping components, or piping elements that are exposed to closed cycle cooling water and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-27	Steel heat exchanger components exposed to closed cycle cooling water	Loss of material due to general, pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Loss of material in steel (including gray cast iron) heat exchanger components that are exposed to closed cycle cooling water is managed by the Closed Cooling Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage loss of material.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-28	Stainless steel piping, piping components, piping elements, and heat exchanger components exposed to closed-cycle cooling water	Loss of material due to pitting and crevice corrosion	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Loss of material for stainless steel heat exchanger components that are exposed to closed cycle cooling water is managed by the Closed Cooling Water Chemistry Program. This item is also applied to nickel alloy heat exchanger components that are exposed to closed cycle cooling water. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage loss of material. The ESF Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to closed-cycle cooling water and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-29	Copper alloy piping, piping components, piping elements, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Loss of material in copper alloy heat exchanger components that are exposed to closed cycle cooling water is managed by the Closed Cooling Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage loss of material. The ESF Systems do not contain copper alloy piping, piping components, or piping elements that are exposed to closed-cycle cooling water and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-30	Stainless steel and copper alloy heat exchanger tubes exposed to closed cycle cooling water	Reduction of heat transfer due to fouling	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Reduction in heat transfer for stainless steel and copper alloy heat exchanger tubes that are exposed to closed cycle cooling water is managed by the Closed Cooling Water Chemistry Program. This item is also applied to nickel alloy heat exchanger tubes that are exposed to closed cycle cooling water. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage reduction in heat transfer.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801					
Item Number	**Component/Commodity**	**Aging Effect/ Mechanism**	**Aging Management Programs**	**Further Evaluation Recommended**	**Discussion**
3.2.1-31	External surfaces of steel components including ducting, piping, ducting closure bolting, and containment isolation piping external surfaces exposed to air - indoor uncontrolled (external); condensation (external) and air - outdoor (external)	Loss of material due to general corrosion	External Surfaces Monitoring	No	Consistent with NUREG-1801. Loss of material for external surfaces of steel (including gray cast iron) components, except for bolting, that are exposed to air-indoor uncontrolled (external) is managed by the External Surfaces Monitoring Program. For bolting, see Item Number 3.2.1-23. This item is also applied to internal surfaces of steel piping components and tanks that are exposed to an air-indoor uncontrolled (internal) where it has been demonstrated that the internal environment is the same as the external environment. The ESF Systems do not contain steel components that are exposed to condensation (external) or air-outdoor (external) and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-32	Steel piping and ducting components and internal surfaces exposed to air – indoor uncontrolled (Internal)	Loss of material due to general corrosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	No	Not applicable. Loss of material for the internal surfaces of steel components that are exposed to air-indoor uncontrolled (Internal) is managed by the External Surfaces Monitoring Program where it has been demonstrated that the internal environment is the same as the external environment (see Item Number 3.2.1-31).
3.2.1-33	Steel encapsulation components exposed to air-indoor uncontrolled (internal)	Loss of material due to general, pitting, and crevice corrosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	No	Not applicable. The ESF Systems do not contain steel encapsulation components that are subject to aging management review.
3.2.1-34	Steel piping, piping components, and piping elements exposed to condensation (internal)	Loss of material due to general, pitting, and crevice corrosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	No	Not applicable. The ESF Systems do not contain steel piping, piping components, or piping elements that are exposed to condensation (internal) and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-35	Steel containment isolation piping and components internal surfaces exposed to raw water	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Not applicable. The ESF Systems do not contain steel containment isolation piping and components that are exposed to raw water (internal) and subject to aging management review.
3.2.1-36	Steel heat exchanger components exposed to raw water	Loss of material due to general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Not applicable. The ESF Systems do not contain steel heat exchanger components that are exposed to raw water and subject to aging management review.
3.2.1-37	Stainless steel piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion	Open-Cycle Cooling Water System	No	Not applicable. The ESF Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to raw water and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-38	Stainless steel containment isolation piping and components internal surfaces exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Not applicable. The ESF Systems do not contain stainless steel containment isolation piping and components that are exposed to raw water (internal) and subject to aging management review.
3.2.1-39	Stainless steel heat exchanger components exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Not applicable. The ESF Systems do not contain stainless steel heat exchanger components that are exposed to raw water and subject to aging management review.
3.2.1-40	Steel and stainless steel heat exchanger tubes (serviced by open-cycle cooling water) exposed to raw water	Reduction of heat transfer due to fouling	Open-Cycle Cooling Water System	No	Not applicable. The ESF Systems do not contain steel or stainless steel heat exchanger tubes that are exposed to raw water and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-41	Copper alloy >15% Zn piping, piping components, piping elements, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to selective leaching	Selective Leaching of Materials	No	Not applicable. The ESF Systems contain copper alloy > 15% Zn heat exchanger tubes that are exposed to closed cycle cooling water and subject to aging management review. However, the material is admiralty brass, which is an inhibited copper alloy, and is, therefore, not susceptible to selective leaching. The ESF Systems do not contain copper alloy > 15% Zn piping, piping components, or piping elements that are exposed to closed cycle cooling water and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-42	Gray cast iron piping, piping components, piping elements exposed to closed-cycle cooling water	Loss of material due to selective leaching	Selective Leaching of Materials	No	Consistent with NUREG-1801. The ESF Systems do not contain gray cast iron piping, piping components, or piping elements that are exposed to closed cycle cooling water and subject to aging management review. This item is, however, applied to gray cast iron heat exchanger components that are exposed to closed cycle cooling water. Loss of material due to selective leaching in gray cast iron heat exchanger components that are exposed to closed cycle cooling water is detected and characterized by the Selective Leaching Inspection.
3.2.1-43	Gray cast iron piping, piping components, and piping elements exposed to soil	Loss of material due to selective leaching	Selective Leaching of Materials	No	Not applicable. The ESF Systems do not contain gray cast iron piping, piping components, or piping elements that are exposed to soil and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-44	Gray cast iron motor cooler exposed to treated water	Loss of material due to selective leaching	Selective Leaching of Materials	No	Not applicable. The ESF Systems do not contain gray cast iron motor coolers that are exposed to treated water and subject to aging management review.
3.2.1-45	Aluminum, copper alloy >15% Zn, and steel external surfaces, bolting, and piping, piping components, and piping elements exposed to air with borated water leakage	Loss of material due to Boric acid corrosion	Boric Acid Corrosion	No	Consistent with NUREG-1801. Loss of material for external surfaces of aluminum and steel (including gray cast iron) bolting, piping, piping components, and piping elements, heat exchangers and tanks that are exposed to air with borated water leakage is managed by the Boric Acid Corrosion Program. The ESF Systems do not contain copper alloy > 15% Zn components with external surfaces exposed to air with borated water leakage and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-46	Steel encapsulation components exposed to air with borated water leakage (internal)	Loss of material due to general, pitting, crevice and boric acid corrosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	No	Not applicable. The ESF Systems do not contain steel encapsulation components and subject to aging management review.
3.2.1-47	Cast austenitic stainless steel piping, piping components, and piping elements exposed to treated borated water >250°C (>482°F)	Loss of fracture toughness due to thermal aging embrittlement	Thermal Aging Embrittlement of CASS	No	Not applicable. The ESF Systems do not contain cast austenitic stainless steel piping, piping components, or piping elements that are exposed to treated borated water > 250°C (> 482°F) and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-48	Stainless steel or stainless-steel-clad steel piping, piping components, piping elements, and tanks (including safety injection tanks/accumulators) exposed to treated borated water >60°C (>140°F)	Cracking due to stress corrosion cracking	Water Chemistry	No	Consistent with NUREG-1801. Cracking in stainless steel piping, piping components, and piping elements that are exposed to treated borated water > 60°C (> 140°F) is managed by the PWR Water Chemistry Program. This item is also applied to stainless steel heat exchanger components that are exposed to treated borated water > 60°C (> 140°F). In addition, the One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage cracking.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-49	Stainless steel piping, piping components, piping elements, and tanks exposed to treated borated water	Loss of material due to pitting and crevice corrosion	Water Chemistry	No	Consistent with NUREG-1801. Loss of material for stainless steel piping, piping components, piping elements, and tanks that are exposed to treated borated water is managed by the PWR Water Chemistry Program. This item is also applied to stainless steel heat exchanger components and separators that are exposed to treated borated water. In addition, the One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material.
3.2.1-50	Aluminum piping, piping components, and piping elements exposed to air- indoor uncontrolled (internal/external)	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management were identified for any aluminum piping, piping components, or piping elements that are exposed to air-indoor uncontrolled (internal or external).

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-51	Galvanized steel ducting exposed to air – indoor controlled (external)	None	None	NA - No AEM or AMP	Not applicable. In the Davis-Besse aging management review process, no credit is taken for coatings, including the zinc coating of galvanized steel, to prevent the effects of aging on the base metal. Therefore, galvanized steel ducting is evaluated simply as steel. In addition, all air-indoor environments were conservatively evaluated as uncontrolled environments. Refer to Item Number 3.2.1-56.
3.2.1-52	Glass piping elements exposed to air – indoor uncontrolled (external), lubricating oil, raw water, treated water, or treated borated water	None	None	NA - No AEM or AMP	Not applicable. The ESF Systems do not contain glass piping elements that are subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-53	Stainless steel, copper alloy, and nickel alloy piping, piping components, and piping elements exposed to air – indoor uncontrolled (external)	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management were identified for any stainless steel, copper alloy, or nickel alloy piping, piping components, or piping elements that are exposed to air-indoor uncontrolled (external). This item is also applied to stainless steel and copper alloy heat exchanger components, and to stainless steel tanks, that are exposed to an air-indoor uncontrolled (external). This item is also applied to internal surfaces of stainless steel and copper alloy piping components, and to stainless steel tanks, that are exposed to an air-indoor uncontrolled (internal) where it has been demonstrated that the internal environment is the same as the external environment.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-54	Steel piping, piping components, and piping elements exposed to air – indoor controlled (external)	None	None	NA - No AEM or AMP	Not applicable. The ESF Systems do not contain steel piping, piping components, or piping elements that are exposed to air-indoor controlled (external) and subject to aging management review. All air-indoor environments were conservatively evaluated as uncontrolled environments.
3.2.1-55	Steel and stainless steel piping, piping components, and piping elements in concrete	None	None	NA - No AEM or AMP	Not applicable. The ESF Systems do not contain steel or stainless steel piping, piping components, or piping elements that are embedded in concrete and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-56	Steel, stainless steel, and copper alloy piping, piping components, and piping elements exposed to gas	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management were identified for any stainless steel piping, piping components, or piping elements that are exposed to gas. This item is also applied to stainless steel tanks that are exposed to gas. The ESF Systems do not contain steel or copper alloy piping, piping components, or piping elements that are exposed to gas and subject to aging management review.

Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-57	Stainless steel and copper alloy <15% Zn piping, piping components, and piping elements exposed to air with borated water leakage	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management were identified for any stainless steel piping, piping components, or piping elements that are exposed to air with borated water leakage. This item is also applied to stainless steel bolting, heat exchanger components, and tanks that are exposed to air with borated water leakage. The ESF Systems do not contain copper alloy <15% Zn piping, piping components, or piping elements that are exposed to air with borated water leakage and subject to aging management review.

Table 3.2.2-1 Aging Management Review Results – Containment Air Cooling and Recirculation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
6	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B

Table 3.2.2-1 Aging Management Review Results – Containment Air Cooling and Recirculation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
8	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
9	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
10	Damper Housing	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0201
11	Damper Housing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
12	Damper Housing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
13	Drain Pan	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
14	Drain Pan	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C

Table 3.2.2-1 Aging Management Review Results – Containment Air Cooling and Recirculation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0201
16	Duct	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
17	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
18	Fan Housing - Containment air cooler fans (DB-C1-1, -2 & -3)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0201
19	Fan Housing - Containment air cooler fans (DB-C1-1, -2 & -3)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
20	Fan Housing - Containment air cooler fans (DB-C1-1, -2 & -3)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
21	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (Internal)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E

Table 3.2.2-1 Aging Management Review Results – Containment Air Cooling and Recirculation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
22	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
23	Heat Exchanger (cooling coil casing) - Containment air cooling coils (DB-E37-1, -2 & -3)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C
24	Heat Exchanger (cooling coil casing) - Containment air cooling coils (DB-E37-1, -2 & -3)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
25	Heat Exchanger (cooling coil casing) - Containment air cooling coils (DB-E37-1, -2 & -3)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C

Table 3.2.2-1 Aging Management Review Results – Containment Air Cooling and Recirculation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
26	Heat Exchanger (cooling coil fins) - Containment air cooling coils (DB-E37-1, -2 & -3)	Heat transfer	Copper Alloy	Condensation (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	G
27	Heat Exchanger (cooling coil tubes) - Containment air cooling coils (DB-E37-1, -2 & -3)	Heat transfer	Copper Alloy	Raw water (Internal)	Reduction in heat transfer	Open-Cycle Cooling Water	VII.C1-6	3.3.1-83	B
28	Heat Exchanger (cooling coil tubes) - Containment air cooling coils (DB-E37-1, -2 & -3)	Heat transfer	Copper Alloy	Condensation (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	G

Table 3.2.2-1 Aging Management Review Results – Containment Air Cooling and Recirculation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
29	Heat Exchanger (cooling coil tubes) - Containment air cooling coils (DB-E37-1, -2 & -3)	Pressure boundary	Copper Alloy	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-3	3.3.1-82	B
30	Heat Exchanger (cooling coil tubes) - Containment air cooling coils (DB-E37-1, -2 & -3)	Pressure boundary	Copper Alloy	Condensation (External)	Loss of material	One-Time Inspection	VII.F1-16	3.3.1-25	E
31	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0201
32	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
33	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
34	Piping	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E

Table 3.2.2-1 Aging Management Review Results – Containment Air Cooling and Recirculation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
35	Register	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0201
36	Register	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
37	Register	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
38	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0201
39	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
40	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.2.2-2 Aging Management Review Results – Containment Spray System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
6	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F

Table 3.2.2-2 Aging Management Review Results – Containment Spray System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
8	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.E-2	3.2.1-45	A
10	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	V.E-6	3.2.1-22	B
11	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	V.E-4	3.2.1-23	B
12	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	V.E-5	3.2.1-24	B
13	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208
14	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A

Table 3.2.2-2 Aging Management Review Results – Containment Spray System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
16	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
17	Orifice	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208
18	Orifice	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A
19	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	A 0201
20	Piping	Pressure boundary	Stainless Steel	Moist air (Internal)	Cracking	One-Time Inspection	N/A	N/A	H 0202
21	Piping	Pressure boundary	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.A-26	3.2.1-08	E 0202 0210
22	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208
23	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A

Table 3.2.2-2 Aging Management Review Results – Containment Spray System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
24	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60ºC (> 140ºF) (Internal)	Cracking	One-Time Inspection	V.A-28	3.2.1-48	E 0208
25	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60ºC (> 140ºF) (Internal)	Cracking	PWR Water Chemistry	V.A-28	3.2.1-48	A
26	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60ºC (> 140ºF) (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0204 0208
27	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60ºC (> 140ºF) (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A 0204
28	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
29	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
30	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	A 0201

Table 3.2.2-2 Aging Management Review Results – Containment Spray System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
31	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208
32	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A
33	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
34	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
35	Piping	Structural integrity	Steel	Air (Internal)	Loss of material	One-Time Inspection	N/A	N/A	G 0203
36	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.A-4	3.2.1-45	A
37	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.A-1	3.2.1-31	A
38	Pump Casing - Containment spray pumps (DB-P56-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208

Table 3.2.2-2 Aging Management Review Results – Containment Spray System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
39	Pump Casing - Containment spray pumps (DB-P56-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A
40	Pump Casing - Containment spray pumps (DB-P56-1 & 2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
41	Pump Casing - Containment spray pumps (DB-P56-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
42	Separator	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208
43	Separator	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A
44	Separator	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A

Table 3.2.2-2 Aging Management Review Results – Containment Spray System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
45	Separator	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
46	Spray Nozzle	Spray	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	A 0201
47	Spray Nozzle	Spray	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
48	Spray Nozzle	Spray	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
49	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208
50	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A
51	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
52	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A

Table 3.2.2-2 Aging Management Review Results – Containment Spray System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
53	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208
54	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A
55	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
56	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
57	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208
58	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A
59	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
60	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A

Table 3.2.2-2 Aging Management Review Results – Containment Spray System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
61	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.A-27	3.2.1-49	E 0208
62	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.A-27	3.2.1-49	A
63	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
64	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A

Table 3.2.2-3 Aging Management Review Results – Core Flooding System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.E-2	3.2.1-45	A
6	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	V.E-3	3.2.1-21	B

Table 3.2.2-3 Aging Management Review Results – Core Flooding System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	V.E-6	3.2.1-22	B
8	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	V.E-4	3.2.1-23	B
9	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	V.E-5	3.2.1-24	B
10	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
11	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
12	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
13	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F

Table 3.2.2-3 Aging Management Review Results – Core Flooding System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
14	Nozzle - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Nickel Alloy	Gas (Internal)	None	None	N/A	N/A	G
15	Nozzle - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Nickel Alloy	Treated borated water (Internal)	Loss of material	One-Time Inspection	N/A	N/A	G 0208
16	Nozzle - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Nickel Alloy	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	N/A	N/A	G
17	Nozzle - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Nickel Alloy	Air with borated water leakage (External)	None	None	N/A	N/A	G
18	Nozzle - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Nickel Alloy	Air-indoor uncontrolled (External)	None	None	V.F-11	3.2.1-53	A
19	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
20	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
21	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A

Table 3.2.2-3 Aging Management Review Results – Core Flooding System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
22	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
23	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	A 0201
24	Piping	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	V.F-15	3.2.1-56	A
25	Piping	Pressure boundary	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0202 0210
26	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
27	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
28	Piping	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	V.C-4	3.2.1-03	C
29	Piping	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	V.C-4	3.2.1-03	C
30	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A

Table 3.2.2-3 Aging Management Review Results – Core Flooding System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
31	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
32	Piping	Structural integrity	Stainless Steel	Gas (Internal)	None	None	V.F-15	3.2.1-56	A
33	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
34	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
35	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	V.C-4	3.2.1-03	C
36	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	V.C-4	3.2.1-03	C
37	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
38	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A

Table 3.2.2-3 Aging Management Review Results – Core Flooding System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
39	Tank - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	V.F-15	3.2.1-56	C
40	Tank - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
41	Tank - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
42	Tank - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
43	Tank - Core flood tanks (DB-T9-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
44	Tubing	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	V.F-15	3.2.1-56	A
45	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
46	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A

Table 3.2.2-3 Aging Management Review Results – Core Flooding System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
47	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
48	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
49	Valve Body	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	V.F-15	3.2.1-56	A
50	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
51	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
52	Valve Body	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	V.C-4	3.2.1-03	C
53	Valve Body	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	V.C-4	3.2.1-03	C
54	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A

Table 3.2.2-3 Aging Management Review Results – Core Flooding System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
55	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
56	Valve Body	Structural integrity	Stainless Steel	Gas (Internal)	None	None	V.F-15	3.2.1-56	A
57	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
58	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
59	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
60	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
2	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
6	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
7	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Structural integrity	Stainless Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
10	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
11	Heat Exchanger (channel) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
12	Heat Exchanger (channel) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	C
13	Heat Exchanger (channel) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
14	Heat Exchanger (channel) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	C 0204
15	Heat Exchanger (channel) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
16	Heat Exchanger (channel) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
17	Heat Exchanger (channel) - BWST heater (DB-E34)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
18	Heat Exchanger (channel) - BWST heater (DB-E34)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	C

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
19	Heat Exchanger (channel) - BWST heater (DB-E34)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
20	Heat Exchanger (channel) - BWST heater (DB-E34)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	C
21	Heat Exchanger (shell) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	V.D1-6	3.2.1-27	B
22	Heat Exchanger (shell) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	V.D1-6	3.2.1-27	E 0207
23	Heat Exchanger (shell) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
24	Heat Exchanger (shell) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
25	Heat Exchanger (shell) - BWST heater (DB-E34)	Structural integrity	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-8	3.4.1-37	E 0208
26	Heat Exchanger (shell) - BWST heater (DB-E34)	Structural integrity	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-8	3.4.1-37	C
27	Heat Exchanger (shell) - BWST heater (DB-E34)	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
28	Heat Exchanger (shell) - BWST heater (DB-E34)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
29	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Heat transfer	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Reduction in heat transfer	One-Time Inspection	V.D2-13	3.2.1-10	A 0205

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
30	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Heat transfer	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Reduction in heat transfer	PWR Water Chemistry	V.D2-13	3.2.1-10	A 0205
31	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Heat transfer	Stainless Steel	Closed cycle cooling water (External)	Reduction in heat transfer	Closed Cooling Water Chemistry	V.D1-9	3.2.1-30	B
32	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Heat transfer	Stainless Steel	Closed cycle cooling water (External)	Reduction in heat transfer	One-Time Inspection	V.D1-9	3.2.1-30	E 0207
33	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
34	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	C

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
35	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208
36	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	C 0204
37	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	V.D1-4	3.2.1-28	B
38	Heat Exchanger (tubes) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	V.D1-4	3.2.1-28	E 0207
39	Heat Exchanger (tubesheet) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
40	Heat Exchanger (tubesheet) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	C
41	Heat Exchanger (tubesheet) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208
42	Heat Exchanger (tubesheet) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	C 0204
43	Heat Exchanger (tubesheet) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	V.D1-4	3.2.1-28	B
44	Heat Exchanger (tubesheet) - DHR cooler (DB-E27-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	V.D1-4	3.2.1-28	E 0207

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
45	Heat Exchanger (housing) - DHR pump bearing oil cooler (DB-P42-1 & 2)	Heat transfer	Gray Cast Iron	Closed cycle cooling water (External)	Reduction in heat transfer	Closed Cooling Water Chemistry	N/A	N/A	H
46	Heat Exchanger (housing) - DHR pump bearing oil cooler (DB-P42-1 & 2)	Heat transfer	Gray Cast Iron	Closed cycle cooling water (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H 0207
47	Heat Exchanger (housing) - DHR pump bearing oil cooler (DB-P42-1 & 2)	Heat transfer	Gray Cast Iron	Lubricating oil (Internal)	Reduction in heat transfer	Lubricating Oil Analysis	V.D1-12	3.2.1-09	C
48	Heat Exchanger (housing) - DHR pump bearing oil cooler (DB-P42-1 & 2)	Heat transfer	Gray Cast Iron	Lubricating oil (Internal)	Reduction in heat transfer	One-Time Inspection	V.D1-12	3.2.1-09	C

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
49	Heat Exchanger (housing) - DHR pump bearing oil cooler (DB-P42-1 & 2)	Pressure boundary	Gray Cast Iron	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	V.D1-6	3.2.1-27	B
50	Heat Exchanger (housing) - DHR pump bearing oil cooler (DB-P42-1 & 2)	Pressure boundary	Gray Cast Iron	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	V.D1-6	3.2.1-27	E 0207
51	Heat Exchanger (housing) - DHR pump bearing oil cooler (DB-P42-1 & 2)	Pressure boundary	Gray Cast Iron	Closed cycle cooling water (External)	Loss of material	Selective Leaching Inspection	V.D1-20	3.2.1-42	C
52	Heat Exchanger (housing) - DHR pump bearing oil cooler (DB-P42-1 & 2)	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	C 0209

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
53	Heat Exchanger (housing) - DHR pump bearing oil cooler (DB-P42-1 & 2)	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	C
54	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
55	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
56	Orifice	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
57	Orifice	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A
58	Orifice	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
59	Orifice	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204
60	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
61	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
62	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
63	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
64	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
65	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
66	Orifice	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
67	Orifice	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
68	Orifice	Throttling	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
69	Orifice	Throttling	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A
70	Orifice	Throttling	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208
71	Orifice	Throttling	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204
72	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	A 0201
73	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
74	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
75	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
76	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A
77	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208
78	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204
79	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
80	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
81	Piping	Pressure boundary	Stainless Steel	Air-outdoor (External)	None	None	N/A	N/A	G
82	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	A 0201
83	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
84	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
85	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
86	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A
87	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
88	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204
89	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
90	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
91	Piping	Structural integrity	Stainless Steel	Air-outdoor (External)	None	None	N/A	N/A	G
92	Pump Casing - DHR pump (DB-P42-1 & 2)	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
93	Pump Casing - DHR pump (DB-P42-1 & 2)	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A
94	Pump Casing - DHR pump (DB-P42-1 & 2)	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
95	Pump Casing - DHR pump (DB-P42-1 & 2)	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204
96	Pump Casing - DHR pump (DB-P42-1 & 2)	Pressure boundary	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
97	Pump Casing - DHR pump (DB-P42-1 & 2)	Pressure boundary	Cast Austenitic Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
98	Pump Casing - Borated water recirculation pump (DB-P57_BW)	Structural integrity	Cast Austenitic Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
99	Pump Casing - Borated water recirculation pump (DB-P57_BW)	Structural integrity	Cast Austenitic Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
100	Pump Casing - Borated water recirculation pump (DB-P57_BW)	Structural integrity	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
101	Pump Casing - Borated water recirculation pump (DB-P57_BW)	Structural integrity	Cast Austenitic Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
102	Pump Casing - Refueling canal drain pump (DB-P204)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
103	Pump Casing - Refueling canal drain pump (DB-P204)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
104	Pump Casing - Refueling canal drain pump (DB-P204)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
105	Pump Casing - Refueling canal drain pump (DB-P204)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
106	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
107	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A
108	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208
109	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204
110	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
111	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
112	Tank - BWST (DB-T10)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	C 0201
113	Tank - BWST (DB-T10)	Pressure boundary	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0210 0211

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
114	Tank - BWST (DB-T10)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
115	Tank - BWST (DB-T10)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
116	Tank - BWST (DB-T10)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
117	Tank - BWST (DB-T10)	Pressure boundary	Stainless Steel	Air-outdoor (External)	None	None	N/A	N/A	G
118	Tank - Incore instrument tank (DB-T92)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	C 0201
119	Tank - Incore instrument tank (DB-T92)	Pressure boundary	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0210 0211
120	Tank - Incore instrument tank (DB-T92)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
121	Tank - Incore instrument tank (DB-T92)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
122	Tank - Incore instrument tank (DB-T92)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
123	Tank - Incore instrument tank (DB-T92)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	C
124	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
125	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
126	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
127	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A
128	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
129	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204
130	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
131	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
132	Tubing	Pressure boundary	Stainless Steel	Air-outdoor (External)	None	None	N/A	N/A	G
133	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
134	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
135	Tubing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
136	Tubing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A
137	Tubing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208
138	Tubing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204
139	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
140	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
141	Valve Body	Pressure boundary	Aluminum	Air-indoor uncontrolled (Internal)	None	None	V.F-2	3.2.1-50	A
142	Valve Body	Pressure boundary	Aluminum	Air-outdoor (External)	None	None	N/A	N/A	G

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
143	Valve Body	Pressure boundary	Aluminum	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D2-18	3.2.1-45	A
144	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
145	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
146	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
147	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A
148	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208
149	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
150	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
151	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
152	Valve Body	Pressure boundary	Stainless Steel	Air-outdoor (External)	None	None	N/A	N/A	G
153	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
154	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
155	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	V.D1-31	3.2.1-48	E 0208
156	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	V.D1-31	3.2.1-48	A

Table 3.2.2-4 Aging Management Review Results – Decay Heat Removal and Low Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
157	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0204 0208
158	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A 0204
159	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
160	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Stainless Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
6	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.E-2	3.2.1-45	A
7	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	V.E-3	3.2.1-21	B

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	V.E-6	3.2.1-22	B
9	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	V.E-4	3.2.1-23	B
10	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	V.E-5	3.2.1-24	B
11	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	C
12	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
13	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
14	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Filter Housing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	A
16	Filter Housing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	A
17	Filter Housing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
18	Filter Housing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
19	Flow Element	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
20	Flow Element	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
21	Flow Element	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
22	Flow Element	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
23	Heat Exchanger (bonnets) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	V.D1-6	3.2.1-27	B
24	Heat Exchanger (bonnets) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	V.D1-6	3.2.1-27	E 0207
25	Heat Exchanger (bonnets) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	V.D1-20	3.2.1-42	C

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
26	Heat Exchanger (bonnets) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
27	Heat Exchanger (bonnets) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
28	Heat Exchanger (shell) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	C

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
29	Heat Exchanger (shell) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	C
30	Heat Exchanger (shell) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
31	Heat Exchanger (shell) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
32	Heat Exchanger (tubes) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	Closed Cooling Water Chemistry	V.A-11	3.2.1-30	B
33	Heat Exchanger (tubes) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	One-Time Inspection	V.A-11	3.2.1-30	E 0207
34	Heat Exchanger (tubes) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (External)	Reduction in heat transfer	Lubricating Oil Analysis	V.D1-8	3.2.1-09	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
35	Heat Exchanger (tubes) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (External)	Reduction in heat transfer	One-Time Inspection	V.D1-8	3.2.1-09	A
36	Heat Exchanger (tubes) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	V.D1-2	3.2.1-29	B 0206
37	Heat Exchanger (tubes) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	V.D1-2	3.2.1-29	E 0206 0207

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
38	Heat Exchanger (tubes) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	V.D1-18	3.2.1-06	C 0206
39	Heat Exchanger (tubes) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (External)	Loss of material	One-Time Inspection	V.D1-18	3.2.1-06	C 0206
40	Heat Exchanger (tubesheet) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	V.D1-6	3.2.1-27	B

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
41	Heat Exchanger (tubesheet) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	V.D1-6	3.2.1-27	E 0207
42	Heat Exchanger (tubesheet) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Steel	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	C
43	Heat Exchanger (tubesheet) - HPI pump lube oil heat exchanger (DB-E198-1 & DB-E198-2)	Pressure boundary	Steel	Lubricating oil (External)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	C
44	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
45	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
46	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
47	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
48	Orifice	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	A
49	Orifice	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	A
50	Orifice	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
51	Orifice	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
52	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
53	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
54	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
55	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
56	Orifice	Throttling	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	A
57	Orifice	Throttling	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	A
58	Orifice	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
59	Orifice	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
60	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	A 0201
61	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
62	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
63	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
64	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
65	Piping	Pressure boundary	Stainless Steel	Air-outdoor (External)	None	None	N/A	N/A	G
66	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A 0201
67	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	A
68	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	A
69	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
70	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
71	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	V.F-12	3.2.1-53	A 0201
72	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
73	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
74	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
75	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
76	Pump Casing - HPI pump (DB-P58-1 & DB-P58-2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
77	Pump Casing - HPI pump (DB-P58-1 & DB-P58-2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
78	Pump Casing - HPI pump (DB-P58-1 & DB-P58-2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
79	Pump Casing - HPI pump (DB-P58-1 & DB-P58-2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
80	Pump Casing - HPI pump AC lube oil pumps DB-P197-1 & DB-P198-1)	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	A 0209
81	Pump Casing - HPI pump AC lube oil pumps DB-P197-1 & DB-P198-1)	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	A
82	Pump Casing - HPI pump AC lube oil pumps DB-P197-1 & DB-P198-1)	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
83	Pump Casing - HPI pump AC lube oil pumps DB-P197-1 & DB-P198-1)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
84	Pump Casing - HPI pump DC lube oil pump (DB-P197-2 & DB-P198-2)	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	A 0209
85	Pump Casing - HPI pump DC lube oil pump (DB-P197-2 & DB-P198-2)	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	A
86	Pump Casing - HPI pump DC lube oil pump (DB-P197-2 & DB-P198-2)	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
87	Pump Casing - HPI pump DC lube oil pump (DB-P197-2 & DB-P198-2)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
88	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
89	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
90	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
91	Separator	Pressure boundary	Cast Austenitic Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
92	Tank - HPI pump lube oil head tank (DB-T198-1 & DB-T198-2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	C
93	Tank - HPI pump lube oil head tank (DB-T198-1 & DB-T198-2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	C

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
94	Tank - HPI pump lube oil head tank (DB-T198-1 & DB-T198-2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
95	Tank - HPI pump lube oil head tank (DB-T198-1 & DB-T198-2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
96	Tank - HPI pump lube oil reservoir (DB-T199-1 & DB-T199-2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	C
97	Tank - HPI pump lube oil reservoir (DB-T199-1 & DB-T199-2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	C
98	Tank - HPI pump lube oil head tank (DB-T198-1 & DB-T198-2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A 0201

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
99	Tank - HPI pump lube oil reservoir (DB-T199-1 & DB-T199-2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A 0201
100	Tank - HPI pump lube oil reservoir (DB-T199-1 & DB-T199-2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
101	Tank - HPI pump lube oil reservoir (DB-T199-1 & DB-T199-2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
102	Thrust Bearing Housing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	C
103	Thrust Bearing Housing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	C
104	Thrust Bearing Housing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
105	Thrust Bearing Housing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
106	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	A
107	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	A
108	Tubing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A
109	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
110	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
111	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
112	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
113	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
114	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
115	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
116	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
117	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
118	Valve Body	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	A 0209
119	Valve Body	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	A
120	Valve Body	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
121	Valve Body	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
122	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
123	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
124	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
125	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A
126	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	V.D1-28	3.2.1-16	A
127	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	V.D1-28	3.2.1-16	A
128	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	V.D1-1	3.2.1-45	A

Table 3.2.2-5 Aging Management Review Results – High Pressure Injection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
129	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	V.E-7	3.2.1-31	A
130	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	V.D1-30	3.2.1-49	E 0208
131	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	V.D1-30	3.2.1-49	A
132	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	V.F-13	3.2.1-57	A
133	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	V.F-12	3.2.1-53	A

Generic Notes:	
A	Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
B	Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
C	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
D	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
E	Consistent with NUREG-1801 item for material, environment, and aging effect, but a different aging management program is credited or NUREG-1801 identifies a plant-specific aging management program.
F	Material not in NUREG-1801 for this component.
G	Environment not in NUREG-1801 for this component and material.
H	Aging effect not in NUREG-1801 for this component, material and environment combination.
I	Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.
J	Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-Specific Notes:	
0201	This environment is the same as the NUREG-1801 environment except that it is an internal rather than an external environment.
0202	The One-Time Inspection will confirm, for components subject to a "Moist air (Internal)" environment, the absence of aging effects or that aging is slow acting so as to not affect the subject component's intended function during the period of extended operation.
0203	The One-Time Inspection will confirm, for components subject to an "Air (Internal)" environment, the absence of aging effects or that aging is slow acting so as to not affect the subject component's intended function during the period of extended operation.
0204	Aging effect not in NUREG-1801 for this particular environment. However, loss of material is not dependent on temperature in the treated borated water environment. Therefore, this is considered to be a match.
0205	Aging effect not in NUREG-1801 for this particular environment. However, reduction in heat transfer due to fouling is not dependent on temperature, nor on whether the treated water environment is borated or not. Therefore, this is considered to be a match.
0206	The component material is admiralty brass and, therefore, loss of material due to selective leaching is not an applicable aging mechanism.
0207	The One-Time Inspection will provide verification of Closed Cooling Water Chemistry Program effectiveness.
0208	The One-Time Inspection will provide verification of PWR Water Chemistry Program effectiveness.
0209	The Lubricating Oil Analysis Program also manages loss of material due to selective leaching for susceptible materials by ensuring that water contamination is minimized.
0210	The "Moist air (Internal)" environment is enveloped by the NUREG-1801 Chapter IX definition of "Condensation (internal/external)".
0211	The One-Time Inspection will confirm, for components subject to a "Moist air (Internal)" environment at the air-water interface, the absence of aging effects or that aging is slow acting so as to not affect the subject component's intended function during the period of extended operation.

3.3 AGING MANAGEMENT OF AUXILIARY SYSTEMS

3.3.1 INTRODUCTION

Section 3.3 provides the results of the aging management reviews (AMRs) for those components identified in Section 2.3.3, Auxiliary Systems, as subject to AMR. The systems or portions of systems are described in the indicated sections.

- Auxiliary Building Heating, Ventilation and Air Conditioning (HVAC) Systems (Section 2.3.3.1)
- Auxiliary Building Chilled Water System (Section 2.3.3.2)
- Auxiliary Steam and Station Heating System (Section 2.3.3.3)
- Boron Recovery System (Section 2.3.3.4)
- Chemical Addition System (Section 2.3.3.5)
- Circulating Water System (Section 2.3.3.6)
- Component Cooling Water System (Section 2.3.3.7)
- Containment Hydrogen Control System (Section 2.3.3.8)
- Containment Purge System (Section 2.3.3.9)
- Containment Vacuum Relief System (Section 2.3.3.10)
- Demineralized Water Storage System (Section 2.3.3.11)
- Emergency Diesel Generators System (Section 2.3.3.12)
- Emergency Ventilation System (Section 2.3.3.13)
- Fire Protection System (Section 2.3.3.14)
- Fuel Oil System (Section 2.3.3.15)
- Gaseous Radwaste System (Section 2.3.3.16)
- Instrument Air System (Section 2.3.3.17)
- Makeup and Purification System (Section 2.3.3.18)
- Makeup Water Treatment System (Section 2.3.3.19)
- Miscellaneous Building HVAC System (Section 2.3.3.20)
- Miscellaneous Liquid Radwaste System (Section 2.3.3.21)
- Nitrogen Gas System (Section 2.3.3.22)
- Process and Area Radiation Monitoring System (Section 2.3.3.23)

- Reactor Coolant Vent and Drain System (Section 2.3.3.24)
- Sampling System (Section 2.3.3.25)
- Service Water System (Section 2.3.3.26)
- Spent Fuel Pool Cooling and Cleanup System (Section 2.3.3.27)
- Spent Resin Transfer System (Section 2.3.3.28)
- Station Air System (Section 2.3.3.29)
- Station Blackout Diesel Generator System (Section 2.3.3.30)
- Station Plumbing, Drains, and Sumps System (Section 2.3.3.31)
- Turbine Plant Cooling Water System (Section 2.3.3.32)

Table 3.3.1, Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801, provides the summary of the programs evaluated in NUREG-1801 that are applicable to component and commodity groups in this section. Text addressing summary items requiring further evaluation is provided in Section 3.3.2.2.

3.3.2 RESULTS

The following tables summarize the results of the AMR for Auxiliary Systems:

Table 3.3.2-1	Aging Management Review Results – Auxiliary Building HVAC System
Table 3.3.2-2	Aging Management Review Results – Auxiliary Building Chilled Water System
Table 3.3.2-3	Aging Management Review Results – Auxiliary Steam and Station Heating Systems
Table 3.3.2-4	Aging Management Review Results – Boron Recovery System
Table 3.3.2-5	Aging Management Review Results – Chemical Addition System
Table 3.3.2-6	Aging Management Review Results – Circulating Water System
Table 3.3.2-7	Aging Management Review Results – Component Cooling Water System
Table 3.3.2-8	Aging Management Review Results – Containment Hydrogen Control System
Table 3.3.2-9	Aging Management Review Results – Containment Purge System

3.3.2.1 Materials, Environments, Aging Effects Requiring Management, and Aging Management Programs

The materials from which specific components and commodities are fabricated, the environments to which they are exposed, the aging effects requiring management, and the aging management programs (AMPs) used to manage these aging effects are provided for each of the above systems in the following sections.

3.3.2.1.1 Auxiliary Building HVAC Systems

Materials

The materials of construction for subject mechanical components of the Auxiliary Building HVAC Systems are:

- Aluminum
- Copper alloy
- Copper alloy > 15% Zn
- Elastomer
- Glass
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Auxiliary Building HVAC Systems are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air-outdoor

- Air with borated water leakage
- Air with steam or water leakage
- Condensation
- Gas
- Lubricating oil
- Raw water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Auxiliary Building HVAC Systems:

- Cracking
- Hardening and loss of strength
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Auxiliary Building HVAC Systems:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Collection, Drainage, and Treatment Components Inspection Program
- External Surfaces Monitoring Program
- Lubricating Oil Analysis Program
- One-Time Inspection
- Open-Cycle Cooling Water Program
- Selective Leaching Inspection

3.3.2.1.2 Auxiliary Building Chilled Water System

Materials

The materials of construction for subject mechanical components of the Auxiliary Building Chilled Water System are:

- Copper alloy
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Auxiliary Building Chilled Water System are exposed to the following normal operating environments:

- Air with borated water leakage
- Air-indoor uncontrolled
- Closed cycle cooling water
- Condensation
- Moist air

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Auxiliary Building Chilled Water System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Auxiliary Building Chilled Water System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program

- One-Time Inspection
- Selective Leaching Inspection

3.3.2.1.3 Auxiliary Steam and Station Heating System

Materials

The materials of construction for subject mechanical components of the Auxiliary Steam and Station Heating System are:

- Copper alloy
- Copper alloy > 15% Zn
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Auxiliary Steam and Station Heating System are exposed to the following normal operating environments:

- Air
- Air with borated water leakage
- Air with steam or water leakage
- Air-indoor uncontrolled
- Closed cycle cooling water > 60°C (> 140°F)
- Condensation
- Moist air
- Steam

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Auxiliary Steam and Station Heating System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Auxiliary Steam and Station Heating System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program
- Flow-Accelerated Corrosion (FAC) Program
- One-Time Inspection
- PWR Water Chemistry Program
- Selective Leaching Inspection

3.3.2.1.4 Boron Recovery System

Materials

The material of construction for subject mechanical components of the Boron Recovery System is:

- Stainless steel

Environments

Subject mechanical components of the Boron Recovery System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Closed cycle cooling water
- Gas
- Moist air
- Treated borated water
- Treated borated water > 60°C (> 140°F)
- Treated water
- Treated water > 60°C (> 140°F)

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Boron Recovery System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Boron Recovery System:

- Bolting Integrity Program
- Closed Cooling Water Chemistry Program
- One-Time Inspection
- PWR Water Chemistry Program

3.3.2.1.5 Chemical Addition System

The material of construction for subject mechanical components of the Chemical Addition System is:

- Stainless steel

Environments

Subject mechanical components of the Chemical Addition System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Moist air
- Treated borated water
- Treated borated water > 60°C (> 140°F)
- Treated water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Chemical Addition System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Chemical Addition System:

- Bolting Integrity Program
- One-Time Inspection
- PWR Water Chemistry Program

3.3.2.1.6 Circulating Water System

Materials

The materials of construction for subject mechanical components of the Circulating Water System are:

- Elastomer
- Steel

Environments

Subject mechanical components of the Circulating Water System are exposed to the following normal operating environments:

- Air with steam or water leakage
- Air-indoor uncontrolled
- Raw water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Circulating Water System:

- Cracking
- Hardening and loss of strength

- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Circulating Water System:

- Bolting Integrity Program
- External Surfaces Monitoring Program
- One-Time Inspection
- Open-Cycle Cooling Water Program

3.3.2.1.7 Component Cooling Water System

Materials

The materials of construction for the subject mechanical components of the Component Cooling Water System are:

- Copper alloy
- Stainless steel
- Steel

Environments

The subject mechanical components of the Component Cooling Water System are exposed to the following normal plant operating environments:

- Air-Indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Closed cycle cooling water
- Closed cycle cooling water > 60°C (> 140°F)
- Gas
- Moist air
- Raw water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Component Cooling Water System:

- Cracking
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for the subject mechanical components of the Component Cooling Water System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program
- One-Time Inspection
- Open-Cycle Cooling Water Program

3.3.2.1.8 Containment Hydrogen Control System

Materials

The materials of construction for subject mechanical components of the Containment Hydrogen Control System are:

- Stainless steel
- Steel

Environments

Subject mechanical components of the Containment Hydrogen Control System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Closed cycle cooling water

- Condensation
- Raw water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Containment Hydrogen Control System:

- Cracking
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Containment Hydrogen Control System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program
- One-Time Inspection
- Open-Cycle Cooling Water Program

3.3.2.1.9 Containment Purge System

Materials

The materials of construction for subject mechanical components of the Containment Purge System are:

- Stainless steel
- Steel

Environments

Subject mechanical components of the Containment Purge System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Containment Purge System:

- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Containment Purge System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program

3.3.2.1.10 Containment Vacuum Relief System

Materials

The material of construction for subject mechanical components of the Containment Vacuum Relief System is:

- Steel

Environments

Subject mechanical components of the Containment Vacuum Relief System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Containment Vacuum Relief System:

- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Containment Vacuum Relief System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program

3.3.2.1.11 Demineralized Water Storage System

Materials

The materials of construction for the subject mechanical components of the Demineralized Water Storage System are:

- Stainless steel
- Steel

Environments

The subject mechanical components of the Demineralized Water Storage System are exposed to the following normal plant operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Moist air
- Treated water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Demineralized Water Storage System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for the subject mechanical components of the Demineralized Water Storage System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program

- One-Time Inspection
- PWR Water Chemistry Program

3.3.2.1.12 Emergency Diesel Generators System

Materials

The materials of construction for subject mechanical components of the Emergency Diesel Generators System are:

- Aluminum
- Copper alloy > 15% Zn
- Elastomer
- Stainless steel
- Steel

Environments

Subject mechanical components of the Emergency Diesel Generators System are exposed to the following normal operating environments:

- Air
- Air-indoor uncontrolled
- Air-outdoor
- Air with steam or water leakage
- Closed cycle cooling water
- Condensation
- Diesel exhaust
- Fuel oil
- Lubricating oil
- Moist air
- Soil

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Emergency Diesel Generators System:

- Cracking

- Hardening and loss of strength
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Emergency Diesel Generators System:

- Bolting Integrity Program
- Buried Piping and Tanks Inspection Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program
- Fuel Oil Chemistry Program
- Lubricating Oil Analysis Program
- One-Time Inspection
- Selective Leaching Inspection

3.3.2.1.13 Emergency Ventilation System

Materials

The materials of construction for subject mechanical components of the Emergency Ventilation System are:

- Copper alloy
- Copper alloy > 15% Zn
- Elastomer
- Glass
- Steel

Environments

Subject mechanical components of the Emergency Ventilation System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Emergency Ventilation System:

- Hardening and loss of strength
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Emergency Ventilation System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program

3.3.2.1.14 Fire Protection System

Materials

The materials of construction for subject mechanical components of the Fire Protection System are:

- Aluminum
- Copper alloy
- Copper alloy > 15% Zn
- Elastomer
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Fire Protection System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air-outdoor
- Air with borated water leakage

- Air with steam or water leakage
- Concrete
- Diesel exhaust
- Fuel oil
- Lubricating oil
- Moist air
- Raw water
- Soil
- Steam

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Fire Protection System:

- Cracking
- Hardening and loss of strength
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Fire Protection System:

- Aboveground Steel Tanks Inspection Program
- Bolting Integrity Program
- Boric Acid Corrosion Program
- Buried Piping and Tanks Inspection Program
- Collection, Drainage, and Treatment Components Inspection Program
- External Surfaces Monitoring Program
- Fire Water Program
- Fuel Oil Chemistry Program
- Lubricating Oil Analysis Program

- One-Time Inspection
- PWR Water Chemistry Program
- Selective Leaching Inspection

3.3.2.1.15 Fuel Oil System

Materials

The materials of construction for subject mechanical components of the Fuel Oil System are:

- Copper alloy
- Copper alloy > 15% Zn
- Elastomer
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Fuel Oil System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air-outdoor
- Fuel oil
- Soil

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Fuel Oil System:

- Cracking
- Hardening and loss of strength
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Fuel Oil System:

- Aboveground Steel Tanks Inspection
- Bolting Integrity Program
- Buried Piping and Tanks Inspection
- External Surfaces Monitoring Program
- Fuel Oil Chemistry Program
- One-Time Inspection

3.3.2.1.16 Gaseous Radwaste System

Materials

The materials of construction for subject mechanical components of the Gaseous Radwaste System are:

- Gray cast iron
- Stainless steel

Environments

Subject mechanical components of the Gaseous Radwaste System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Closed cycle cooling water
- Condensation
- Gas

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Gaseous Radwaste System:

- Cracking
- Loss of material

- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Gaseous Radwaste System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- Collection, Drainage, and Treatment Components Inspection Program
- External Surfaces Monitoring Program
- One-Time Inspection
- Selective Leaching Inspection

3.3.2.1.17 Instrument Air System

Materials

The materials of construction for subject mechanical components of the Instrument Air System are:

- Copper alloy > 15% Zn
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Instrument Air System are exposed to the following normal operating environments:

- Air
- Air-indoor uncontrolled
- Air with borated water leakage
- Condensation
- Dried air

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Instrument Air System:

- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Instrument Air System

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program
- One Time Inspection
- Selective Leaching Inspection

3.3.2.1.18 Makeup and Purification System

Materials

The materials of construction for subject mechanical components of the Makeup and Purification System are:

- Aluminum
- Copper alloy
- Copper alloy > 15% Zn
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Makeup and Purification System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage

- Closed cycle cooling water
- Dried air
- Gas
- Lubricating oil
- Raw water
- Treated borated water
- Treated borated water > 60°C (> 140°F)

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Makeup and Purification System:

- Cracking
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Makeup and Purification System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- Collection, Drainage, and Treatment Components Inspection Program
- External Surfaces Monitoring Program
- Lubricating Oil Analysis Program
- One-Time Inspection
- PWR Water Chemistry Program

3.3.2.1.19 Makeup Water Treatment System

Materials

The materials of construction for subject mechanical components of the Makeup Water Treatment System are:

- Copper alloy
- Copper alloy > 15% Zn
- Steel

Environments

Subject mechanical components of the Makeup Water Treatment System are exposed to the following normal operating environments:

- Air with borated water leakage
- Air with steam or water leakage
- Air-indoor uncontrolled
- Raw water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Makeup Water Treatment System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Makeup Water Treatment System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Collection, Drainage, and Treatment Components Inspection Program
- External Surfaces Monitoring Program
- Selective Leaching Inspection

3.3.2.1.20 Miscellaneous Building HVAC System

Materials

The material of construction for subject mechanical components of the Miscellaneous Building HVAC System is:

- Steel

Environments

Subject mechanical components of the Miscellaneous Building HVAC System are exposed to the following normal operating environment:

- Air-indoor uncontrolled

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Miscellaneous Building HVAC System:

- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Miscellaneous Building HVAC System:

- Bolting Integrity Program
- External Surfaces Monitoring Program

3.3.2.1.21 Miscellaneous Liquid Radwaste System

Materials

The materials of construction for subject mechanical components of the Miscellaneous Liquid Radwaste System are:

- Copper Alloy > 15% Zn
- Elastomer
- Gray cast iron
- Stainless steel

Environments

Subject mechanical components of the Miscellaneous Liquid Radwaste System are exposed to the following normal operating environments:

- Air with borated water leakage
- Air with steam or water leakage
- Air-indoor uncontrolled
- Gas

- Raw water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Miscellaneous Liquid Radwaste System:

- Cracking
- Hardening and loss of strength
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Miscellaneous Liquid Radwaste System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Collection, Drainage, and Treatment Components Inspection Program
- External Surfaces Monitoring Program
- One-Time Inspection
- Selective Leaching Inspection

3.3.2.1.22 Nitrogen Gas System

Materials

The materials of construction for subject mechanical components of the Nitrogen Gas System are:

- Stainless steel
- Steel

Environments

Subject mechanical components of the Nitrogen Gas System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Gas

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Nitrogen Gas System:

- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Nitrogen Gas System

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program

3.3.2.1.23 Process and Area Radiation Monitoring System

Materials

The materials of construction for subject mechanical components of the Process and Area Radiation Monitoring System are:

- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Process and Area Radiation Monitoring System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Condensation

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Process and Area Radiation Monitoring System:

- Cracking

- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Process and Area Radiation Monitoring System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program
- One-Time Inspection

3.3.2.1.24 Reactor Coolant Vent and Drain System

Materials

The materials of construction for subject mechanical components of the Reactor Coolant Vent and Drain System are:

- Cast austenitic stainless steel
- Stainless steel
- Steel

Environments

Subject mechanical components of the Reactor Coolant Vent and Drain System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Closed cycle cooling water
- Gas
- Raw water
- Treated borated water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Reactor Coolant Vent and Drain System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Reactor Coolant Vent and Drain System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- Collection, Drainage, and Treatment Components Inspection Program
- External Surfaces Monitoring Program
- One-Time Inspection
- PWR Water Chemistry Program

3.3.2.1.25 Sampling System

Materials

The materials of construction for the subject mechanical components of the Sampling System are:

- Stainless steel
- Steel

Environments

The subject mechanical components of the Sampling System are exposed to the following normal plant operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Closed cycle cooling water
- Closed cycle cooling water > 60°C (> 140°F)
- Gas
- Treated borated water

- Treated borated water > 60°C (> 140°F)
- Treated water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Sampling System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for the subject mechanical components of the Sampling System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program
- One-Time Inspection
- PWR Water Chemistry Program

3.3.2.1.26 Service Water System

Materials

The materials of construction for subject mechanical components of the Service Water System are:

- Copper alloy
- Copper alloy > 15% Zn
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Service Water System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air-outdoor
- Air with borated water leakage
- Air with steam or water leakage
- Concrete
- Condensation
- Dried air
- Gas
- Moist air
- Raw water
- Soil

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Service Water System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Service Water System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Buried Piping and Tanks Inspection Program
- External Surfaces Monitoring Program
- One-Time Inspection
- Open-Cycle Cooling Water Program
- Selective Leaching Inspection

3.3.2.1.27 Spent Fuel Pool Cooling and Cleanup System

Materials

The materials of construction for subject mechanical components of the Spent Fuel Pool Cooling and Cleanup System are:

- Stainless steel
- Steel

Environments

Subject mechanical components of the Spent Fuel Pool Cooling and Cleanup System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Closed cycle cooling water
- Moist air
- Raw water
- Treated borated water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Spent Fuel Pool Cooling and Cleanup System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Spent Fuel Pool Cooling and Cleanup System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Closed Cooling Water Chemistry Program
- Collection, Drainage, and Treatment Components Inspection Program

- External Surfaces Monitoring Program
- One-Time Inspection
- PWR Water Chemistry Program

3.3.2.1.28 Spent Resin Transfer System

Materials

The materials of construction for subject mechanical components of the Spent Resin Transfer System are:

- Elastomer
- Stainless steel

Environments

Subject mechanical components of the Spent Resin Transfer System are exposed to the following normal operating environments:

- Air with borated water leakage
- Air with steam or water leakage
- Air-indoor uncontrolled
- Treated water > 60°C (> 140°F)

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Spent Resin Transfer System:

- Cracking
- Hardening and loss of strength
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Spent Resin Transfer System:

- Bolting Integrity Program
- External Surfaces Monitoring Program
- One-Time Inspection

- PWR Water Chemistry Program

3.3.2.1.29 Station Air System

Materials

The materials of construction for subject mechanical components of the Station Air System are:

- Copper Alloy > 15% Zn
- Steel

Environments

Subject mechanical components of the Station Air System are exposed to the following normal operating environments:

- Air
- Air-indoor uncontrolled
- Air with borated water leakage
- Condensation

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Station Air System

- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Station Air System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program
- One-Time Inspection
- Selective Leaching Inspection

3.3.2.1.30 Station Blackout Diesel Generator System

Materials

The materials of construction for subject mechanical components of the Station Blackout Diesel Generator System are:

- Aluminum
- Copper alloy
- Copper alloy > 15% Zn
- Elastomer
- Stainless steel
- Steel

Environments

Subject mechanical components of the Station Blackout Diesel Generator System are exposed to the following normal operating environments:

- Air
- Air-indoor uncontrolled
- Air-outdoor
- Air with steam or water leakage
- Closed cycle cooling water
- Condensation
- Diesel exhaust
- Fuel oil
- Lubricating oil
- Moist air

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Station Blackout Diesel Generator System:

- Cracking
- Hardening and loss of strength
- Loss of material

- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Station Blackout Diesel Generator System:

- Bolting Integrity Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program
- Fuel Oil Chemistry Program
- Lubricating Oil Analysis Program
- One-Time Inspection
- Selective Leaching Inspection

3.3.2.1.31 Station Plumbing, Drains, and Sumps System

Materials

The materials of construction for the subject mechanical components of the Station Plumbing, Drains, and Sumps System are:

- Gray cast iron
- Stainless steel
- Steel

Environments

The subject mechanical components of the Station Plumbing, Drains, and Sumps System are exposed to the following normal plant operating environments:

- Air-Indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Concrete
- Condensation
- Moist air
- Raw water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Station Plumbing, Drains, and Sumps System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for the subject mechanical components of the Station Plumbing, Drains, and Sumps System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- Collection, Drainage, and Treatment Components Inspection Program
- External Surfaces Monitoring Program
- One-Time Inspection
- Selective Leaching Inspection

3.3.2.1.32 Turbine Plant Cooling Water System

Materials

The materials of construction for subject mechanical components of the Turbine Plant Cooling Water System are:

- Gray cast iron
- Steel

Environments

Subject mechanical components of the Turbine Plant Cooling Water System are exposed to the following normal operating environments:

- Air with steam or water leakage
- Air-indoor uncontrolled
- Closed cycle cooling water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Turbine Plant Cooling Water System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Turbine Plant Cooling Water System:

- Bolting Integrity Program
- Closed Cooling Water Chemistry Program
- External Surfaces Monitoring Program
- One-Time Inspection

3.3.2.2 Aging Management Review Results for Which Further Evaluation is Recommended by NUREG-1801

For the Auxiliary Systems, those items requiring further evaluation are addressed in the following sections.

3.3.2.2.1 Cumulative Fatigue Damage

Fatigue is a time-limited aging analysis as defined in 10 CFR 54.3. Time-limited aging analyses are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluations of the fatigue time-limited aging analyses are addressed in Section 4.

3.3.2.2.2 Reduction of Heat Transfer due to Fouling

Reduction of heat transfer due to fouling could occur for stainless steel heat exchanger tubes exposed to treated water. At Davis-Besse, the Auxiliary Systems do not contain stainless steel heat exchanger tubes that are exposed to treated water and subject to aging management review; therefore, this item is not applicable to Davis-Besse.

3.3.2.2.3 Cracking due to Stress Corrosion Cracking

3.3.2.2.3.1 Stainless Steel Piping, Piping Components, and Piping Elements – Sodium Pentaborate Solution Greater Than 60°C (> 140°F)

Cracking of boiling water reactor (BWR) standby liquid control system piping, piping components, and piping elements is applicable to BWR plants only.

3.3.2.2.3.2 Stainless Steel and Stainless Steel Clad Heat Exchanger Components – Treated Water Greater Than 60°C (> 140°F)

Cracking due to stress corrosion cracking could occur in stainless steel and stainless steel clad heat exchanger components exposed to treated water greater than 60°C (> 140°F). At Davis-Besse, the Auxiliary Systems do not contain stainless steel or stainless steel clad heat exchanger components that are exposed to treated water greater than 60°C (> 140°F) and subject to aging management review; therefore, this item is not applicable to Davis-Besse.

3.3.2.2.3.3 Stainless Steel Piping, Piping Components, and Piping Elements – Diesel Exhaust

Cracking due to stress corrosion cracking could occur in stainless steel diesel engine exhaust piping, piping components, and piping elements exposed to diesel exhaust. At Davis-Besse, the flexible connections and tubing of the diesel exhaust systems are stainless steel, while the diesel exhaust piping, and other piping components and piping elements are steel. Cracking due to stress corrosion cracking for stainless steel diesel engine exhaust piping components, though it is not expected to occur, will be detected and characterized by the One-Time Inspection.

3.3.2.2.4 Cracking due to Stress Corrosion Cracking and Cyclic Loading

3.3.2.2.4.1 Stainless Steel PWR Nonregenerative Heat Exchanger Components – Treated Borated Water Greater Than 60°C (> 140°F)

Cracking due to stress corrosion cracking and cyclic loading could occur in stainless steel pressurized water reactor (PWR) nonregenerative heat exchanger components exposed to treated borated water greater than 60°C (> 140°F) in the chemical and volume control system. At Davis-Besse, the seal return coolers in the Makeup and Purification System consist of stainless steel heat exchanger components exposed to treated borated water greater than 60°C (> 140°F). Cracking due to stress corrosion cracking (SCC) in stainless steel heat exchanger components that are exposed to treated borated water greater than 60°C (>140°F) is managed by the PWR Water Chemistry Program. The PWR Water Chemistry Program manages cracking through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage cracking. The One-Time Inspection is selected in lieu of eddy current testing of tubes. Temperature and radioactivity monitoring of shell side water is performed by installed instrumentation. Cracking due to cyclic loading is not identified as an aging effect requiring management for the stainless steel heat exchanger components that are exposed to treated borated water greater than 60°C (>140°F).

3.3.2.2.4.2 Stainless Steel PWR Regenerative Heat Exchanger Components – Treated Borated Water Greater Than 60°C (> 140°F)

Cracking due to stress corrosion cracking and cyclic loading could occur in stainless steel PWR regenerative heat exchanger components exposed to treated borated water greater than 60°C (> 140°F). At Davis-Besse, the Auxiliary Systems do not contain stainless steel regenerative heat exchanger components that are exposed to treated borated water greater than 60°C (>140°F) and subject to aging management review; therefore, this item is not applicable to Davis-Besse.

3.3.2.2.4.3 Stainless Steel PWR High Pressure Pump Casings – Treated Borated Water Greater Than 60°C (> 140°F)

Cracking due to stress corrosion cracking and cyclic loading could occur for the stainless steel pump casing for the PWR high-pressure pumps in the chemical and volume control system. At Davis-Besse, cracking due to stress corrosion cracking and cyclic loading is not identified as an aging effect requiring management for the stainless steel pump casing for the high-pressure pumps in the Makeup and Purification (chemical and volume control) System; therefore, this item is not applicable to Davis-Besse.

3.3.2.2.4.4 High-Strength Steel Closure Bolting

Cracking due to stress corrosion cracking could occur for high-strength steel bolting exposed to steam or water leakage. At Davis-Besse, cracking due to stress corrosion cracking in high-strength steel bolting that is exposed to air with steam or water leakage is managed by the Bolting Integrity Program.

3.3.2.2.5 Hardening and Loss of Strength due to Elastomer Degradation

3.3.2.2.5.1 Elastomer Seals and Components – Air-Indoor Uncontrolled

Hardening and loss of strength due to elastomer degradation could occur in elastomer seals and components of heating and ventilation systems exposed to air-indoor uncontrolled (internal or external). At Davis-Besse, hardening and loss of strength due to elastomer degradation in elastomer seals and components in the Auxiliary Systems that are exposed to air-indoor uncontrolled (internal and external) are managed by the External Surfaces Monitoring Program.

3.3.2.2.5.2 Elastomer Linings – Treated Water or Treated Borated Water

Hardening and loss of strength due to elastomer degradation could occur in elastomer linings of the filters, valves, and ion exchangers in spent fuel pool cooling and cleanup systems (BWR and PWR) exposed to treated water or to treated borated water. At Davis-Besse, there are no elastomer linings in the Spent Fuel Pool Cooling and Cleanup System that are exposed to treated water or to treated borated water and are subject to aging management review. However, the Spent Resin Transfer System contains elastomer components (not linings) exposed to the treated water greater than 60°C (> 140°F) environment that are susceptible to hardening and loss of strength. Hardening and loss of strength for these elastomer components will be detected and characterized by the One-Time Inspection.

3.3.2.2.6 Reduction of Neutron-Absorbing Capacity and Loss of Material due to General Corrosion

Reduction of neutron-absorbing capacity and loss of material due to general corrosion could occur in the neutron-absorbing sheets of BWR and PWR spent fuel storage racks exposed to treated water or to treated borated water. At Davis-Besse, loss of material due to general corrosion in the neutron-absorbing sheets of spent fuel storage racks that are exposed to treated borated water will be managed by the Boral® Monitoring Program and the PWR Water Chemistry Program. Reduction of neutron-absorbing capacity is not identified as an aging effect requiring management; however, FirstEnergy Nuclear Operating Company commits to a plant-specific aging management program for Davis-Besse, the Boral® Monitoring Program, to address this issue (see Section 2.1.3).

3.3.2.2.7 Loss of Material due to General, Pitting, and Crevice Corrosion

3.3.2.2.7.1 Steel Piping, Piping Components, Piping Elements, and Tanks – Lubricating Oil

Loss of material due to general, pitting, and crevice corrosion could occur in steel piping, piping components, and piping elements; including the tubing, valves, and tanks in the reactor coolant pump oil collection system, exposed to lubricating oil (as part of the fire protection system). At Davis-Besse, loss of material due to general, pitting, and crevice corrosion in steel piping, piping components, piping elements, and tanks that are exposed to lubricating oil, including components in the reactor coolant pump oil collection system, is managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material.

3.3.2.2.7.2 Steel Piping, Piping Components, and Piping Elements – Treated Water

Loss of material due to general, pitting, and crevice corrosion could occur in steel piping, piping components, and piping elements in the BWR reactor water cleanup and shutdown cooling systems exposed to treated water. This item, applicable to BWR plants, is also appropriate for some treated (unborated) water systems in PWRs with the same material, environment, and aging effects. At Davis-Besse, loss of material due to general, pitting, and crevice corrosion in steel piping, piping components, and piping elements that are exposed to treated water is managed by the PWR Water Chemistry Program. The PWR Water Chemistry Program manages loss of material through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material.

3.3.2.2.7.3 Steel and Stainless Steel Piping, Piping Components, and Piping Elements – Diesel Exhaust

Loss of material due to general (steel only), pitting, and crevice corrosion could occur for steel and stainless steel diesel exhaust piping, piping components, and piping elements exposed to diesel exhaust. At Davis-Besse, loss of material due to general (steel only), pitting, and crevice corrosion for steel and stainless steel diesel exhaust piping, piping components, and piping elements that are exposed to diesel exhaust will be detected and characterized by the One-Time Inspection.

3.3.2.2.8 Loss of Material due to General, Pitting, Crevice, and Microbiologically-Influenced Corrosion

Loss of material due to general, pitting, crevice corrosion, and microbiologically-influenced corrosion could occur for steel (with or without coating or wrapping) piping, piping components, and piping elements buried in soil. At Davis-Besse, loss of material due to general, pitting, and crevice corrosion, and microbiologically-influenced corrosion for steel (including gray cast iron) piping, piping components, and piping elements, and steel emergency diesel generator fuel oil storage tanks buried in soil is managed by the Buried Piping and Tanks Inspection Program.

3.3.2.2.9 Loss of Material due to General, Pitting, Crevice, Microbiologically-Influenced Corrosion, and Fouling

3.3.2.2.9.1 Steel Piping, Piping Components, Piping Elements, and Tanks – Fuel Oil

Loss of material due to general, pitting, crevice, microbiologically-influenced corrosion, and fouling could occur for steel piping, piping components, piping elements, and tanks exposed to fuel oil. Loss of material due to general, pitting, and crevice corrosion and microbiologically-influenced corrosion for Davis-Besse steel piping, piping components, piping elements, and tanks that are exposed to fuel oil is managed by the Fuel Oil Chemistry Program. The Fuel Oil Chemistry Program manages loss of material through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the Fuel Oil Chemistry Program to manage loss of material.

3.3.2.2.9.2 Steel Heat Exchanger Components – Lubricating Oil

Loss of material due to general, pitting, crevice, microbiologically-influenced corrosion, and fouling could occur for steel heat exchanger components exposed to lubricating oil. At Davis-Besse, loss of material due to general, pitting, and crevice corrosion for steel heat exchanger components that are exposed to lubricating oil is managed by the

Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material.

3.3.2.2.10 Loss of Material due to Pitting and Crevice Corrosion

3.3.2.2.10.1 Steel Piping with Elastomer Lining or Stainless Steel Cladding – Treated Water or Treated Borated Water

Loss of material due to pitting and crevice corrosion could occur in BWR and PWR steel piping with elastomer lining or stainless steel cladding that is exposed to treated water and treated borated water if the cladding or lining is degraded. At Davis-Besse, elastomer linings are not credited for protection of metallic components. The base metals are evaluated for aging as if exposed to the fluid environment. Elastomer linings, if present, do not perform an intended function. Therefore, no elastomer linings are identified as requiring aging management review. The Auxiliary Systems do not contain steel piping with stainless steel cladding that is exposed to treated water or treated borated water and subject to aging management review.

3.3.2.2.10.2 Stainless Steel and Aluminum Piping, Piping Components, Piping Elements, and Stainless Steel and Steel with Stainless Steel Cladding Heat Exchanger Components – Treated Water

Loss of material due to pitting and crevice corrosion could occur for stainless steel and aluminum piping, piping components, and piping elements, and for stainless steel and steel with stainless steel cladding heat exchanger components exposed to treated water. Loss of material due to pitting and crevice corrosion for Davis-Besse stainless steel piping, piping components, and piping elements that are exposed to treated water is managed by the PWR Water Chemistry Program. The PWR Water Chemistry Program manages loss of material through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. This item is also applied to stainless steel tanks that are exposed to treated water.

The Davis-Besse Auxiliary Systems do not contain stainless steel or steel with stainless steel cladding heat exchanger components; or aluminum piping, piping components or piping elements that are exposed to treated water and subject to aging management review.

3.3.2.2.10.3 Copper Alloy Piping, Piping Components, and Piping Elements – Condensation

Loss of material due to pitting and crevice corrosion could occur for copper alloy heating, ventilation, and air conditioning piping; piping components and piping elements exposed to condensation (external). At Davis-Besse, loss of material due to pitting and crevice corrosion for copper alloy piping, piping components, and piping elements that are exposed to condensation (external) is managed by the External Surfaces Monitoring Program. Loss of material for copper alloy bolting that is exposed to a condensation (external) environment is managed by the Bolting Integrity Program. For copper alloy heat exchanger components that are exposed to a condensation (external) environment, the One-Time Inspection will detect and characterize loss of material.

3.3.2.2.10.4 Copper Alloy Piping, Piping Components, and Piping Elements – Lubricating Oil

Loss of material due to pitting and crevice corrosion could occur for copper alloy piping, piping components, and piping elements exposed to lubricating oil. Loss of material due to pitting and crevice corrosion for Davis-Besse copper alloy piping, piping components, and piping elements with a zinc content greater than 15% that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. Loss of material for copper alloy heat exchanger components with a zinc content greater than 15% that are exposed to lubricating oil is also managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material.

3.3.2.2.10.5 Aluminum Piping, Piping Components, and Piping Elements and Stainless Steel Ducting and Components – Condensation

Loss of material due to pitting and crevice corrosion could occur for heating, ventilation, and air conditioning aluminum piping; piping components and piping elements, and stainless steel ducting and components exposed to condensation. Loss of material due to pitting and crevice corrosion for stainless steel piping, piping components, and piping elements that are exposed to external condensation at Davis-Besse is managed by the External Surfaces Monitoring Program. The One-Time Inspection will detect and characterize loss of material due to pitting and crevice corrosion for stainless steel heat exchanger components that are exposed to external condensation; and for stainless steel piping, piping components, piping elements, and tanks (including demisters, drain pans, and moisture separators) that are exposed to internal condensation. The Bolting Integrity Program will manage loss of material due to pitting and crevice corrosion for stainless steel bolting that is exposed to external condensation.

3.3.2.2.10.6 Copper Alloy Piping, Piping Components, and Piping Elements – Internal Condensation

Loss of material due to pitting and crevice corrosion could occur for copper alloy fire protection system piping, piping components, and piping elements exposed to internal condensation. The Davis-Besse Fire Protection System contains no piping, piping components, or piping elements exposed to internal condensation. However, loss of material due to pitting and crevice corrosion for other copper alloy piping, piping components, and piping elements exposed to internal condensation, although not expected to occur, will be detected and characterized by the One-Time Inspection.

3.3.2.2.10.7 ***Stainless Steel Piping, Piping Components, and Piping Elements – Soil***

Loss of material due to pitting and crevice corrosion could occur for stainless steel piping, piping components, and piping elements exposed to soil. The Davis-Besse Auxiliary Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to soil and subject to aging management review.

3.3.2.2.10.8 ***Stainless Steel Piping, Piping Components, and Piping Elements – Sodium Pentaborate Solution***

Loss of material for BWR standby liquid control system piping, piping components, and piping elements is applicable to BWR plants only.

3.3.2.2.11 Loss of Material due to Pitting, Crevice, and Galvanic Corrosion

Loss of material due to pitting, crevice, and galvanic corrosion could occur for copper alloy piping, piping components, and piping elements exposed to treated water. At Davis-Besse there are no copper alloy piping, piping components, or piping elements in the Auxiliary Systems that are exposed to treated water.

3.3.2.2.12 Loss of Material due to Pitting, Crevice, and Microbiologically-Influenced Corrosion

3.3.2.2.12.1 ***Stainless Steel, Aluminum, and Copper Alloy Piping, Piping Components, and Piping Elements – Fuel Oil***

Loss of material due to pitting, crevice, and microbiologically-influenced corrosion could occur in stainless steel, aluminum, and copper alloy piping, piping components, and piping elements exposed to fuel oil. Loss of material due to pitting and crevice corrosion and microbiologically-influenced corrosion for Davis-Besse stainless steel and copper alloy piping, piping components, and piping elements that are exposed to fuel oil is managed by the Fuel Oil Chemistry Program. The Fuel Oil Chemistry Program manages loss of material through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the Fuel Oil Chemistry Program to manage loss of material. The Davis-Besse Auxiliary Systems do not contain aluminum piping, piping components, or piping elements that are exposed to fuel oil and subject to aging management review.

3.3.2.2.12.2 ***Stainless Steel Piping, Piping Components, and Piping Elements – Lubricating Oil***

Loss of material due to pitting, crevice, and microbiologically-influenced corrosion could occur in stainless steel piping, piping components, and piping elements exposed to lubricating oil. At Davis-Besse loss of material due to pitting and crevice corrosion for stainless steel piping, piping components, and piping elements, and heat exchanger components that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material.

3.3.2.2.13 Loss of Material due to Wear

Loss of material due to wear could occur in elastomer seals and components exposed to air indoor uncontrolled (internal or external). Wear of elastomer seals and components exposed to air is not identified as an aging effect requiring management at Davis-Besse. Loss of material due to wear is the result of relative motion between two surfaces in contact. However, wear occurs during the performance of an active function; as a result of improper design, application, or operation; or to a very small degree with insignificant consequences. Therefore, loss of material due to wear is not an aging effect requiring management for elastomers exposed to air-indoor uncontrolled.

3.3.2.2.14 Loss of Material due to Cladding Breach

Loss of material due to cladding breach could occur for PWR steel charging pump casings with stainless steel cladding exposed to treated borated water. The Davis-Besse Auxiliary Systems do not contain stainless steel clad pump casings that are exposed to treated borated water and subject to aging management review.

3.3.2.2.15 Quality Assurance for Aging Management of Nonsafety-Related Components

See Appendix B, Section B.1.3, for a discussion of FirstEnergy Nuclear Operating Company quality assurance procedures and administrative controls for aging management programs.

3.3.2.3 Time-Limited Aging Analyses

The time-limited aging analyses identified below are associated with the components of the Auxiliary Systems. The section of the application that contains the time-limited aging analysis review results is indicated in parentheses.

- Metal Fatigue (Section 4.3, Metal Fatigue)

3.3.3 CONCLUSIONS

The Auxiliary System components and commodities having aging effects requiring management have been evaluated, and aging management programs have been selected to manage the aging effects. Descriptions of the aging management programs are provided in Appendix B, along with a demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the demonstration provided in Appendix B, the effects of aging will be adequately managed so that there is reasonable assurance that the intended functions of Auxiliary System components and commodities will be maintained consistent with the current licensing basis, and that spatial interactions will not result in the loss of any safety-related intended functions, during the period of extended operation.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-01	Steel cranes - structural girders exposed to air – indoor uncontrolled (external)	Cumulative fatigue damage	TLAA to be evaluated for structural girders of cranes. See the Standard Review Plan, Section 4.7 for generic guidance for meeting the requirements of 10 CFR 54.21(c)(1).	Yes, TLAA	Fatigue is a time-limited aging analysis (TLAA). Further evaluation is documented in Section 3.3.2.2.1.
3.3.1-02	Steel and stainless steel piping, piping components, piping elements, and heat exchanger components exposed to air – indoor uncontrolled, treated borated water or treated water	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA	Fatigue is a TLAA. Further evaluation is documented in Section 3.3.2.2.1.
3.3.1-03	Stainless steel heat exchanger tubes exposed to treated water	Reduction of heat transfer due to fouling	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Not applicable. The Auxiliary Systems do not contain stainless steel heat exchanger tubes that are exposed to treated water and subject to aging management review. Further evaluation is documented in Section 3.3.2.2.2.
3.3.1-04	BWR only				

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-05	Stainless steel and stainless clad steel heat exchanger components exposed to treated water >60 °C (>140 °F)	Cracking due to stress corrosion cracking	A plant specific aging management program is to be evaluated.	Yes, plant specific	Not applicable. The Auxiliary Systems do not contain stainless steel or stainless clad steel heat exchanger components that are exposed to treated water greater than 60°C (> 140°F) and subject to aging management review. Further evaluation is documented in Section 3.3.2.2.3.2.
3.3.1-06	Stainless steel diesel engine exhaust piping, piping components, and piping elements exposed to diesel exhaust	Cracking due to stress corrosion cracking	A plant specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801. Cracking in stainless steel diesel engine exhaust piping, piping components, and piping elements that are exposed to diesel exhaust, though it is not expected to occur, will be detected and chanracterized by the One-Time Inspection. Further evaluation is documented in Section 3.3.2.2.3.3.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-07	Stainless steel non-regenerative heat exchanger components exposed to treated borated water >60°C (>140°F)	Cracking due to stress corrosion cracking and cyclic loading	Water Chemistry and a plant-specific verification program. An acceptable verification program is to include temperature and radioactivity monitoring of the shell side water, and eddy current testing of tubes.	Yes, plant specific	Consistent with NUREG-1801. Cracking due to SCC for stainless steel heat exchanger components in the Auxiliary Systems that are exposed to treated borated water > 60°C (> 140°F) is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage cracking. Temperature and radioactivity monitoring of shell side water is performed by installed instrumentation. Cracking due to cyclic loading is not identified as an aging effect requiring management for the stainless steel heat exchanger components that are exposed to treated borated water > 60°C (> 140°F). Further evaluation is documented in Section 3.3.2.2.4.1.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-08	Stainless steel regenerative heat exchanger components exposed to treated borated water >60°C (>140°F)	Cracking due to stress corrosion cracking and cyclic loading	Water Chemistry and a plant-specific verification program. The AMP is to be augmented by verifying the absence of cracking due to stress corrosion cracking and cyclic loading. A plant specific aging management program is to be evaluated.	Yes, plant specific	Not applicable. The Auxiliary Systems do not contain stainless steel regenerative heat exchanger components that are exposed to treated borated water > 60°C (> 140°F) and subject to aging management review. Further evaluation is documented in Section 3.3.2.2.4.2.
3.3.1-09	Stainless steel high-pressure pump casing in PWR chemical and volume control system	Cracking due to stress corrosion cracking and cyclic loading	Water Chemistry and a plant-specific verification program. The AMP is to be augmented by verifying the absence of cracking due to stress corrosion cracking and cyclic loading. A plant specific aging management program is to be evaluated.	Yes, plant specific	Not applicable. Cracking due to SCC and cyclic loading is not identified as an aging effect requiring management for the stainless steel high-pressure pump casings in the Makeup and Purification (chemical and volume control) System. Further evaluation is documented in Section 3.3.2.2.4.3.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-10	High-strength steel closure bolting exposed to air with steam or water leakage.	Cracking due to stress corrosion cracking, cyclic loading	Bolting Integrity The AMP is to be augmented by appropriate inspection to detect cracking if the bolts are not otherwise replaced during maintenance.	Yes, if the bolts are not replaced during maintenance	Not applicable. Cracking due to SCC in high-strength steel bolting that is exposed to air with steam or water leakage is managed by the Bolting Integrity Program. Refer to Item Number 3.3.1-41. Further evaluation is documented in Section 3.3.2.2.4.4.
3.3.1-11	Elastomer seals and components exposed to air – indoor uncontrolled (internal/external)	Hardening and loss of strength due to elastomer degradation	A plant specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801. Hardening and loss of strength in elastomer seals and components in the Auxiliary Systems that are exposed to air-indoor uncontrolled (internal and external) are managed by the External Surfaces Monitoring Program. Further evaluation is documented in Section 3.3.2.2.5.1.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-12	Elastomer lining exposed to treated water or treated borated water	Hardening and loss of strength due to elastomer degradation	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801. There are no elastomer linings in the Spent Fuel Pool Cooling and Cleanup System that are exposed to treated water or to treated borated water and subject to aging management review. However, this item is applied to elastomer components (not linings) in the Spent Resin Transfer System that are exposed to the treated water > 60°C (> 140°F) environment that are susceptible to hardening and loss of strength. Hardening and loss of strength in these elastomer components will be detected and characterized by the One-Time Inspection. Further evaluation is documented in Section 3.3.2.2.5.2.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-13	Boral, boron steel spent fuel storage racks neutron-absorbing sheets exposed to treated water or treated borated water	Reduction of neutron-absorbing capacity and loss of material due to general corrosion	A plant specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801. Loss of material in the spent fuel rack neutron absorbers will be managed by the Boral® Monitoring Program and the PWR Water Chemistry Program. However, reduction of neutron-absorbing capacity is not identified as an aging effect requiring management. Further evaluation is documented in Section 3.3.2.2.6.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-14	Steel piping, piping component, and piping elements exposed to lubricating oil	Loss of material due to general, pitting, and crevice corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material in steel piping, piping component, and piping elements that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. This item is also applied to steel tanks, and bearing and gear housings, in the Auxiliary Systems that are exposed to lubricating oil. Further evaluation is documented in Section 3.3.2.2.7.1.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-15	Steel reactor coolant pump oil collection system piping, tubing, and valve bodies exposed to lubricating oil	Loss of material due to general, pitting, and crevice corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material in steel reactor coolant pump oil collection system piping and valve bodies that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. Further evaluation is documented in Section 3.3.2.2.7.1.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-16	Steel reactor coolant pump oil collection system tank exposed to lubricating oil	Loss of material due to general, pitting, and crevice corrosion	Lubricating Oil Analysis and One-Time Inspection to evaluate the thickness of the lower portion of the tank	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material in steel reactor coolant pump oil collection system tanks that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. Further evaluation is documented in Section 3.3.2.2.7.1.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-17	Steel piping, piping components, and piping elements exposed to treated water	Loss of material due to general, pitting, and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. This item, applicable to BWR plants, is also appropriate for some treated (unborated) water systems in PWRs with the same material, environment, and aging effects. At Davis-Besse, loss of material in steel piping, piping components, and piping elements that are exposed to treated water is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. Further evaluation is documented in Section 3.3.2.2.7.2.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-18	Stainless steel and steel diesel engine exhaust piping, piping components, and piping elements exposed to diesel exhaust	Loss of material/ general (steel only), pitting and crevice corrosion	A plant specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801. Loss of material in stainless steel and steel diesel engine exhaust piping, piping components, and piping elements that are exposed to diesel exhaust will be detected and characterized by the One-Time Inspection. Further evaluation is documented in Section 3.3.2.2.7.3.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-19	Steel (with or without coating or wrapping) piping, piping components, and piping elements exposed to soil	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion	Buried Piping and Tanks Surveillance Or Buried Piping and Tanks Inspection	No Yes, detection of aging effects and operating experience are to be further evaluated	Not applicable. The Buried Piping and Tanks Surveillance is not credited to provide aging management. Consistent with NUREG-1801. Loss of material in steel (including gray cast iron) piping, piping components, and piping elements that are exposed to soil is managed by the Buried Piping and Tanks Inspection Program. This item is also applied to steel tanks that are exposed to soil. Further evaluation is documented in Section 3.3.2.2.8.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-20	Steel piping, piping components, piping elements, and tanks exposed to fuel oil	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Fuel Oil Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801, with exceptions. Loss of material in steel piping, piping components, piping elements, and tanks that are exposed to fuel oil is managed by the Fuel Oil Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the Fuel Oil Chemistry Program to manage loss of material. Further evaluation is documented in Section 3.3.2.2.9.1.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-21	Steel heat exchanger components exposed to lubricating oil	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material in steel heat exchanger components in the Auxiliary Systems that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. Further evaluation is documented in Section 3.3.2.2.9.2.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-22	Steel with elastomer lining or stainless steel cladding piping, piping components, and piping elements exposed to treated water and treated borated water	Loss of material due to pitting and crevice corrosion (only for steel after lining/cladding degradation)	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Not applicable. At Davis-Besse, elastomer linings are not credited for protection of metallic components and do not perform an intended function. The Auxiliary Systems do not contain steel piping, piping components, or piping elements with stainless steel cladding that are exposed to treated water or treated borated water and subject to aging management review. Further evaluation is documented in Section 3.3.2.2.10.1.
3.3.1-23	BWR only				

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-24	Stainless steel and aluminum piping, piping components, and piping elements exposed to treated water	Loss of material due to pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material in stainless steel piping, piping components, and piping elements that are exposed to treated water (including treated water > 60°C (> 140°F)) is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. This item is also applied to stainless steel tanks that are exposed to treated water (including treated water > 60°C (> 140°F)). The Auxiliary Systems do not contain aluminum piping, piping components, or piping elements that are exposed to treated water and subject to aging management review. Further evaluation is documented in Section 3.3.2.2.10.2.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-25	Copper alloy HVAC piping, piping components, piping elements exposed to condensation (external)	Loss of material due to pitting and crevice corrosion	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801. Except as noted below, loss of material in copper alloy piping, piping components, and piping elements that are exposed to condensation (external) is managed by the External Surfaces Monitoring Program. For copper alloy bolting that is exposed to condensation (external), the Bolting Integrity Program manages loss of material. For copper alloy heat exchanger components that are exposed to condensation (external), the One-Time Inspection will detect and characterize loss of material. Further evaluation is documented in Section 3.3.2.2.10.3.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-26	Copper alloy piping, piping components, and piping elements exposed to lubricating oil	Loss of material due to pitting and crevice corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material in copper alloy piping, piping components, and piping elements exposed to lubricating oil is managed by the Lubricating Oil Analysis Program if the zinc content is greater than 15%. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. This item is also applied to copper alloy heat exchanger components with zinc content greater than 15% that are exposed to lubricating oil. Loss of material due to pitting and crevice corrosion was not identified as an aging effect requiring management for copper alloy piping, piping components, and piping elements with a zinc content less than 15% that are exposed to lubricating oil. Further evaluation is documented in Section 3.3.2.2.10.4.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-27	Stainless steel HVAC ducting and aluminum HVAC piping, piping components and piping elements exposed to condensation	Loss of material due to pitting and crevice corrosion	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801. Except as noted, loss of material in stainless steel piping, piping components, and piping elements that are exposed to condensation (external) is managed by the External Surfaces Monitoring Program. For stainless steel heat exchanger components that are exposed to external condensation, and for stainless steel piping, piping components, piping elements, and tanks (including demisters, drain pans, and moisture separators) that are exposed to internal condensation, the One-Time Inspection will detect and characterize loss of material. Loss of material in stainless steel bolting that is exposed to external condensation is managed by the Bolting Integrity Program. Further evaluation is documented in Section 3.3.2.2.10.5.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-28	Copper alloy fire protection piping, piping components, and piping elements exposed to condensation (internal)	Loss of material due to pitting and crevice corrosion	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801. The Davis-Besse Fire Protection System does not contain piping, piping components, or piping elements that are exposed to internal condensation and subject to aging management review. However, the One-Time Inspection will detect and characterize loss of material due to pitting and crevice corrosion for other copper alloy piping, piping components, and piping elements that are exposed to internal condensation. Further evaluation is documented in Section 3.3.2.2.10.6.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-29	Stainless steel piping, piping components, and piping elements exposed to soil	Loss of material due to pitting and crevice corrosion	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Not applicable. The Auxiliary Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to soil and subject to aging management review. Further evaluation is documented in Section 3.3.2.2.10.7.
3.3.1-30	BWR only				
3.3.1-31	BWR only				

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-32	Stainless steel, aluminum and copper alloy piping, piping components, and piping elements exposed to fuel oil	Loss of material due to pitting, crevice, and microbiologically influenced corrosion	Fuel Oil Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801, with exceptions. Loss of material in stainless steel and copper alloy piping, piping components, and piping elements that are exposed to fuel oil is managed by the Fuel Oil Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the Fuel Oil Chemistry Program to manage loss of material. Further evaluation is documented in Section 3.3.2.2.12.1.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-33	Stainless steel piping, piping components, and piping elements exposed to lubricating oil	Loss of material due to pitting, crevice, and microbiologically influenced corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material in stainless steel piping, piping components, and piping elements that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. This item is also applied to stainless steel heat exchanger components that are exposed to lubricating oil. Further evaluation is documented in Section 3.3.2.2.12.2.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-34	Elastomer seals and components exposed to air – indoor uncontrolled (internal or external)	Loss of material due to wear	A plant specific aging management program is to be evaluated.	Yes, plant specific	Not applicable. Loss of material due to wear was not identified as an aging effect requiring management for elastomer seals and components in Auxiliary Systems that are exposed to air-indoor uncontrolled. Further evaluation is documented in Section 3.3.2.2.13.
3.3.1-35	Steel with stainless steel cladding pump casing exposed to treated borated water	Loss of material/ cladding breach	A plant-specific aging management program is to be evaluated. Reference NRC Information Notice 94-63, "Boric Acid Corrosion of Charging Pump Casings Caused by Cladding Cracks."	Yes, verify plant-specific program addresses cladding breach	Not applicable. The Auxiliary Systems do not contain steel with stainless steel clad pump casings that are exposed to treated borated water and subject to aging management review. Further evaluation is documented in Section 3.3.2.2.14.
3.3.1-36	BWR only				

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-37	Stainless steel piping, piping components, and piping elements exposed to treated water >60 °C (>140 °F)	Cracking due to stress corrosion cracking, intergranular stress corrosion cracking	BWR Reactor Water Cleanup System	No	Consistent with NUREG-1801, but a different aging management program is assigned. Cracking in stainless steel piping, piping components, and piping elements that are exposed to treated water > 60°C (> 140°F) is managed by the PWR Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage cracking. This item is also applied to stainless steel tanks that are exposed to treated water > 60°C (> 140°F).
3.3.1-38	BWR only				
3.3.1-39	BWR only				

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-40	Steel tanks in diesel fuel oil system exposed to air - outdoor (external)	Loss of material due to general, pitting, and crevice corrosion	Aboveground Steel Tanks	No	Consistent with NUREG-1801. Loss of material in the steel fire water storage tank in Fire Protection System and the steel diesel oil storage tank in the Fuel Oil System that are exposed to air - outdoor (external) are managed by the Aboveground Steel Tanks Inspection Program.
3.3.1-41	High-strength steel closure bolting exposed to air with steam or water leakage	Cracking due to cyclic loading, stress corrosion cracking	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Cracking in high-strength steel bolting that is exposed to air with steam or water leakage is managed by the Bolting Integrity Program.
3.3.1-42	Steel closure bolting exposed to air with steam or water leakage	Loss of material due to general corrosion	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Loss of material in steel bolting that is exposed to air with steam or water leakage is managed by the Bolting Integrity Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-43	Steel bolting and closure bolting exposed to air – indoor uncontrolled (external) or air – outdoor (External)	Loss of material due to general, pitting, and crevice corrosion	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Loss of material in steel bolting that is exposed to air-indoor uncontrolled (external) or air-outdoor (external) is managed by the Bolting Integrity Program.
3.3.1-44	Steel compressed air system closure bolting exposed to condensation	Loss of material due to general, pitting, and crevice corrosion	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Loss of material in steel bolting that is exposed to condensation is managed by the Bolting Integrity Program.
3.3.1-45	Steel closure bolting exposed to air – indoor uncontrolled (external)	Loss of preload due to thermal effects, gasket creep, and self-loosening	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Loss of preload in steel bolting that is exposed to air-indoor uncontrolled (external) is managed by the Bolting Integrity Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-46	Stainless steel and stainless clad steel piping, piping components, piping elements, and heat exchanger components exposed to closed cycle cooling water >60 °C (>140 °F)	Cracking due to stress corrosion cracking	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Cracking in stainless steel piping, piping components, piping elements, and heat exchanger components that are exposed to closed cycle cooling water > 60°C (> 140°F) is managed by the Closed Cooling Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage cracking. There are no stainless clad steel piping, piping components, piping elements, or heat exchanger components that are exposed to closed cycle cooling water > 60°C (> 140°F) and subject to aging management review.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-47	Steel piping, piping components, piping elements, tanks, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to general, pitting, and crevice corrosion	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Loss of material in steel piping, piping components, piping elements, and tanks that are exposed to closed cycle cooling water is managed by the Closed Cooling Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage loss of material. Steel heat exchanger components that are exposed to closed cycle cooling water are addressed by Item Number 3.3.1-48.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-48	Steel piping, piping components, piping elements, tanks, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to general, pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Loss of material in steel heat exchanger components that are exposed to closed cycle cooling water is managed by the Closed Cooling Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage loss of material. Steel piping, piping components, piping elements, and tanks that are exposed to closed cycle cooling water are addressed by Item Number 3.3.1-47.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-49	Stainless steel; steel with stainless steel cladding heat exchanger components exposed to closed cycle cooling water	Loss of material due to microbiologically influenced corrosion	Closed-Cycle Cooling Water System	No	Not applicable. Loss of material due to microbiologically influenced corrosion is not identified as an aging effect requiring management for stainless steel heat exchanger components that are exposed to closed cycle cooling water. In addition, there are no steel with stainless steel cladding heat exchanger components that are exposed to closed cycle cooling water and subject to aging management review.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-50	Stainless steel piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to pitting and crevice corrosion	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Loss of material in stainless steel piping, piping components, and piping elements that are exposed to closed cycle cooling water is managed by the Closed Cooling Water Chemistry Program. This item is also applied to stainless steel heat exchanger components and compressor casings that are exposed to closed cycle cooling water. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage loss of material.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-51	Copper alloy piping, piping components, piping elements, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Loss of material in copper alloy piping, piping components, piping elements, and heat exchanger components that are exposed to closed cycle cooling water is managed by the Closed Cooling Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage loss of material.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-52	Steel, stainless steel, and copper alloy heat exchanger tubes exposed to closed cycle cooling water	Reduction of heat transfer due to fouling	Closed-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Reduction in heat transfer for steel, stainless steel, and copper alloy heat exchanger tubes that are exposed to closed cycle cooling water is managed by the Closed Cooling Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the Closed Cooling Water Chemistry Program to manage reduction in heat transfer.
3.3.1-53	Steel compressed air system piping, piping components, and piping elements exposed to condensation (internal)	Loss of material due to general and pitting corrosion	Compressed Air Monitoring	No	Consistent with NUREG-1801, but a different aging management program is assigned. Loss of material in steel piping, piping components, and piping elements that are exposed to condensation (internal) is detected and characterized by the One-Time Inspection.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-54	Stainless steel compressed air system piping, piping components, and piping elements exposed to internal condensation	Loss of material due to pitting and crevice corrosion	Compressed Air Monitoring	No	Consistent with NUREG-1801, but a different aging management program is assigned. Loss of material in stainless steel piping, piping components, and piping elements that are exposed to condensation (internal) in the Waste Gas System will be detected and characterized by the Collection, Drainage, and Treatment Components Inspection. This item is also applied to the stainless steel waste gas surge tank that is exposed to condensation (internal). Loss of material in stainless steel tubing in the Instrument Air System that is exposed to condensation (internal) will be detected and characterized by the One-Time Inspection. [continued]

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-54 [cont'd]	Stainless steel compressed air system piping, piping components, and piping elements exposed to internal condensation	Loss of material due to pitting and crevice corrosion	Compressed Air Monitoring	No	For piping, piping components, and piping elements in the Auxiliary Steam and Station Heating System, where the condensation (internal) environment originates from the Main Steam System, loss of material is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material.
3.3.1-55	Steel ducting closure bolting exposed to air – indoor uncontrolled (external)	Loss of material due to general corrosion	External Surfaces Monitoring	No	Not applicable. Loss of material for steel bolting exposed to air-indoor uncontrolled (external) is managed by the Bolting Integrity Program and addressed in Item Number 3.3.1-43.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-56	Steel HVAC ducting and components external surfaces exposed to air – indoor uncontrolled (external)	Loss of material due to general corrosion	External Surfaces Monitoring	No	Consistent with NUREG-1801. Loss of material in steel ducting and components external surfaces that are exposed to air-indoor uncontrolled (external) is managed by the External Surfaces Monitoring Program. This item is also applied to steel ducting and components internal surfaces that are exposed to air-indoor uncontrolled (internal) where it was determined that the internal environment is the same as the external environment.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-57	Steel piping and components external surfaces exposed to air – indoor uncontrolled (External)	Loss of material due to general corrosion	External Surfaces Monitoring	No	Consistent with NUREG-1801. Loss of material in steel piping and components external surfaces that are exposed to air-indoor uncontrolled (external) is managed by the External Surfaces Monitoring Program. This item is also applied to steel piping and components internal surfaces that are exposed to air-indoor uncontrolled (internal) where it was determined that the internal environment is the same as the external environment.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-58	Steel external surfaces exposed to air – indoor uncontrolled (external), air - outdoor (external), and condensation (external)	Loss of material due to general corrosion	External Surfaces Monitoring	No	Consistent with NUREG-1801. Loss of material in steel (including gray cast iron) external surfaces that are exposed to air-indoor uncontrolled (external), air-outdoor (external), and condensation (external) is managed by the External Surfaces Monitoring Program. This item is also applied to steel internal surfaces that are exposed to air-indoor uncontrolled (internal) or air-outdoor (internal) where it was determined that the internal environment is the same as the external environment.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-59	Steel heat exchanger components exposed to air – indoor uncontrolled (external) or air – outdoor (external)	Loss of material due to general, pitting, and crevice corrosion	External Surfaces Monitoring	No	Consistent with NUREG-1801. Loss of material in steel heat exchanger components that are exposed to air-indoor uncontrolled (external) is managed by the External Surfaces Monitoring Program. For steel heat exchanger components that are exposed to air-outdoor (external), refer to Item Number 3.3.1-58. This item is also applied to internal surfaces of steel heat exchanger components where it was determined that the internal environment is the same as the external environment.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-60	Steel piping, piping components, and piping elements exposed to air – outdoor (external)	Loss of material due to general, pitting, and crevice corrosion	External Surfaces Monitoring	No	Consistent with NUREG-1801. Loss of material in steel tanks that are exposed to air-outdoor (external) is managed by the External Surfaces Monitoring Program. This item is also applied to internal surfaces of steel tanks where it was determined that the internal environment is the same as the external environment. Steel piping, piping components, and piping elements exposed to air-outdoor (external) are addressed by Item Number 3.3.1-58.
3.3.1-61	Elastomer fire barrier penetration seals exposed to air – outdoor or air – indoor uncontrolled	Increased hardness, shrinkage and loss of strength due to weathering	Fire Protection	No	Consistent with NUREG-1801, but a different aging management program is assigned. Hardening and loss of strength for elastomer flexible connections that are exposed to air-outdoor are managed by the External Surfaces Monitoring Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-62	Aluminum piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting and crevice corrosion	Fire Protection	No	Not applicable. There are no aluminum piping, piping components, and piping elements that are exposed to raw water and subject to aging management review.
3.3.1-63	Steel fire rated doors exposed to air – outdoor or air – indoor uncontrolled	Loss of material due to Wear	Fire Protection	No	Consistent with NUREG-1801, with exceptions. Loss of material in carbon steel and galvanized steel fire doors that are exposed to air-indoor and air-outdoor is managed by the Fire Protection Program.
3.3.1-64	Steel piping, piping components, and piping elements exposed to fuel oil	Loss of material due to general, pitting, and crevice corrosion	Fire Protection and Fuel Oil Chemistry	No	Not applicable. Steel piping, piping components, and piping elements that are exposed to fuel oil are addressed by Item Number 3.3.1-20.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-65	Reinforced concrete structural fire barriers – walls, ceilings and floors exposed to air – indoor uncontrolled	Concrete cracking and spalling due to aggressive chemical attack, and reaction with aggregates	Fire Protection and Structures Monitoring Program	No	Not applicable. Cracking and spalling were not identified as aging effects requiring management for reinforced concrete structural fire barriers – walls, ceilings and floors – that are exposed to air-indoor uncontrolled.
3.3.1-66	Reinforced concrete structural fire barriers – walls, ceilings and floors exposed to air – outdoor	Concrete cracking and spalling due to freeze thaw, aggressive chemical attack, and reaction with aggregates	Fire Protection and Structures Monitoring Program	No	Not applicable. Cracking and spalling were not identified as aging effects requiring management for reinforced concrete structural fire barriers – walls, ceilings and floors – that are exposed to air-outdoor.
3.3.1-67	Reinforced concrete structural fire barriers – walls, ceilings and floors exposed to air – outdoor or air – indoor uncontrolled	Loss of material due to corrosion of embedded steel	Fire Protection and Structures Monitoring Program	No	Not applicable. For loss of material due to corrosion of embedded steel for reinforced concrete structural fire barriers – walls, ceilings and floors – that are exposed to air-outdoor or air-indoor uncontrolled, refer to Item Number 3.5.1-23.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-68	Steel piping, piping components, and piping elements exposed to raw water	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Fire Water System	No	Consistent with NUREG-1801. Except as noted below, loss of material in steel piping, piping components, and piping elements that are exposed to raw water in the Fire Water System is managed by the Fire Water Program. This item is also applied to heat exchanger components and tanks that are exposed to raw water in the Fire Protection System. For steel (including gray cast iron) piping, piping components, and piping elements that are exposed to raw water in the Fire Protection System (Diesel) and in the Station Plumbing, Drains, and Sumps System, loss of material will be detected and characterized by the Collection, Drainage, and Treatment Components Inspection Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-69	Stainless steel piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting and crevice corrosion, and fouling	Fire Water System	No	Consistent with NUREG-1801. Except as noted below, loss of material in stainless steel piping, piping components, and piping elements that are exposed to raw water in the Fire Water System is managed by the Fire Water Program. For stainless steel piping, piping components, and piping elements that are exposed to raw water in the Fire Protection System (Diesel), loss of material will be detected and characterized by the Collection, Drainage, and Treatment Components Inspection Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-70	Copper alloy piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling	Fire Water System	No	Consistent with NUREG-1801. Except as noted below, loss of material in copper alloy piping, piping components, and piping elements that are exposed to raw water in the Fire Water System is managed by the Fire Water Program. For copper alloy piping, piping components, and piping elements, and heat exchanger components that are exposed to raw water in the Fire Protection System (Diesel), loss of material will be detected and characterized by the Collection, Drainage, and Treatment Components Inspection Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-71	Steel piping, piping components, and piping elements exposed to moist air or condensation (Internal)	Loss of material due to general, pitting, and crevice corrosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	No	Consistent with NUREG-1801, but a different aging management program is assigned. Loss of material in steel piping, piping components, piping elements, and tanks that are exposed to air (internal) and moist air (internal) will be detected and characterized by the One-Time Inspection.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-72	Steel HVAC ducting and components internal surfaces exposed to condensation (Internal)	Loss of material due to general, pitting, crevice, and (for drip pans and drain lines) microbiologically influenced corrosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	No	Consistent with NUREG-1801, but a different aging management program is assigned. Although there is no steel ducting that is exposed to condensation (internal), loss of material in steel piping, piping components, and piping elements that are exposed to condensation (internal) will be detected and characterized by the One-Time Inspection, except as noted below. For piping, piping components, and piping elements and tanks in the Auxiliary Steam and Station Heating System, where the condensation (internal) environment originates from the Main Steam System, loss of material is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-73	Steel crane structural girders in load handling system exposed to air – indoor uncontrolled (external)	Loss of material due to general corrosion	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	No	Consistent with NUREG-1801. Loss of material in carbon steel crane bridges, trolleys, rails, and girders that are exposed to air-indoor is managed by the Cranes and Hoists Inspection Program.
3.3.1-74	Steel cranes – rails exposed to air – indoor uncontrolled (external)	Loss of material due to wear	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	No	Not applicable. Loss of material due to wear is not identified as an aging effect requiring management for carbon steel crane bridges, trolleys, rails, and girders that are exposed to air-indoor uncontrolled (external).
3.3.1-75	Elastomer seals and components exposed to raw water	Hardening and loss of strength due to elastomer degradation; loss of material due to erosion	Open-Cycle Cooling Water System	No	Consistent with NUREG-1801, but a different aging management program is assigned. Hardening and loss of strength for elastomer components that are exposed to raw water will be detected and characterized by the One-Time Inspection.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-76	Steel piping, piping components, and piping elements (without lining/coating or with degraded lining/coating) exposed to raw water	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining/coating degradation	Open-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Except as noted below, loss of material in steel (including gray cast iron) piping, piping components, and piping elements that are exposed to raw water is managed by the Open-Cycle Cooling Water Program. For steel (including gray cast iron) piping, piping components, piping elements, and bolting that are exposed to raw water that is not from an open-cycle cooling water system, loss of material will be detected and characterized by the Collection, Drainage, and Treatment Components Inspection Program.
3.3.1-77	Steel heat exchanger components exposed to raw water	Loss of material due to general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Loss of material in steel heat exchanger components that are exposed to raw water is managed by the Open-Cycle Cooling Water Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-78	Stainless steel, nickel alloy, and copper alloy piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting and crevice corrosion	Open-Cycle Cooling Water System	No	Consistent with NUREG-1801, but a different aging management program is assigned. Loss of material in stainless steel and copper alloy piping, piping components, piping elements, and tanks that are exposed to raw water will be detected and characterized by the Collection, Drainage, and Treatment Components Inspection Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-79	Stainless steel piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting and crevice corrosion, and fouling	Open-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Except as noted below, loss of material in stainless steel piping, piping components, piping elements, fan housings, and heat exchanger components that are exposed to raw water is managed by the Open-Cycle Cooling Water Program. For stainless steel piping, piping components, piping elements that are exposed to raw water that is not from an open-cycle cooling water system, loss of material will be detected and characterized by the Collection, Drainage, and Treatment Components Inspection.
3.3.1-80	Stainless steel and copper alloy piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion	Open-Cycle Cooling Water System	No	Not applicable. For stainless steel and copper alloy piping, piping components, and piping elements that are exposed to raw water, refer to Item Number 3.3.1-78 or Item Number 3.3.1-79.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-81	Copper alloy piping, piping components, and piping elements, exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Consistent with NUREG-1801, but a different aging management program is assigned. Loss of material in copper alloy piping, piping components, and piping elements that are exposed to raw water will be detected and characterized by the Collection, Drainage, and Treatment Components Inspection Program.
3.3.1-82	Copper alloy heat exchanger components exposed to raw water	Loss of material due to pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Loss of material in copper alloy heat exchanger components that are exposed to raw water is managed by the Open-Cycle Cooling Water Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-83	Stainless steel and copper alloy heat exchanger tubes exposed to raw water	Reduction of heat transfer due to fouling	Open-Cycle Cooling Water System	No	Consistent with NUREG-1801, with exceptions. Except as noted below, reduction in heat transfer for stainless steel and copper alloy heat exchanger tubes that are exposed to raw water is managed by the Open-Cycle Cooling Water Program. For stainless steel and copper alloy heat exchanger tubes that are exposed to raw water in the Fire Protection System, reduction in heat transfer will be detected and characterized by the Collection, Drainage, and Treatment Components Inspection Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-84	Copper alloy >15% Zn piping, piping components, piping elements, and heat exchanger components exposed to raw water, treated water or closed cycle cooling water	Loss of material due to selective leaching	Selective Leaching of Materials	No	Consistent with NUREG-1801. Loss of material due to selective leaching in copper alloy > 15% Zn piping, piping components, piping elements, and heat exchanger components that are exposed to raw water or to closed cycle cooling water will be detected and characterized by the Selective Leaching Inspection.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-85	Gray cast iron piping, piping components, and piping elements exposed to soil, raw water, treated water or closed-cycle cooling water	Loss of material due to selective leaching	Selective Leaching of Materials	No	Consistent with NUREG-1801. Loss of material due to selective leaching in gray cast iron piping, piping components, and piping elements that are exposed to soil, raw water, and closed cycle cooling water will be detected and characterized by the Selective Leaching Inspection. This item is also applied to gray cast iron heat exchanger components that are exposed to closed cycle cooling water. This item is also applied to gray cast iron piping, piping components, and piping elements that are exposed to condensation (internal), where the condensation environment is evaluated as equivalent to a raw water environment.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-86	Structural steel (new fuel storage rack assembly) exposed to air – indoor uncontrolled (external)	Loss of material due to general, pitting, and crevice corrosion	Structures Monitoring Program	No	Not applicable. There is no structural steel (new fuel storage rack assembly) that is exposed to air-indoor uncontrolled (external) and subject to aging management review. New fuel storage racks are stainless steel. Refer to Item Number 3.5.1-59.
3.3.1-87	Boraflex spent fuel storage racks neutron-absorbing sheets exposed to treated borated water	Reduction of neutron-absorbing capacity due to boraflex degradation	Boraflex Monitoring	No	Not applicable. There are no Boraflex spent fuel storage racks neutron-absorbing sheets that are exposed to treated borated water and subject to aging management review. Davis-Besse spent fuel rack neutron absorbers are fabricated of Boral®.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-88	Aluminum and copper alloy >15% Zn piping, piping components, and piping elements exposed to air with borated water leakage	Loss of material due to Boric acid corrosion	Boric Acid Corrosion	No	Consistent with NUREG-1801. Loss of material due to boric acid wastage in aluminum and copper alloy > 15% Zn piping, piping components, and piping elements that are exposed to air with borated water leakage is managed by the Boric Acid Corrosion Program. This item is also applied to copper alloy > 15% Zn heat exchanger components, and to aluminum and copper alloy > 15% Zn tanks, that are exposed to air with borated water leakage.
3.3.1-89	Steel bolting and external surfaces exposed to air with borated water leakage	Loss of material due to Boric acid corrosion	Boric Acid Corrosion	No	Consistent with NUREG-1801. Loss of material due to boric acid wastage in steel bolting and external surfaces (including gray cast iron) that are exposed to air with borated water leakage is managed by the Boric Acid Corrosion Program.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-90	Stainless steel and steel with stainless steel cladding piping, piping components, piping elements, tanks, and fuel storage racks exposed to treated borated water >60°C (>140°F)	Cracking due to stress corrosion cracking	Water Chemistry	No	Consistent with NUREG-1801. Cracking in stainless steel piping, piping components, piping elements, and tanks that are exposed to treated borated water > 60°C (> 140°F) is managed by the PWR Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage cracking. This item is also applied to stainless steel piping, piping components, and piping elements in the non-Class 1 portions of the Reactor Coolant System and Reactor Coolant Pressure Boundary that are exposed to borated reactor coolant.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-91	Stainless steel and steel with stainless steel cladding piping, piping components, and piping elements exposed to treated borated water	Loss of material due to pitting and crevice corrosion	Water Chemistry	No	Consistent with NUREG-1801. Loss of material in stainless steel piping, piping components, and piping elements that are exposed to treated borated water (including treated borated water > 60°C (> 140°F)) is managed by the PWR Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. This item is also applied to stainless steel piping, piping components, and piping elements in the non-Class 1 portions of the Reactor Coolant System and Reactor Coolant Pressure Boundary that are exposed to borated reactor coolant. [continued]

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-91 [cont'd]	Stainless steel and steel with stainless steel cladding piping, piping components, and piping elements exposed to treated borated water	Loss of material due to pitting and crevice corrosion	Water Chemistry	No	This item is also applied to stainless steel heat exchanger components and tanks that are exposed to treated borated water.
3.3.1-92	Galvanized steel piping, piping components, and piping elements exposed to air – indoor uncontrolled	None	None	NA - No AEM or AMP	Not applicable. The Davis-Besse AMR process did not take credit for the zinc coating of galvanized steel to prevent the effects of aging on the base metal. Therefore, galvanized steel was evaluated as steel.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801					
Item Number	**Component/Commodity**	**Aging Effect/Mechanism**	**Aging Management Programs**	**Further Evaluation Recommended**	**Discussion**
3.3.1-93	Glass piping elements exposed to air, air – indoor uncontrolled (external), fuel oil, lubricating oil, raw water, treated water, and treated borated water	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. Althought there are no glass piping elements that are exposed to air-indoor controlled (external), fuel oil, lubricating oil, raw water, treated water, or treated borated water, and subject to aging management review, this item is applied to glass filter housing viewports that are exposed to air-indoor uncontrolled (external). No aging effects requiring management are identified. This item is also applied to glass filter housing viewports that are exposed to air-indoor uncontrolled (internal) where it was determined that the internal environment is the same as the external environment.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-94	Stainless steel and nickel alloy piping, piping components, and piping elements exposed to air – indoor uncontrolled (external)	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management are identified for stainless steel piping, piping components, and piping elements that are exposed to air-indoor uncontrolled (external). This item is also applied to stainless steel compressor casings, drain pans, heat exchangers, and tanks that are exposed to air-indoor uncontrolled (external). This item is also applied to stainless steel components internal surfaces exposed to air-indoor uncontrolled (internal) where it was determined that the internal environment was the same as the external environment.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-95	Steel and aluminum piping, piping components, and piping elements exposed to air – indoor controlled (external)	None	None	NA - No AEM or AMP	Not applicable. There are no steel or aluminum piping, piping components, or piping elements that are exposed to air-indoor controlled (external) and subject to aging management review. All air-indoor environments were conservatively evaluated as uncontrolled environments.
3.3.1-96	Steel and stainless steel piping, piping components, and piping elements in concrete	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management are identified for steel and stainless steel piping, piping components, and piping elements that are exposed to concrete (external).

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-97	Steel, stainless steel, aluminum, and copper alloy piping, piping components, and piping elements exposed to gas	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management are identified for steel, stainless steel, and copper alloy piping, piping components, and piping elements that are exposed to gas. This item is also applied to steel and copper alloy heat exchanger components and compressors, and stainless steel tanks and compressor casings, that are exposed to gas. There are no aluminum piping, piping components, or piping elements that are exposed to gas and subject to aging management review.

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-98	Steel, stainless steel, and copper alloy piping, piping components, and piping elements exposed to dried air	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management are identified for steel (including gray cast iron), stainless steel, and copper alloy piping, piping components, and piping elements that are exposed to dried air. This item is also applied to steel tanks that are exposed to dried air.
3.3.1-99	Stainless steel and copper alloy <15% Zn piping, piping components, and piping elements exposed to air with borated water leakage	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management are identified for stainless steel and copper alloy (< 15% Zn) piping, piping components, and piping elements that are exposed to air with borated water leakage. This item is also applied to stainless steel and copper alloy (< 15% Zn) bolting, compressor casings, heat exchanger components, and tanks that are exposed to air with borated water leakage.

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
2	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
3	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
4	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
5	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
6	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	Bolting Integrity	VII.I-1	3.3.1-43	B
7	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	H

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
9	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
10	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
11	Compressor – CREVS air conditioning unit compressor (DB-MS3311 & DB-MS3321)	Pressure boundary	Gray Cast Iron	Gas (Internal)	None	None	VII.J-23	3.3.1-97	C
12	Compressor – CREVS air conditioning unit compressor (DB-MS3311 & DB-MS3321)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
13	Condenser Unit Housing – CREVS air-cooled condensing unit (DB-S61-1 & 2)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
14	Condenser Unit Housing – CREVS air-cooled condensing unit (DB-S61-1 & 2)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0301
15	Damper Housing	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301
16	Damper Housing	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0301
17	Damper Housing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
18	Damper Housing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
19	Damper Housing	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
20	Damper Housing	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0301
21	Damper Housing	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
22	Damper Housing	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
23	Drain Pan	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E 0306
24	Drain Pan	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
25	Drain Pan	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
26	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301
27	Duct	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
28	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
29	Duct	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301
30	Duct	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
31	Duct	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
32	Fan Housing – Auxiliary Feed Pump Room ventilation fans (DB-C73-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301
33	Fan Housing – Auxiliary Feed Pump Room ventilation fans (DB-C73-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
34	Fan Housing – Battery Room ventilation fans (DB-C78-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
35	Fan Housing – Battery Room ventilation fans (DB-C78-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
36	Fan Housing – CREVS fans (DB-C21-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301
37	Fan Housing – CREVS fans (DB-C21-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
38	Fan Housing – Diesel Generator Room ventilation fans (DB-C25-1, 2, 3, & 4)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301
39	Fan Housing – Diesel Generator Room ventilation fans (DB-C25-1, 2, 3, & 4)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
40	Fan Housing – ECCS Room fans (DB-C31-1, 2, 3, 4, & 5)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301
41	Fan Housing – ECCS Room fans (DB-C31-1, 2, 3, 4, & 5)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
42	Fan Housing – ECCS Room fans (DB-C31-1, 2, 3, 4, & 5)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
43	Fan Housing – Low Voltage Switchgear Room ventilation fans (DB-C71-1 & DB-C133)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
44	Fan Housing – Low Voltage Switchgear Room ventilation fans (DB-C71-1 & DB-C133)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
45	Filter Housing – CREVS water-cooled condenser skid (DB-S33-1 & 2)	Pressure boundary	Steel	Gas (Internal)	None	None	VII.J-23	3.3.1-97	C
46	Filter Housing – CREVS water-cooled condenser skid (DB-S33-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
47	Filter Housing – CREVS filters (DB-F22-1 & 2)	Pressure boundary	Glass	Air-indoor uncontrolled (Internal)	None	None	VII.J-8	3.3.1-93	C 0301

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
48	Filter Housing – CREVS filters (DB-F22-1 & 2)	Pressure boundary	Glass	Air-indoor uncontrolled (External)	None	None	VII.J-8	3.3.1-93	C
49	Filter Housing – CREVS filters (DB-F22-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301
50	Filter Housing – CREVS filters (DB-F22-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
51	Filter Housing – Fuel Handling Building area exhaust filter (DB-F24)	Pressure boundary	Glass	Air-indoor uncontrolled (Internal)	None	None	VII.J-8	3.3.1-93	C 0301
52	Filter Housing – Fuel Handling Building area exhaust filter (DB-F24)	Pressure boundary	Glass	Air with borated water leakage (External)	None	None	N/A	N/A	G

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
53	Filter Housing – Fuel Handling Building area exhaust filter (DB-F24)	Pressure boundary	Glass	Air-indoor uncontrolled (External)	None	None	VII.J-8	3.3.1-93	C
54	Filter Housing – Fuel Handling Building area exhaust filter (DB-F24)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0301
55	Filter Housing – Fuel Handling Building area exhaust filter (DB-F24)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
56	Filter Housing – Fuel Handling Building area exhaust filter (DB-F24)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
57	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (Internal)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
58	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
59	Flexible Connection	Pressure boundary	Copper Alloy	Gas (Internal)	None	None	VII.J-4	3.3.1-97	A
60	Flexible Connection	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
61	Flexible Connection	Pressure boundary	Copper Alloy > 15% Zn	Gas (Internal)	None	None	VII.J-4	3.3.1-97	A
62	Flexible Connection	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
63	Heat Exchanger (channel) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-5	3.3.1-77	B

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
64	Heat Exchanger (channel) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-10	3.3.1-59	A
65	Heat Exchanger (cooling coil casing) – CREVS air-cooled condensing unit (DB-S61-1 & 2)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0301
66	Heat Exchanger (cooling coil casing) – CREVS air-cooled condensing unit (DB-S61-1 & 2)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
67	Heat Exchanger (cooling coil casing) – CREVS cooling coils (DB-E106-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-10	3.3.1-59	A 0301
68	Heat Exchanger (cooling coil casing) – CREVS cooling coils (DB-E106-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-10	3.3.1-59	A
69	Heat Exchanger (cooling coil casing) – ECCS Room coolers (DB-E42-1, 2, 4, & 5)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
70	Heat Exchanger (cooling coil casing) – ECCS Room coolers (DB-E42-1, 2, 4, & 5)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C
71	Heat Exchanger (cooling coil casing) – ECCS Room coolers (DB-E42-1, 2, 4, & 5)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
72	Heat Exchanger (cooling coil casing) – ECCS Room cooler (DB-E42-3)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-10	3.3.1-59	A 0301
73	Heat Exchanger (cooling coil casing) – ECCS Room cooler (DB-E42-3)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-10	3.3.1-59	A

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
74	Heat Exchanger (cooling coil casing) – ECCS Room cooler (DB-E42-3)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
75	Heat Exchanger (cooling coil fins) – CREVS air-cooled condensing unit cooling coils (DB-S61-1 & 2)	Heat transfer	Copper Alloy	Air-outdoor (External)	Reduction in heat transfer	External Surfaces Monitoring	N/A	N/A	G
76	Heat Exchanger (cooling coil fins) – CREVS cooling coils (DB-E106-1 & 2)	Heat transfer	Copper Alloy	Air-indoor uncontrolled (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	G

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
77	Heat Exchanger (cooling coil fins) – ECCS Room coolers (DB-E42-1, 2, 4, & 5)	Heat transfer	Aluminum	Condensation (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H
78	Heat Exchanger (cooling coil fins) – ECCS Room coolers (DB-E42-1, 2, 4, & 5)	Heat transfer	Aluminum	Condensation (External)	Loss of material	One-Time Inspection	N/A	N/A	H 0306 0331
79	Heat Exchanger (cooling coil fins) – ECCS Room cooler (DB-E42-3)	Heat transfer	Copper Alloy	Condensation (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H
80	Heat Exchanger (cooling coil fins) – ECCS Room cooler (DB-E42-3)	Heat transfer	Copper Alloy	Condensation (External)	Loss of material	One-Time Inspection	N/A	N/A	H 0306 0331

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
81	Heat Exchanger (cooling coil tubes) – CREVS air-cooled condensing unit (DB-S61-1 & 2)	Heat transfer	Copper Alloy	Air-outdoor (External)	Reduction in heat transfer	External Surfaces Monitoring	N/A	N/A	H
82	Heat Exchanger (cooling coil tubes) – CREVS air-cooled condensing unit (DB-S61-1 & 2)	Pressure boundary	Copper Alloy	Gas (Internal)	None	None	VII.J-4	3.3.1-97	C
83	Heat Exchanger (cooling coil tubes) – CREVS air-cooled condensing unit (DB-S61-1 & 2)	Pressure boundary	Copper Alloy	Air-outdoor (External)	None	None	N/A	N/A	G

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
84	Heat Exchanger (cooling coil tubes) – CREVS cooling coils (DB-E106-1 & 2)	Heat transfer	Copper Alloy	Air-indoor uncontrolled (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H
85	Heat Exchanger (cooling coil tubes) – CREVS cooling coils (DB-E106-1 & 2)	Pressure boundary	Copper Alloy	Gas (Internal)	None	None	VII.J-4	3.3.1-97	C
86	Heat Exchanger (cooling coil tubes) – CREVS cooling coils (DB-E106-1 & 2)	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	C

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
87	Heat Exchanger (cooling coil tubes) – ECCS Room coolers (DB-E42-1, 2, 4, & 5)	Heat transfer	Stainless Steel	Raw water (Internal)	Reduction in heat transfer	Open-Cycle Cooling Water	VII.C1-7	3.3.1-83	B
88	Heat Exchanger (cooling coil tubes) – ECCS Room coolers (DB-E42-1, 2, 4, & 5)	Heat transfer	Stainless Steel	Condensation (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H
89	Heat Exchanger (cooling coil tubes) – ECCS Room coolers (DB-E42-1, 2, 4, & 5)	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	D

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
90	Heat Exchanger (cooling coil tubes) – ECCS Room coolers (DB-E42-1, 2, 4, & 5)	Pressure boundary	Stainless Steel	Condensation (External)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
91	Heat Exchanger (cooling coil tubes) ECCS Room coolers (DB-E42-3)	Heat transfer	Copper Alloy	Condensation (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H
92	Heat Exchanger (cooling coil tubes) ECCS Room cooler (DB-E42-3)	Heat transfer	Copper Alloy	Raw water (Internal)	Reduction in heat transfer	Open-Cycle Cooling Water	VII.C1-6	3.3.1-83	B
93	Heat Exchanger (cooling coil tubes) ECCS Room cooler (DB-E42-3)	Pressure boundary	Copper Alloy	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-3	3.3.1-82	B

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
94	Heat Exchanger (cooling coil tubes) ECCS Room cooler (DB-E42-3)	Pressure boundary	Copper Alloy	Condensation (External)	Loss of material	One-Time Inspection	VII.F1-16	3.3.1-25	E
95	Heat Exchanger (shell) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-10	3.3.1-59	A
96	Heat Exchanger (shell) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Pressure boundary	Steel	Gas (Internal)	None	None	VII.J-23	3.3.1-97	C
97	Heat Exchanger (tubes) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Heat transfer	Copper Alloy > 15% Zn	Raw water (Internal)	Reduction in heat transfer	Open-Cycle Cooling Water	VII.C1-6	3.3.1-83	B

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
98	Heat Exchanger (tubes) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Heat transfer	Copper Alloy > 15% Zn	Gas (External)	None	None	VII.J-4	3.3.1-97	C
99	Heat Exchanger (tubes) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Open-Cycle Cooling Water	N/A	N/A	H
100	Heat Exchanger (tubes) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-3	3.3.1-82	B 0303

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
101	Heat Exchanger (tubes) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Gas (External)	None	None	VII.J-4	3.3.1-97	C
102	Heat Exchanger (tubesheet) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Pressure boundary	Steel	Gas (External)	None	None	VII.J-23	3.3.1-97	C
103	Heat Exchanger (tubesheet) – CREVS water-cooled condensing unit (DB-S33-1 & 2)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-5	3.3.1-77	B
104	Humidifier (tubing) – Control Room HVAC humidifiers (DB-S19-1 & 2)	Structural integrity	Copper Alloy	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-2	3.3.1-78	E

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
105	Humidifier (tubing) – Control Room HVAC humidifiers (DB-S19-1 & 2)	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	C
106	Mechanical Sealant	Pressure boundary	Elastomer	Air-indoor uncontrolled (Internal)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
107	Mechanical Sealant	Pressure boundary	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
108	Piping	Pressure boundary	Copper Alloy	Gas (Internal)	None	None	VII.J-4	3.3.1-97	A
109	Piping	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
110	Piping	Pressure boundary	Copper Alloy	Air-outdoor (External)	None	None	N/A	N/A	G
111	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0301
112	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
113	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
114	Piping	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
115	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
116	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
117	Tubing	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	C 0301
118	Tubing	Pressure boundary	Copper Alloy	Gas (Internal)	None	None	VII.J-4	3.3.1-97	A
119	Tubing	Pressure boundary	Copper Alloy	Lubricating oil (Internal)	None	None	VII.C1-8	3.3.1-26	I 0302
120	Tubing	Pressure boundary	Copper Alloy	Air with borated water leakage (External)	None	None	V.II.J-5	3.3.1-99	A
121	Tubing	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
122	Tubing	Pressure boundary	Copper Alloy	Air-outdoor (External)	None	None	N/A	N/A	G
123	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0301
124	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Gas (Internal)	None	None	VII.J-4	3.3.1-97	A
125	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.C1-8	3.3.1-26	A 0304
126	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.C1-8	3.3.1-26	A
127	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
128	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
129	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air-outdoor (External)	None	None	N/A	N/A	G
130	Tubing	Structural integrity	Copper Alloy	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0301

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
131	Tubing	Structural integrity	Copper Alloy	Gas (Internal)	None	None	VII.J-4	3.3.1-97	A
132	Tubing	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
133	Tubing	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
134	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0301
135	Tubing	Structural integrity	Copper Alloy > 15% Zn	Gas (Internal)	None	None	VII.J-4	3.3.1-97	A
136	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
137	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
138	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0301
139	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Gas (Internal)	None	None	VII.J-4	3.3.1-97	A

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
140	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A 0305
141	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
142	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-outdoor (External)	None	None	N/A	N/A	G
143	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0301
144	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
145	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
146	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0301
147	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Gas (Internal)	None	None	VII.J-4	3.3.1-97	A
148	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-9	3.3.1-81	E

Table 3.3.2-1 Aging Management Review Results – Auxiliary Building HVAC System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
149	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.C1-10	3.3.1-84	A
150	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	C
2	Bolting	Structural integrity	Copper Alloy	Condensation (External)	Loss of material	Bolting Integrity	VII.F1-16	3.3.1-25	E
3	Bolting	Structural integrity	Copper Alloy	Condensation (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
4	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
5	Bolting	Structural integrity	Steel	Condensation (External)	Cracking	Bolting Integrity	N/A	N/A	H
6	Bolting	Structural integrity	Steel	Condensation (External)	Loss of material	Bolting Integrity	VII.D-1	3.3.1-44	B
7	Bolting	Structural integrity	Steel	Condensation (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
8	Flexible Connection	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
9	Flexible Connection	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
10	Flexible Connection	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
11	Flexible Connection	Structural integrity	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E
12	Heat Exchanger (shell) – Control Room water chiller evaporator (DB-S12-1 & 2)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-11	3.3.1-48	B
13	Heat Exchanger (shell) – Control Room water chiller evaporator (DB-S12-1 & 2)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-11	3.3.1-48	E 0314

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
14	Heat Exchanger (shell) – Control Room water chiller evaporator (DB-S12-1 & 2)	Structural integrity	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
15	Heat Exchanger (tubing) – Access Control Area duct cooling coil (DB-E47)	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-8	3.3.1-51	B
16	Heat Exchanger (tubing) – Access Control Area duct cooling coil (DB-E47)	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-8	3.3.1-51	E 0314

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
17	Heat Exchanger (tubing) – Access Control Area duct cooling coil (DB-E47)	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	C
18	Heat Exchanger (tubing) – Access Control Area duct cooling coil (DB-E47)	Structural integrity	Copper Alloy	Condensation (External)	Loss of material	One-Time Inspection	VII.F1-16	3.3.1-25	E
19	Heat Exchanger (tubing) – Computer Room A/C unit (DB-S77)	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-8	3.3.1-51	B
20	Heat Exchanger (tubing) – Computer Room A/C unit (DB-S77)	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-8	3.3.1-51	E 0314

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
21	Heat Exchanger (tubing) – Computer Room A/C unit (DB-S77)	Structural integrity	Copper Alloy	Condensation (External)	Loss of material	One-Time Inspection	VII.F1-16	3.3.1-25	E
22	Heat Exchanger (tubing) – Control Room air handling cooling coil (DB-E44 & 45)	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-8	3.3.1-51	B
23	Heat Exchanger (tubing) – Control Room air handling cooling coil (DB-E44 & 45)	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-8	3.3.1-51	E 0314

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
24	Heat Exchanger (tubing) – Control Room air handling cooling coil (DB-E44 & 45)	Structural integrity	Copper Alloy	Condensation (External)	Loss of material	One-Time Inspection	VII.F1-16	3.3.1-25	E
25	Heat Exchanger (tubing) – Electric Penetration Room 402 cooling coil (DB-E78)	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-8	3.3.1-51	B
26	Heat Exchanger (tubing) – Electric Penetration Room 402 cooling coil (DB-E78)	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-8	3.3.1-51	E 0314

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
27	Heat Exchanger (tubing) – Electric Penetration Room 402 cooling coil (DB-E78)	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	C
28	Heat Exchanger (tubing) – Electric Penetration Room 402 cooling coil (DB-E78)	Structural integrity	Copper Alloy	Condensation (External)	Loss of material	One-Time Inspection	VII.F1-16	3.3.1-25	E
29	Orifice	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
30	Orifice	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
31	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
32	Orifice	Structural integrity	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
33	Piping	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-15	3.3.1-51	B
34	Piping	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-15	3.3.1-51	E 0314
35	Piping	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
36	Piping	Structural integrity	Copper Alloy	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-16	3.3.1-25	E
37	Piping	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B
38	Piping	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0314
39	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
40	Piping	Structural integrity	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
41	Pump Casing – Chilled water pump (DB-P92-1 & 2)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B
42	Pump Casing – Chilled water pump (DB-P92-1 & 2)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0314
43	Pump Casing – Chilled water pump (DB-P92-1 & 2)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	A
44	Pump Casing – Chilled water pump (DB-P92-1 & 2)	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
45	Pump Casing – Chilled water pump (DB-P92-1 & 2)	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	Selective Leaching Inspection	N/A	N/A	H
46	Strainer (body)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
47	Strainer (body)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0314
48	Strainer (body)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	A
49	Strainer (body)	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
50	Strainer (body)	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
51	Strainer (body)	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	Selective Leaching Inspection	N/A	N/A	H
52	Tank – Air separator	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0309
53	Tank – Air separator	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B
54	Tank – Air separator	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0314
55	Tank – Air separator	Structural integrity	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
56	Tank – Air separator	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
57	Tank – Air separator	Structural integrity	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
58	Tank – Chemical pot feeder (DB-T154)	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0309
59	Tank – Chemical pot feeder (DB-T154)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B
60	Tank – Chemical pot feeder (DB-T154)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0314
61	Tank – Chemical pot feeder (DB-T154)	Structural integrity	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313
62	Tank – Chemical pot feeder (DB-T154)	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
63	Tank – Chemical pot feeder (DB-T154)	Structural integrity	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
64	Tank – Expansion tank (DB-T88)	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0309
65	Tank – Expansion tank (DB-T88)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B
66	Tank – Expansion tank (DB-T88)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0314
67	Tank – Expansion tank (DB-T88)	Structural integrity	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313
68	Tank – Expansion tank (DB-T88)	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
69	Tank – Expansion tank (DB-T88)	Structural integrity	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
70	Tubing	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-15	3.3.1-51	B
71	Tubing	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-15	3.3.1-51	E 0314
72	Tubing	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
73	Tubing	Structural integrity	Copper Alloy	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-16	3.3.1-25	E
74	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
75	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
76	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
77	Tubing	Structural integrity	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
78	Valve Body	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-15	3.3.1-51	B
79	Valve Body	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-15	3.3.1-51	E 0314
80	Valve Body	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
81	Valve Body	Structural integrity	Copper Alloy	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-16	3.3.1-25	E
82	Valve Body	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B
83	Valve Body	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0314
84	Valve Body	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	A
85	Valve Body	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-2 Aging Management Review Results – Auxiliary Building Chilled Water System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
86	Valve Body	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
87	Valve Body	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	Selective Leaching Inspection	N/A	N/A	H

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	C
2	Bolting	Structural integrity	Copper Alloy	Air with steam or water leakage (External)	None	None	N/A	N/A	F
3	Bolting	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
4	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
5	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
6	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
7	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Heat Exchanger (tubing) – Containment purge air supply heating coil (DB-E38)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-8	3.3.1-51	B 0310
9	Heat Exchanger (tubing) – Containment purge air supply heating coil (DB-E38)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-8	3.3.1-51	E 0310 0314
10	Heat Exchanger (tubing) – Containment purge air supply heating coil (DB-E38)	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	C

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
11	Heat Exchanger (tubing) – Control Room heating coil (DB-E46-1 & 2)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-8	3.3.1-51	B 0310
12	Heat Exchanger (tubing) – Control Room heating coil (DB-E46-1 & 2)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-8	3.3.1-51	E 0310 0314
13	Heat Exchanger (tubing) – Control Room heating coil (DB-E46-1 & 2)	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	C
14	Heat Exchanger (tubing) – Fuel handling supply heating coil (DB-E40)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-8	3.3.1-51	B 0310

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Heat Exchanger (tubing) – Fuel handling supply heating coil (DB-E40)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-8	3.3.1-51	E 0310 0314
16	Heat Exchanger (tubing) – Fuel handling supply heating coil (DB-E40)	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	C
17	Heat Exchanger (tubing) – Fuel handling supply heating coil (DB-E40)	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	C
18	Heat Exchanger (tubing) – Intake structure unit heater (DB-E50-1)	Structural integrity	Copper Alloy	Steam (Internal)	Loss of material	One-Time Inspection	N/A	N/A	G

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
19	Heat Exchanger (tubing) – Intake structure unit heater (DB-E50-1)	Structural integrity	Copper Alloy	Steam (Internal)	Loss of material	PWR Water Chemistry	N/A	N/A	G
20	Heat Exchanger (tubing) – Intake structure unit heater (DB-E50-1)	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	C
21	Heat Exchanger (tubing) – Main steam line area unit heater (DB-E87-1, 2, & 3)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-8	3.3.1-51	B 0310
22	Heat Exchanger (tubing) – Main steam line area unit heater (DB-E87-1, 2, & 3)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-8	3.3.1-51	E 0310 0314

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
23	Heat Exchanger (tubing) – Main steam line area unit heater (DB-E87-1, 2, & 3)	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	C
24	Heat Exchanger (tubing) – Radwaste supply heating coil (DB-E39)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-8	3.3.1-51	B 0310
25	Heat Exchanger (tubing) – Radwaste supply heating coil (DB-E39)	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-8	3.3.1-51	E 0310 0314
26	Heat Exchanger (tubing) – Radwaste supply heating coil (DB-E39)	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	C

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
27	Orifice	Structural integrity	Stainless Steel	Condensation (Internal)	Cracking	One-Time Inspection	N/A	N/A	H
28	Orifice	Structural integrity	Stainless Steel	Condensation (Internal)	Cracking	PWR Water Chemistry	N/A	N/A	H
29	Orifice	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-4	3.3.1-54	E
30	Orifice	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.D-4	3.3.1-54	E
31	Orifice	Structural integrity	Stainless Steel	Steam (Internal)	Cracking	One-Time Inspection	VIII.A-10	3.4.1-39	E 0315
32	Orifice	Structural integrity	Stainless Steel	Steam (Internal)	Cracking	PWR Water Chemistry	VIII.A-10	3.4.1-39	A
33	Orifice	Structural integrity	Stainless Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.A-12	3.4.1-37	E 0315
34	Orifice	Structural integrity	Stainless Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.A-12	3.4.1-37	A
35	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
36	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
37	Piping	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-15	3.3.1-51	B 0310
38	Piping	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-15	3.3.1-51	E 0310 0314
39	Piping	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
40	Piping	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
41	Piping	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B 0310
42	Piping	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0310 0314

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
43	Piping	Structural integrity	Steel	Condensation (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	N/A	N/A	G 0317
44	Piping	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
45	Piping	Structural integrity	Steel	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
46	Piping	Structural integrity	Steel	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.A-17	3.4.1-29	A
47	Piping	Structural integrity	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.A-16	3.4.1-02	A
48	Piping	Structural integrity	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.A-16	3.4.1-02	A
49	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
50	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
51	Pump Casing – 10 psig condensate pump (DB-P118-1 & 2)	Structural integrity	Steel	Condensation (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	N/A	N/A	G 0317
52	Pump Casing – 10 psig condensate pump (DB-P118-1 & 2)	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
53	Pump Casing – 10 psig condensate pump (DB-P118-1 & 2)	Structural integrity	Steel	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
54	Pump Casing – 10 psig condensate pump (DB-P118-1 & 2)	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
55	Pump Casing – 10 psig condensate pump (DB-P118-1 & 2)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
56	Pump Casing – Degasifier package drain pump (DB-P178-1 & 2)	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
57	Pump Casing – Degasifier package drain pump (DB-P178-1 & 2)	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
58	Pump Casing – Degasifier package drain pump (DB-P178-1 & 2)	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	Selective Leaching Inspection	VII.F1-18	3.3.1-85	A 0308
59	Pump Casing – Degasifier package drain pump (DB-P178-1 & 2)	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
60	Pump Casing – Degasifier package drain pump (DB-P178-1 & 2)	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
61	Pump Casing – Evaporator package condensate drain pump (DB-P275-1 & 2)	Structural integrity	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
62	Pump Casing – Evaporator package condensate drain pump (DB-P275-1 & 2)	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
63	Pump Casing – Evaporator package condensate drain pump (DB-P275-1 & 2)	Structural integrity	Steel	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
64	Pump Casing – Evaporator package condensate drain pump (DB-P275-1 & 2)	Structural integrity	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313
65	Pump Casing – Evaporator package condensate drain pump (DB-P275-1 & 2)	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
66	Pump Casing – Evaporator package condensate drain pump (DB-P275-1 & 2)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
67	Pump Casing -Secondary hot water control room AHU pump (DB-P97 & 98)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B 0310
68	Pump Casing -Secondary hot water control room AHU pump (DB-P97 & 98)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0310 0314
69	Pump Casing -Secondary hot water control room AHU pump (DB-P97 & 98)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	A 0310

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
70	Pump Casing -Secondary hot water control room AHU pump (DB-P97 & 98)	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
71	Pump Casing -Secondary hot water control room AHU pump (DB-P97 & 98)	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
72	Pump Casing – Secondary hot water fuel handling pump (DB-P95)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B 0310
73	Pump Casing – Secondary hot water fuel handling pump (DB-P95)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0310 0314

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
74	Pump Casing – Secondary hot water fuel handling pump (DB-P95)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	A 0310
75	Pump Casing – Secondary hot water fuel handling pump (DB-P95)	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
76	Pump Casing – Secondary hot water fuel handling pump (DB-P95)	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
77	Pump Casing – Secondary hot water purge supply pump (DB-P93)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B 0310
78	Pump Casing – Secondary hot water purge supply pump (DB-P93)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0310 0314

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
79	Pump Casing – Secondary hot water purge supply pump (DB-P93)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	A 0310
80	Pump Casing – Secondary hot water purge supply pump (DB-P93)	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
81	Pump Casing – Secondary hot water purge supply pump (DB-P93)	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
82	Pump Casing – Secondary hot water radwaste supply pump (DB-P94)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B 0310
83	Pump Casing – Secondary hot water radwaste supply pump (DB-P94)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0310 0314

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
84	Pump Casing – Secondary hot water radwaste supply pump (DB-P94)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	A 0310
85	Pump Casing – Secondary hot water radwaste supply pump (DB-P94)	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
86	Pump Casing – Secondary hot water radwaste supply pump (DB-P94)	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
87	Strainer (body)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B 0310
88	Strainer (body)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0310 0314

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
89	Strainer (body)	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	A 0310
90	Strainer (body)	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
91	Strainer (body)	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
92	Strainer (body)	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	Selective Leaching Inspection	VII.F1-18	3.3.1-85	A 0308
93	Strainer (body)	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
94	Strainer (body)	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
95	Tank – 10 psig condensate tank (DB-T95)	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0309

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
96	Tank – 10 psig condensate tank (DB-T95)	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
97	Tank – 10 psig condensate tank (DB-T95)	Structural integrity	Steel	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
98	Tank – 10 psig condensate tank (DB-T95)	Structural integrity	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313
99	Tank – 10 psig condensate tank (DB-T95)	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
100	Tank – 10 psig condensate tank (DB-T95)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
101	Tank – Degasifier package drain pump reservoir	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
102	Tank – Degasifier package drain pump reservoir	Structural integrity	Steel	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
103	Tank – Degasifier package drain pump reservoir	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
104	Tank – Degasifier package drain pump reservoir	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
105	Trap Body	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	N/A	N/A	G 0317
106	Trap Body	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
107	Trap Body	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
108	Trap Body	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	Selective Leaching Inspection	VII.F1-18	3.3.1-85	A 0308

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
109	Trap Body	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
110	Trap Body	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
111	Tubing	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-15	3.3.1-51	B 0310
112	Tubing	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-15	3.3.1-51	E 0310 0314
113	Tubing	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
114	Tubing	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
115	Tubing	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B 0310

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
116	Tubing	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0310 0314
117	Tubing	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
118	Tubing	Structural integrity	Steel	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
119	Tubing	Structural integrity	Steel	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.A-17	3.4.1-29	A
120	Tubing	Structural integrity	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.A-16	3.4.1-02	A
121	Tubing	Structural integrity	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.A-16	3.4.1-02	A
122	Tubing	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
123	Tubing	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
124	Valve Body	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-15	3.3.1-51	B 0310
125	Valve Body	Structural integrity	Copper Alloy	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-15	3.3.1-51	E 0310 0314
126	Valve Body	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
127	Valve Body	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
128	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Condensation (Internal)	Cracking	One-Time Inspection	N/A	N/A	G
129	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Condensation (Internal)	Cracking	PWR Water Chemistry	N/A	N/A	G
130	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Condensation (Internal)	Loss of material	One-Time Inspection	N/A	N/A	G
131	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Condensation (Internal)	Loss of material	PWR Water Chemistry	N/A	N/A	G

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
132	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
133	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
134	Valve Body	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60ºC (> 140ºF) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B 0310
135	Valve Body	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60ºC (> 140ºF) (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0310 0314
136	Valve Body	Structural integrity	Gray Cast Iron	Closed cycle cooling water > 60ºC (> 140ºF) (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	A 0310
137	Valve Body	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	N/A	N/A	G 0317
138	Valve Body	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
139	Valve Body	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
140	Valve Body	Structural integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	Selective Leaching Inspection	VII.F1-18	3.3.1-85	A 0308
141	Valve Body	Structural integrity	Gray Cast Iron	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.A-17	3.4.1-29	A
142	Valve Body	Structural integrity	Gray Cast Iron	Steam (Internal)	Loss of material	One-Time Inspection	VIII.A-16	3.4.1-02	A
143	Valve Body	Structural integrity	Gray Cast Iron	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.A-16	3.4.1-02	A
144	Valve Body	Structural integrity	Gray Cast Iron	Steam (Internal)	Loss of material	Selective Leaching Inspection	N/A	N/A	G
145	Valve Body	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
146	Valve Body	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
147	Valve Body	Structural integrity	Stainless Steel	Condensation (Internal)	Cracking	One-Time Inspection	N/A	N/A	H

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
148	Valve Body	Structural integrity	Stainless Steel	Condensation (Internal)	Cracking	PWR Water Chemistry	N/A	N/A	H
149	Valve Body	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-4	3.3.1-54	E
150	Valve Body	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.D-4	3.3.1-54	E
151	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
152	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
153	Valve Body	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.F1-20	3.3.1-47	B 0310
154	Valve Body	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.F1-20	3.3.1-47	E 0310 0314
155	Valve Body	Structural integrity	Steel	Condensation (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	N/A	N/A	G 0317

Table 3.3.2-3 Aging Management Review Results – Auxiliary Steam and Station Heating Systems

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
156	Valve Body	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
157	Valve Body	Structural integrity	Steel	Condensation (Internal)	Loss of material	PWR Water Chemistry	VII.F1-3	3.3.1-72	E
158	Valve Body	Structural integrity	Steel	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.A-17	3.4.1-29	A
159	Valve Body	Structural integrity	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.A-16	3.4.1-02	A
160	Valve Body	Structural integrity	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.A-16	3.4.1-02	A
161	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
162	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
6	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
8	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Filter Housing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
10	Filter Housing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
11	Filter Housing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
12	Filter Housing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
13	Filter Housing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
14	Filter Housing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
15	Filter Housing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
16	Filter Housing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
17	Filter Housing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
18	Filter Housing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
19	Flexible Connection	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
20	Flexible Connection	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
21	Flexible Connection	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
22	Flexible Connection	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
23	Heat Exchanger (channel) - Distillate coolers (DB-E200-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
24	Heat Exchanger (channel) - Distillate coolers (DB-E200-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
25	Heat Exchanger (channel) - Distillate coolers (DB-E200-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
26	Heat Exchanger (channel) - Distillate coolers (DB-E200-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
27	Heat Exchanger (channel) - Seal water coolers (DB-E199-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
28	Heat Exchanger (channel) - Seal water coolers (DB-E199-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
29	Heat Exchanger (channel) - Seal water coolers (DB-E199-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
30	Heat Exchanger (channel) - Seal water coolers (DB-E199-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
31	Heat Exchanger (shell) - Distillate coolers (DB-E200-1 & 2)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
32	Heat Exchanger (shell) - Distillate coolers (DB-E200-1 & 2)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
33	Heat Exchanger (shell) - Distillate coolers (DB-E200-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
34	Heat Exchanger (shell) - Distillate coolers (DB-E200-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
35	Heat Exchanger (shell) - Seal water coolers (DB-E199-1 & 2)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D
36	Heat Exchanger (shell) - Seal water coolers (DB-E199-1 & 2)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
37	Heat Exchanger (shell) - Seal water coolers (DB-E199-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
38	Heat Exchanger (shell) - Seal water coolers (DB-E199-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
39	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
40	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
41	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
42	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
43	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
44	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
45	Orifice	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
46	Orifice	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
47	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
48	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
49	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
50	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
51	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
52	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
53	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
54	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
55	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
56	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
57	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
58	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
59	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
60	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
61	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
62	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
63	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
64	Piping	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E3-16	3.3.1-37	E
65	Piping	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E3-16	3.3.1-37	E
66	Piping	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A 0311
67	Piping	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A 0311
68	Piping	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
69	Pump Casing - Bottoms circulation pumps (DB-P271-1, 2, 3 & 4)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
70	Pump Casing - Bottoms circulation pumps (DB-P271-1, 2, 3 & 4)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
71	Pump Casing - Bottoms circulation pumps (DB-P271-1, 2, 3 & 4)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
72	Pump Casing - Bottoms circulation pumps (DB-P271-1, 2, 3 & 4)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
73	Pump Casing - Clean waste booster pumps (DB-P179-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
74	Pump Casing - Clean waste booster pumps (DB-P179-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
75	Pump Casing - Clean waste booster pumps (DB-P179-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
76	Pump Casing - Clean waste booster pumps (DB-P179-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
77	Pump Casing - Clean waste monitor tank transfer pumps (DB-P50-1 & 2)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
78	Pump Casing - Clean waste monitor tank transfer pumps (DB-P50-1 & 2)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
79	Pump Casing - Clean waste monitor tank transfer pumps (DB-P50-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
80	Pump Casing - Clean waste monitor tank transfer pumps (DB-P50-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
81	Pump Casing - Clean waste receiver tank transfer pumps (DB-P49-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
82	Pump Casing - Clean waste receiver tank transfer pumps (DB-P49-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
83	Pump Casing - Clean waste receiver tank transfer pumps (DB-P49-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
84	Pump Casing - Clean waste receiver tank transfer pumps (DB-P49-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
85	Pump Casing - Concentrates pumps (DB-P272-1 & 3)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
86	Pump Casing - Concentrates pumps (DB-P272-1 & 3)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
87	Pump Casing - Concentrates pumps (DB-P272-1 & 3)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
88	Pump Casing - Concentrates pumps (DB-P272-1 & 3)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
89	Pump Casing - Concentrates transfer pump (DB-P47-2)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
90	Pump Casing - Concentrates transfer pump (DB-P47-2)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
91	Pump Casing - Concentrates transfer pump (DB-P47-2)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
92	Pump Casing - Concentrates transfer pump (DB-P47-2)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
93	Pump Casing - Concentrates transfer pump (DB-P47-2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
94	Pump Casing - Concentrates transfer pump (DB-P47-2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
95	Pump Casing - Concentrator vacuum pumps (DB-270-1, 2, 3 & 4)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
96	Pump Casing - Concentrator vacuum pumps (DB-270-1, 2, 3 & 4)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
97	Pump Casing - Concentrator vacuum pumps (DB-270-1, 2, 3 & 4)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
98	Pump Casing - Concentrator vacuum pumps (DB-270-1, 2, 3 & 4)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
99	Pump Casing - Concentrator vacuum pumps (DB-270-1, 2, 3 & 4)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
100	Pump Casing - Distillate pumps (DB-269-1 & 3)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
101	Pump Casing - Distillate pumps (DB-269-1 & 3)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
102	Pump Casing - Distillate pumps (DB-269-1 & 3)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
103	Pump Casing - Distillate pumps (DB-269-1 & 3)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
104	Rupture Disc	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
105	Rupture Disc	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
106	Rupture Disc	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
107	Rupture Disc	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
108	Rupture Disc	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
109	Rupture Disc	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
110	Rupture Disc	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
111	Rupture Disc	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
112	Rupture Disc	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
113	Separator	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
114	Separator	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
115	Separator	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
116	Separator	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
117	Strainer (body)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
118	Strainer (body)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
119	Strainer (body)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E3-16	3.3.1-37	E
120	Strainer (body)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E3-16	3.3.1-37	E
121	Strainer (body)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A 0311
122	Strainer (body)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A 0311
123	Strainer (body)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
124	Strainer (body)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
125	Tank - Boric acid concentrators (DB-T200-1 & 2)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
126	Tank - Boric acid concentrators (DB-T200-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
127	Tank - Boric acid concentrators (DB-T200-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
128	Tank - Boric acid concentrators (DB-T200-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
129	Tank - Boric acid concentrators (DB-T200-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
130	Tank - Boric acid concentrators condensate reservoirs	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
131	Tank - Boric acid concentrators condensate reservoirs	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	C
132	Tank - Boric acid concentrators condensate reservoirs	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	C
133	Tank - Boric acid concentrators condensate reservoirs	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
134	Tank - Clean waste monitor tanks (DB-T23-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
135	Tank - Clean waste monitor tanks (DB-T23-1 & 2)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
136	Tank - Clean waste monitor tanks (DB-T23-1 & 2)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	C
137	Tank - Clean waste monitor tanks (DB-T23-1 & 2)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	C

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
138	Tank - Clean waste monitor tanks (DB-T23-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
139	Tank - Clean waste polishing demineralizers (DB-T21-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
140	Tank - Clean waste polishing demineralizers (DB-T21-1 & 2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E3-16	3.3.1-37	E
141	Tank - Clean waste polishing demineralizers (DB-T21-1 & 2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E3-16	3.3.1-37	E
142	Tank - Clean waste polishing demineralizers (DB-T21-1 & 2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	C 0311

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
143	Tank - Clean waste polishing demineralizers (DB-T21-1 & 2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	C 0311
144	Tank - Clean waste polishing demineralizers (DB-T21-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
145	Tank - Clean waste receiver tanks (DB-T15-1 & 2)	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
146	Tank - Clean waste receiver tanks (DB-T15-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
147	Tank - Clean waste receiver tanks (DB-T15-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
148	Tank - Clean waste receiver tanks (DB-T15-1 & 2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
149	Tank - Clean waste receiver tanks (DB-T15-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
150	Tank - Concentrates demineralizer (DB-T55)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
151	Tank - Concentrates demineralizer (DB-T55)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	C
152	Tank - Concentrates demineralizer (DB-T55)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
153	Tank - Concentrates demineralizer (DB-T55)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C 0329
154	Tank - Concentrates demineralizer (DB-T55)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
155	Tank - Concentrates demineralizer (DB-T55)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
156	Tank - Concentrates storage tank (DB-T16)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
157	Tank - Concentrates storage tank (DB-T16)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
158	Tank - Concentrates storage tank (DB-T16)	Structural integrity	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0312 0332
159	Tank - Concentrates storage tank (DB-T16)	Structural integrity	Stainless Steel	Moist air (Internal)	Cracking	One-Time Inspection	N/A	N/A	H 0312
160	Tank - Concentrates storage tank (DB-T16)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
161	Tank - Concentrates storage tank (DB-T16)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	C

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
162	Tank - Concentrates storage tank (DB-T16)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
163	Tank - Concentrates storage tank (DB-T16)	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C 0329
164	Tank - Deborating demineralizers (DB-T20-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
165	Tank - Deborating demineralizers (DB-T20-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
166	Tank - Deborating demineralizers (DB-T20-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
167	Tank - Deborating demineralizers (DB-T20-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
168	Tank - Primary demineralizers (DB-T19-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
169	Tank - Primary demineralizers (DB-T19-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
170	Tank - Primary demineralizers (DB-T19-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
171	Tank - Primary demineralizers (DB-T19-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
172	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
173	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
174	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
175	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
176	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
177	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
178	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
179	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
180	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
181	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
182	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
183	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
184	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
185	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
186	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
187	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
188	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
189	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
190	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-4 Aging Management Review Results – Boron Recovery System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
191	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
192	Valve Body	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A 0311
193	Valve Body	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A 0311
194	Valve Body	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E3-16	3.3.1-37	E
195	Valve Body	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E3-16	3.3.1-37	E
196	Valve Body	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
6	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
7	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
8	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
10	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
11	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
12	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
13	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
14	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
15	Orifice	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
16	Orifice	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
17	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
18	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
19	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
20	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
21	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
22	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
23	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
24	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
25	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
26	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
27	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
28	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
29	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
30	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
31	Pump Casing - Boric acid pumps (DB-P38-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
32	Pump Casing - Boric acid pumps (DB-P38-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
33	Pump Casing - Boric acid pumps (DB-P38-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
34	Pump Casing - Boric acid pumps (DB-P38-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
35	Pump Casing - Boric acid pumps (DB-P38-1 & 2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
36	Pump Casing - Boric acid pumps (DB-P38-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
37	Pump Casing - Hydrazine pump (DB-P40)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
38	Pump Casing - Hydrazine pump (DB-P40)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
39	Pump Casing - Hydrazine pump (DB-P40)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
40	Pump Casing - Hydrazine pump (DB-P40)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
41	Pump Casing - Lithium hydroxide pump (DB-P39)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
42	Pump Casing - Lithium hydroxide pump (DB-P39)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
43	Pump Casing - Lithium hydroxide pump (DB-P39)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
44	Pump Casing - Lithium hydroxide pump (DB-P39)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
45	Strainer (body)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
46	Strainer (body)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
47	Strainer (body)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
48	Strainer (body)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
49	Strainer (body)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
50	Strainer (body)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
51	Strainer (body)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
52	Strainer (body)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
53	Strainer (body)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
54	Strainer (body)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
55	Strainer (screen)	Filtration	Stainless Steel	Treated borated water > 60°C (> 140°F) (External)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
56	Strainer (screen)	Filtration	Stainless Steel	Treated borated water > 60°C (> 140°F) (External)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
57	Strainer (screen)	Filtration	Stainless Steel	Treated borated water > 60°C (> 140°F) (External)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
58	Strainer (screen)	Filtration	Stainless Steel	Treated borated water > 60°C (> 140°F) (External)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
59	Tank - Boric acid addition tanks (DB-T7-1 & 2)	Pressure boundary	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0312 0332
60	Tank - Boric acid addition tanks (DB-T7-1 & 2)	Pressure boundary	Stainless Steel	Moist air (Internal)	Cracking	One-Time Inspection	N/A	N/A	H 0312
61	Tank - Boric acid addition tanks (DB-T7-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
62	Tank - Boric acid addition tanks (DB-T7-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	C
63	Tank - Boric acid addition tanks (DB-T7-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
64	Tank - Boric acid addition tanks (DB-T7-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C 0329
65	Tank - Boric acid addition tanks (DB-T7-1 & 2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
66	Tank - Boric acid addition tanks (DB-T7-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
67	Tank - Boric acid mix tank (DB-T6)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
68	Tank - Boric acid mix tank (DB-T6)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
69	Tank - Boric acid mix tank (DB-T6)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
70	Tank - Boric acid mix tank (DB-T6)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
71	Tank - Lithium hydroxide and hydrazine mix tank (DB-T8)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	C

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
72	Tank - Lithium hydroxide and hydrazine mix tank (DB-T8)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	C
73	Tank - Lithium hydroxide and hydrazine mix tank (DB-T8)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
74	Tank - Lithium hydroxide and hydrazine mix tank (DB-T8)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
75	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
76	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
77	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
78	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
79	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
80	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
81	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
82	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
83	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
84	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
85	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
86	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
87	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
88	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
89	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
90	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
91	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
92	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
93	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315

Table 3.3.2-5 Aging Management Review Results – Chemical Addition System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
94	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
95	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
96	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
97	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
98	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
99	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
100	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A

Table 3.3.2-6 Aging Management Review Results – Circulating Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
2	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
3	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
4	Flexible Connection	Structural integrity	Elastomer	Raw water (Internal)	Hardening and loss of strength	One-Time Inspection	VII.C1-1	3.3.1-75	E
5	Flexible Connection	Structural integrity	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
6	Piping	Structural integrity	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
7	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
8	Pump Casing – Cooling tower makeup pump (DB-P116-1 & 2)	Structural integrity	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B

Table 3.3.2-6 Aging Management Review Results – Circulating Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
9	Pump Casing – Cooling tower makeup pump (DB-P116-1 & 2)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
10	Strainer (body)	Structural integrity	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
11	Strainer (body)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
12	Tubing	Structural integrity	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
13	Tubing	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
14	Valve Body	Structural integrity	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
15	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
6	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
8	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
9	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
10	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
11	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
12	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
13	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
14	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
15	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
16	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
17	Filter Housing	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
18	Filter Housing	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
19	Filter Housing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
20	Filter Housing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
21	Heat Exchanger (channel) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
22	Heat Exchanger (channel) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-5	3.3.1-77	B
23	Heat Exchanger (shell) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B

Table 3.3.2-7	Aging Management Review Results – Component Cooling Water System								
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
24	Heat Exchanger (shell) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
25	Heat Exchanger (shell) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
26	Heat Exchanger (tubes) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Heat transfer	Stainless Steel	Raw water (Internal)	Reduction in heat transfer	Open-Cycle Cooling Water	VII.C1-7	3.3.1-83	B

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
27	Heat Exchanger (tubes) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Heat transfer	Stainless Steel	Closed cycle cooling water (External)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.C2-3	3.3.1-52	B
28	Heat Exchanger (tubes) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Heat transfer	Stainless Steel	Closed cycle cooling water (External)	Reduction in heat transfer	One-Time Inspection	VII.C2-3	3.3.1-52	E 0314
29	Heat Exchanger (tubes) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	D

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
30	Heat Exchanger (tubes) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
31	Heat Exchanger (tubes) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D
32	Heat Exchanger (tubesheet) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	D

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
33	Heat Exchanger (tubesheet) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
34	Heat Exchanger (tubesheet) - Component cooling heat exchangers (DB-E22-1, 2 & 3)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D
35	Orifice	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
36	Orifice	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
37	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
38	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
39	Orifice	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
40	Orifice	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
41	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
42	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
43	Orifice	Throttling	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
44	Orifice	Throttling	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
45	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
46	Piping	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
47	Piping	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
48	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
49	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
50	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
51	Piping	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B
52	Piping	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314
53	Piping	Pressure boundary	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B 0310
54	Piping	Pressure boundary	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0310 0314
55	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
56	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
57	Piping	Pressure boundary	Steel	Gas (Internal)	None	None	VII.J-23	3.3.1-97	A
58	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
59	Piping	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
60	Piping	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
61	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
62	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
63	Piping	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
64	Piping	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B
65	Piping	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
66	Piping	Structural integrity	Steel	Closed cycle cooling water > 60ºC (> 140ºF) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B 0310
67	Piping	Structural integrity	Steel	Closed cycle cooling water > 60ºC (> 140ºF) (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0310 0314
68	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
69	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
70	Pump Casing - CRDC booster pumps (DB-P170-1 & 2)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
71	Pump Casing - CRDC booster pumps (DB-P170-1 & 2)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
72	Pump Casing - CRDC booster pumps (DB-P170-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-7	Aging Management Review Results – Component Cooling Water System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
73	Pump Casing - CRDC booster pumps (DB-P170-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
74	Pump Casing - Component cooling pumps (DB-P43-1, 2 & 3)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B
75	Pump Casing - Component cooling pumps (DB-P43-1, 2, 3)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314
76	Pump Casing - Component cooling pumps (DB-P43-1, 2 & 3)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
77	Tank - Chemical pot feeder (DB-T13)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C 0307
78	Tank - Chemical pot feeder (DB-T13)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
79	Tank - Chemical pot feeder (DB-T13)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
80	Tank - Chemical pot feeder (DB-T13)	Structural integrity	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0312 0332
81	Tank - Chemical pot feeder (DB-T13)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
82	Tank - Chemical pot feeder (DB-T13)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
83	Tank - Component cooling surge tank (DB-T12)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B
84	Tank - Component cooling surge tank (DB-T12)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314
85	Tank - Component cooling surge tank (DB-T12)	Pressure boundary	Steel	Gas (Internal)	None	None	VII.J-23	3.3.1-97	C
86	Tank - Component cooling surge tank (DB-T12)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
87	Tank - Component cooling surge tank (DB-T12)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
88	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
89	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
90	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
91	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
92	Tubing	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-4	3.3.1-51	B
93	Tubing	Structural integrity	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-4	3.3.1-51	E 0314
94	Tubing	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
95	Tubing	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
96	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
97	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
98	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
99	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
100	Valve Body	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
101	Valve Body	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
102	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
103	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
104	Valve Body	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
105	Valve Body	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314
106	Valve Body	Pressure boundary	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B 0310
107	Valve Body	Pressure boundary	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0310 0314
108	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
109	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
110	Valve Body	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
111	Valve Body	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
112	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-7 Aging Management Review Results – Component Cooling Water System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
113	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
114	Valve Body	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B
115	Valve Body	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314
116	Valve Body	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B 0310
117	Valve Body	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0310 0314
118	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
119	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
6	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
8	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
9	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
10	Bolting	Pressure boundary	Steel	Condensation (External)	Cracking	Bolting Integrity	N/A	N/A	H
11	Bolting	Pressure boundary	Steel	Condensation (External)	Loss of material	Bolting Integrity	VII.D-1	3.3.1-44	B
12	Bolting	Pressure boundary	Steel	Condensation (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
13	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
14	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
16	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
17	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
18	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
19	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
20	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
21	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
22	Damper Housing	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
23	Damper Housing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
24	Damper Housing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
25	Demister (DB-S432)	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
26	Demister (DB-S432)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
27	Demister (DB-S432)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
28	Demister (DB-S432)	Water removal	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
29	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A 0307

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
30	Duct	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
31	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A
32	Fan Housing - Hydrogen dilution system blowers (DB-C62-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C 0307
33	Fan Housing - Hydrogen dilution system blowers (DB-C62-1 & 2)	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	D
34	Fan Housing - Hydrogen dilution system blowers (DB-C62-1 & 2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
35	Fan Housing - Hydrogen dilution system blowers (DB-C62-1 &,2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
36	Filter Housing (DB-F60)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C 0307

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
37	Filter Housing (DB-F60)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
38	Filter Housing (DB-F60)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
39	Heat Exchanger (shell) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D
40	Heat Exchanger (shell) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	*Aging Effect* Requiring Management	*Aging* Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
41	Heat Exchanger (shell) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
42	Heat Exchanger (shell) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
43	Heat Exchanger (tubes) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Heat transfer	Stainless Steel	Air-indoor uncontrolled (Internal)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
44	Heat Exchanger (tubes) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Heat transfer	Stainless Steel	Closed cycle cooling water (External)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.C2-3	3.3.1-52	B
45	Heat Exchanger (tubes) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Heat transfer	Stainless Steel	Closed cycle cooling water (External)	Reduction in heat transfer	One-Time Inspection	VII.C2-3	3.3.1-52	E 0314
46	Heat Exchanger (tubes) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
47	Heat Exchanger (tubes) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D
48	Heat Exchanger (tubes) - Containment gas analyzer heat exchangers (DB-E197-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
49	Moisture Separator (DB-F131 & 132)	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
50	Moisture Separator (DB-F131 & 132)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
51	Moisture Separator (DB-F131 & 132)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
52	Moisture Separator (DB-F131 & 132)	Water removal	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
53	Moisture Separator (DB-S404-1 & 2)	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F2-3	3.3.1-72	E
54	Moisture Separator (DB-S404-1 & 2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
55	Moisture Separator (DB-S404-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
56	Moisture Separator (DB-S404-1 & 2)	Water removal	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F2-3	3.3.1-72	E
57	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
58	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
59	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
60	Orifice	Throttling	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
61	Orifice	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
62	Orifice	Pressure boundary	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E
63	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
64	Piping	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
65	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
66	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
67	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
68	Piping	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
69	Piping	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
70	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
71	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
72	Piping	Pressure boundary	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
73	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
74	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
75	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
76	Piping	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
77	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
78	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
79	Pump Casing - Containment hydrogen analyzer pumps (DB-P267-1, -2, & DB-268-1, -2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
80	Pump Casing - Containment hydrogen analyzer pumps (DB-P267-1, -2, & DB-268-1, -2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
81	Pump Casing - Containment hydrogen analyzer pumps (DB-P267-1, -2, & DB-268-1, -2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
82	Silencer (muffler)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
83	Silencer (muffler)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
84	Silencer (muffler)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
85	Tank - Containment radiation monitor moisture accumulation tank (DB-T216)	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
86	Tank - Containment radiation monitor moisture accumulation tank (DB-T216)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
87	Tank - Containment radiation monitor moisture accumulation tank (DB-T216)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
88	Trap Body	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
89	Trap Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
90	Trap Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
91	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
92	Tubing	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
93	Tubing	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
94	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
95	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
96	Tubing	Pressure boundary	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E
97	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
98	Tubing	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
99	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
100	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
101	Tubing	Structural integrity	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	*Aging Effect* Requiring Management	*Aging* Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
102	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
103	Valve Body	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
104	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
105	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
106	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
107	Valve Body	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-3	3.3.1-72	E
108	Valve Body	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
109	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-8 Aging Management Review Results – Containment Hydrogen Control System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
110	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
111	Valve Body	Pressure boundary	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
112	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
113	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
114	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
115	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
116	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
117	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-9 Aging Management Review Results – Containment Purge System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
2	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
4	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
5	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
6	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
7	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
8	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-9 Aging Management Review Results – Containment Purge System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
9	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
10	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
11	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
12	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-10 Aging Management Review Results – Containment Vacuum Relief System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
2	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
4	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
5	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-10 Aging Management Review Results – Containment Vacuum Relief System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
6	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
7	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
8	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
9	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-11 Aging Management Review Results – Demineralized Water Storage System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
6	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F

Table 3.3.2-11 Aging Management Review Results – Demineralized Water Storage System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
8	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
10	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
11	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
12	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
13	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307

Table 3.3.2-11 Aging Management Review Results – Demineralized Water Storage System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
14	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E4-14	3.3.1-24	A
15	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E4-14	3.3.1-24	A
16	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
17	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
18	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
19	Piping	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E4-14	3.3.1-24	A
20	Piping	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E4-14	3.3.1-24	A
21	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
22	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-11 Aging Management Review Results – Demineralized Water Storage System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
23	Piping	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
24	Piping	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E4-17	3.3.1-17	A
25	Piping	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E4-17	3.3.1-17	A
26	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
27	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
28	Tank - Lab. demin. water storage tank (DB-T108)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C 0307
29	Tank - Lab. demin. water storage tank (DB-T108)	Structural integrity	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0312 0332
30	Tank - Lab. demin. water storage tank (DB-T108)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E4-14	3.3.1-24	C

Table 3.3.2-11 Aging Management Review Results – Demineralized Water Storage System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
31	Tank - Lab. demin. water storage tank (DB-T108)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E4-14	3.3.1-24	C
32	Tank - Lab. demin. water storage tank (DB-T108)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
33	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E4-14	3.3.1-24	A
34	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E4-14	3.3.1-24	A
35	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
36	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
37	Valve Body	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E4-14	3.3.1-24	A
38	Valve Body	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E4-14	3.3.1-24	A

Table 3.3.2-11	Aging Management Review Results – Demineralized Water Storage System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
39	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
40	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
41	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E4-14	3.3.1-24	A
42	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E4-14	3.3.1-24	A
43	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
44	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
45	Valve Body	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E4-17	3.3.1-17	A
46	Valve Body	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E4-17	3.3.1-17	A
47	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-11 Aging Management Review Results – Demineralized Water Storage System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
48	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
2	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
4	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
5	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	Bolting Integrity	VII.I-1	3.3.1-43	B
6	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
7	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
9	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
10	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
11	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
12	Bolting	Structural integrity	Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
13	Compressor Casing – Turbocharger (DB-C148-1 & 2)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
14	Compressor Casing – Turbocharger (DB-C148-1 & 2)	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Compressor Casing – Turbocharger (DB-C148-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
16	Filter Body	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
17	Filter Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
18	Filter Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A
19	Filter Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
20	Filter Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
21	Filter Body	Pressure boundary	Steel	Lubricating oil (Internal)	None	None	N/A	N/A	I 0325
22	Filter Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
23	Filter Body	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
24	Flame Arrestor	Pressure boundary	Aluminum	Air-outdoor (Internal)	None	None	N/A	N/A	G
25	Flame Arrestor	Pressure boundary	Aluminum	Air-outdoor (External)	None	None	N/A	N/A	G
26	Flexible Connection	Pressure boundary	Elastomer	Air-outdoor (Internal)	Hardening and loss of strength	External Surfaces Monitoring	VII.G-2	3.3.1-61	E
27	Flexible Connection	Pressure boundary	Elastomer	Fuel oil (Internal)	None	None	N/A	N/A	F
28	Flexible Connection	Pressure boundary	Elastomer	Lubricating oil (Internal)	None	None	N/A	N/A	F
29	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
30	Flexible Connection	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
31	Flexible Connection	Pressure boundary	Stainless Steel	Diesel exhaust (Internal)	Cracking	One-Time Inspection	VII.H2-1	3.3.1-06	E
32	Flexible Connection	Pressure boundary	Stainless Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
33	Flexible Connection	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-6	3.3.1-32	B
34	Flexible Connection	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-6	3.3.1-32	A
35	Flexible Connection	Pressure boundary	Stainless Steel	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VII.H2-17	3.3.1-33	A
36	Flexible Connection	Pressure boundary	Stainless Steel	Lubricating oil (External)	Loss of material	One-Time Inspection	VII.H2-17	3.3.1-33	A
37	Flexible Connection	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
38	Heat Exchanger (shell) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
39	Heat Exchanger (shell) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
40	Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.C2-2	3.3.1-52	B
41	Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	One-Time Inspection	VII.C2-2	3.3.1-52	E
42	Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Heat transfer	Copper Alloy > 15% Zn	Air-outdoor (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H
43	Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	Closed Cooling Water Chemistry	N/A	N/A	H
44	Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	One-Time Inspection	N/A	N/A	H

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
45	Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-2	3.3.1-51	B
46	Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-2	3.3.1-51	E 0314
47	Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	VII.H2-12	3.3.1-84	C
48	Heat Exchanger (tubes) – Aftercooler (DB-E196-1A, 1B, 2A, & 2B)	Pressure boundary	Copper Alloy > 15% Zn	Air-outdoor (External)	None	None	N/A	N/A	G
49	Heat Exchanger (shell) – EDG immersion heater	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
50	Heat Exchanger (shell) – EDG immersion heater	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
51	Heat Exchanger (shell) – EDG immersion heater	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
52	Heat Exchanger (channel) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
53	Heat Exchanger (channel) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
54	Heat Exchanger (channel) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-12	Aging Management Review Results – Emergency Diesel Generators System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
55	Heat Exchanger (shell) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
56	Heat Exchanger (shell) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
57	Heat Exchanger (shell) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
58	Heat Exchanger (tubes) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Heat transfer	Steel	Closed cycle cooling water (Internal)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.F4-9	3.3.1-52	B

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
59	Heat Exchanger (tubes) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Heat transfer	Steel	Closed cycle cooling water (Internal)	Reduction in heat transfer	One-Time Inspection	VII.F4-9	3.3.1-52	E 0314
60	Heat Exchanger (tubes) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Heat transfer	Steel	Closed cycle cooling water (External)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.F4-9	3.3.1-52	B
61	Heat Exchanger (tubes) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Heat transfer	Steel	Closed cycle cooling water (External)	Reduction in heat transfer	One-Time Inspection	VII.F4-9	3.3.1-52	E 0314
62	Heat Exchanger (tubes) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
63	Heat Exchanger (tubes) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
64	Heat Exchanger (tubes) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
65	Heat Exchanger (tubes) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
66	Heat Exchanger (tubesheet) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
67	Heat Exchanger (tubesheet) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
68	Heat Exchanger (tubesheet) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
69	Heat Exchanger (tubesheet) – EDG jacket cooling water heat exchanger (DB-E10-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
70	Heat Exchanger (shell) – Lube oil cooler (DB-E94-1 & 2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-5	3.3.1-21	A
71	Heat Exchanger (shell) – Lube oil cooler (DB-E94-1 & 2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-5	3.3.1-21	A

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
72	Heat Exchanger (shell) – Lube oil cooler (DB-E94-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
73	Heat Exchanger (tubes) – Lube oil cooler (DB-E94-1 & 2)	Heat transfer	Stainless Steel	Closed cycle cooling water (Internal)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.C2-3	3.3.1-52	B
74	Heat Exchanger (tubes) – Lube oil cooler (DB-E94-1 & 2)	Heat transfer	Stainless Steel	Closed cycle cooling water (Internal)	Reduction in heat transfer	One-Time Inspection	VII.C2-3	3.3.1-52	E
75	Heat Exchanger (tubes) – Lube oil cooler (DB-E94-1 & 2)	Heat transfer	Stainless Steel	Lubricating oil (External)	Reduction in heat transfer	Lubricating Oil Analysis	V.D1-10	3.2.1-09	A
76	Heat Exchanger (tubes) – Lube oil cooler (DB-E94-1 & 2)	Heat transfer	Stainless Steel	Lubricating oil (External)	Reduction in heat transfer	One-Time Inspection	V.D1-10	3.2.1-09	A
77	Heat Exchanger (tubes) – Lube oil cooler (DB-E94-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D

Table 3.3.2-12	Aging Management Review Results – Emergency Diesel Generators System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
78	Heat Exchanger (tubes) – Lube oil cooler (DB-E94-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
79	Heat Exchanger (tubes) – Lube oil cooler (DB-E94-1 & 2)	Pressure boundary	Stainless Steel	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VII.H2-17	3.3.1-33	C
80	Heat Exchanger (tubes) – Lube oil cooler (DB-E94-1 & 2)	Pressure boundary	Stainless Steel	Lubricating oil (External)	Loss of material	One-Time Inspection	VII.H2-17	3.3.1-33	C
81	Piping	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-6	3.3.1-32	B
82	Piping	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-6	3.3.1-32	A
83	Piping	Pressure boundary	Stainless Steel	Fuel oil (External)	Loss of material	Fuel Oil Chemistry	VII.H1-6	3.3.1-32	B
84	Piping	Pressure boundary	Stainless Steel	Fuel oil (External)	Loss of material	One-Time Inspection	VII.H1-6	3.3.1-32	A
85	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
86	Piping	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
87	Piping	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.H2-23	3.3.1-47	B
88	Piping	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.H2-23	3.3.1-47	E 0314
89	Piping	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-2	3.3.1-53	E
90	Piping	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
91	Piping	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
92	Piping	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B
93	Piping	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A
94	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
95	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
96	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
97	Piping	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
98	Piping	Pressure boundary	Steel	Fuel oil (External)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B 0326
99	Piping	Pressure boundary	Steel	Fuel oil (External)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A 0326
100	Piping	Pressure boundary	Steel	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
101	Piping	Pressure boundary	Steel	Lubricating oil (External)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
102	Piping	Pressure boundary	Steel	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.H1-9	3.3.1-19	A
103	Piping	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
104	Piping	Structural integrity	Stainless Steel	Air (Internal)	None	None	N/A	N/A	G
105	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
106	Piping	Structural integrity	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
107	Piping	Structural integrity	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
108	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
109	Piping	Structural integrity	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
110	Pump Casing – DC turbo oil pump (DB-P147-5 & 6)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
111	Pump Casing – DC turbo oil pump (DB-P147-5 & 6)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
112	Pump Casing – DC turbo oil pump (DB-P147-5 & 6)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
113	Pump Casing – Engine-driven main lube oil pump (DB-P150-1 & 2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
114	Pump Casing – Engine-driven main lube oil pump (DB-P150-1 & 2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
115	Pump Casing – Engine-driven main lube oil pump (DB-P150-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
116	Pump Casing – Engine-driven piston cooling pump (DB-P265-1 & 2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
117	Pump Casing – Engine-driven piston cooling pump (DB-P265-1 & 2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
118	Pump Casing – Engine-driven piston cooling pump (DB-P265-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-12	Aging Management Review Results – Emergency Diesel Generators System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
119	Pump Casing – Engine-driven scavenger pump (DB-P264-1 & 2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
120	Pump Casing – Engine-driven scavenger pump (DB-P264-1 & 2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
121	Pump Casing – Engine-driven scavenger pump (DB-P264-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
122	Pump Casing – Transfer pump (DB-P195-1 & 2)	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-6	3.3.1-32	B
123	Pump Casing – Transfer pump (DB-P195-1 & 2)	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-6	3.3.1-32	A
124	Pump Casing – Transfer pump (DB-P195-1 & 2)	Pressure boundary	Stainless Steel	Fuel oil (External)	Loss of material	Fuel Oil Chemistry	VII.H1-6	3.3.1-32	B
125	Pump Casing – Transfer pump (DB-P195-1 & 2)	Pressure boundary	Stainless Steel	Fuel oil (External)	Loss of material	One-Time Inspection	VII.H1-6	3.3.1-32	A

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
126	Silencer (exhaust)	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
127	Silencer (exhaust)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
128	Silencer (intake)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
129	Silencer (intake)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
130	Strainer (body)	Pressure boundary	Aluminum	Air (Internal)	None	None	N/A	N/A	G
131	Strainer (body)	Pressure boundary	Aluminum	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	N/A	N/A	G
132	Strainer (body)	Pressure boundary	Aluminum	Lubricating oil (Internal)	Loss of material	One-Time Inspection	N/A	N/A	G
133	Strainer (body)	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	VII.J-1	3.3.1-95	A
134	Strainer (body)	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
135	Strainer (body)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
136	Strainer (body)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A
137	Strainer (body)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
138	Strainer (body)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
139	Strainer (body)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
140	Strainer (body)	Structural integrity	Stainless Steel	Air (Internal)	None	None	N/A	N/A	G
141	Strainer (body)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
142	Strainer (screen)	Filtration	Stainless Steel	Air (Internal)	None	None	N/A	N/A	G
143	Strainer (screen)	Filtration	Stainless Steel	Fuel oil (External)	Loss of material	Fuel Oil Chemistry	VII.H2-16	3.3.1-32	B

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
144	Strainer (screen)	Filtration	Stainless Steel	Fuel oil (External)	Loss of material	One-Time Inspection	VII.H2-16	3.3.1-32	A
145	Strainer (screen)	Filtration	Stainless Steel	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VII.H2-17	3.3.1-33	A
146	Strainer (screen)	Filtration	Stainless Steel	Lubricating oil (External)	Loss of material	One-Time Inspection	VII.H2-17	3.3.1-33	A
147	Tank – EDG day tank (DB-T46-1 & 2)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.H1-8	3.3.1-60	C 0307
148	Tank – EDG day tank (DB-T46-1 & 2)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
149	Tank – EDG day tank (DB-T46-1 & 2)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A
150	Tank – EDG day tank (DB-T46-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
151	Tank – EDG fuel oil storage tank (DB-T153-1 & 2)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.H1-8	3.3.1-60	C 0307
152	Tank – EDG fuel oil storage tank (DB-T153-1 & 2)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
153	Tank – EDG fuel oil storage tank (DB-T153-1 & 2)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A
154	Tank – EDG fuel oil storage tank (DB-T153-1 & 2)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.H1-8	3.3.1-60	C
155	Tank – EDG fuel oil storage tank (DB-T153-1 & 2)	Pressure boundary	Steel	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.H1-9	3.3.1-19	C
156	Tank – EDG starting air receiver (DB-T86-1, 2, 3, & 4)	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
157	Tank – EDG starting air receiver (DB-T86-1, 2, 3, & 4)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
158	Tank – Jacket water expansion tank (DB-T121-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
159	Tank – Jacket water expansion tank (DB-T121-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.H2-23	3.3.1-47	B
160	Tank – Jacket water expansion tank (DB-T121-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.H2-23	3.3.1-47	E 0314
161	Tank – Jacket water expansion tank (DB-T121-1 & 2)	Pressure boundary	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0313
162	Tank – Jacket water expansion tank (DB-T121-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
163	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
164	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
165	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
166	Tubing	Pressure boundary	Stainless Steel	Air (Internal)	None	None	N/A	N/A	G
167	Tubing	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-6	3.3.1-32	B
168	Tubing	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-6	3.3.1-32	A
169	Tubing	Pressure boundary	Stainless Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-17	3.3.1-33	A
170	Tubing	Pressure boundary	Stainless Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-17	3.3.1-33	A
171	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
172	Tubing	Pressure boundary	Stainless Steel	Fuel oil (External)	Loss of material	Fuel Oil Chemistry	VII.H1-6	3.3.1-32	B
173	Tubing	Pressure boundary	Stainless Steel	Fuel oil (External)	Loss of material	One-Time Inspection	VII.H1-6	3.3.1-32	A
174	Tubing	Structural integrity	Stainless Steel	Air-outdoor (Internal)	None	None	N/A	N/A	G

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
175	Tubing	Structural integrity	Stainless Steel	Diesel exhaust (Internal)	Cracking	One-Time Inspection	VII.H2-1	3.3.1-06	E
176	Tubing	Structural integrity	Stainless Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
177	Tubing	Structural integrity	Stainless Steel	Air (Internal)	None	None	N/A	N/A	G
178	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
179	Valve Body	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-16	3.3.1-32	B
180	Valve Body	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-16	3.3.1-32	A
181	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
182	Valve Body	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
183	Valve Body	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.H2-23	3.3.1-47	B

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
184	Valve Body	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.H2-23	3.3.1-47	E 0314
185	Valve Body	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-2	3.3.1-53	E
186	Valve Body	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
187	Valve Body	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
188	Valve Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B
189	Valve Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A
190	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
191	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
192	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-12 Aging Management Review Results – Emergency Diesel Generators System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
193	Valve Body	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
194	Valve Body	Pressure boundary	Steel	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
195	Valve Body	Pressure boundary	Steel	Lubricating oil (External)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
196	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
197	Valve Body	Structural integrity	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
198	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-13	Aging Management Review Results – Emergency Ventilation System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
2	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
4	Damper Housing	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A 0301
5	Damper Housing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
6	Damper Housing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A
7	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A 0301
8	Duct	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-13 Aging Management Review Results – Emergency Ventilation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
9	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A
10	Fan Housing – Emergency ventilation fans (DB-C30-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A 0301
11	Fan Housing – Emergency ventilation fans (DB-C30-1 & 2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
12	Fan Housing – Emergency ventilation fans (DB-C30-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A
13	Filter Housing – Emergency ventilation system filter units (DB-F19-1 & 2)	Pressure boundary	Glass	Air-indoor uncontrolled (Internal)	None	None	VII.J-8	3.3.1-93	C 0301
14	Filter Housing – Emergency ventilation system filter units (DB-F19-1 & 2)	Pressure boundary	Glass	Air with borated water leakage (External)	None	None	N/A	N/A	G

Table 3.3.2-13 Aging Management Review Results – Emergency Ventilation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Filter Housing – Emergency ventilation system filter units (DB-F19-1 & 2)	Pressure boundary	Glass	Air-indoor uncontrolled (External)	None	None	VII.J-8	3.3.1-93	C
16	Filter Housing – Emergency ventilation system filter units (DB-F19-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A 0301
17	Filter Housing – Emergency ventilation system filter units (DB-F19-1 & 2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
18	Filter Housing – Emergency ventilation system filter units (DB-F19-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F2-2	3.3.1-56	A
19	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (Internal)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
20	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E

Table 3.3.2-13 Aging Management Review Results – Emergency Ventilation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
21	Mechanical Sealant	Pressure boundary	Elastomer	Air-indoor uncontrolled (Internal)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
22	Mechanical Sealant	Pressure boundary	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
23	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0301
24	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
25	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
26	Tubing	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0301
27	Tubing	Pressure boundary	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
28	Tubing	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
29	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0301

Table 3.3.2-13 Aging Management Review Results – Emergency Ventilation System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
30	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A 0305
31	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
32	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0301
33	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A 0305
34	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
Fire Protection System									
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
6	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
7	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
9	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
10	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	Bolting Integrity	VII.I-1	3.3.1-43	B
11	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
12	Bolting	Pressure boundary	Steel	Raw water (External)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	G 0324
13	Bolting	Pressure boundary	Steel	Raw water (External)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-19	3.3.1-76	E 0324
14	Bolting	Pressure boundary	Steel	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.G-25	3.3.1-19	C
15	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
16	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
17	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
18	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
19	Heat Exchanger (channel) – Fire water storage tank heat exchanger (DB-E52)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.G-5	3.3.1-59	A
20	Heat Exchanger (channel) – Fire water storage tank heat exchanger (DB-E52)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	C

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
21	Heat Exchanger (shell) – Fire water storage tank heat exchanger (DB-E52)	Pressure boundary	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-8	3.4.1-37	E 0315
22	Heat Exchanger (shell) – Fire water storage tank heat exchanger (DB-E52)	Pressure boundary	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-8	3.4.1-37	C
23	Heat Exchanger (shell) – Fire water storage tank heat exchanger (DB-E52)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.G-5	3.3.1-59	A
24	Heat Exchanger (tubes) – Fire water storage tank heat exchanger (DB-E52)	Heat transfer	Stainless Steel	Raw water (Internal)	Reduction in heat transfer	Collection, Drainage, and Treatment Components Inspection	VII.G-7	3.3.1-83	E

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
25	Heat Exchanger (tubes) – Fire water storage tank heat exchanger (DB-E52)	Heat transfer	Stainless Steel	Steam (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	G
26	Heat Exchanger (tubesheet) - Fire water storage tank heat exchanger (DB-E52)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	C
27	Heat Exchanger (tubesheet) - Fire water storage tank heat exchanger (DB-E52)	Pressure boundary	Steel	Steam (External)	Loss of material	One-Time Inspection	VIII.B1-8	3.4.1-37	E 0315
28	Heat Exchanger (tubesheet) - Fire water storage tank heat exchanger (DB-E52)	Pressure boundary	Steel	Steam (External)	Loss of material	PWR Water Chemistry	VIII.B1-8	3.4.1-37	C
29	Hydrant	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
30	Hydrant	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
31	Hydrant	Pressure boundary	Gray Cast Iron	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
32	Hydrant	Pressure boundary	Gray Cast Iron	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.G-25	3.3.1-19	A
33	Hydrant	Pressure boundary	Gray Cast Iron	Soil (External)	Loss of material	Selective Leaching Inspection	VII.G-15	3.3.1-85	A
34	Orifice	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
35	Orifice	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
36	Orifice	Throttling	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
37	Piping	Pressure boundary	Copper Alloy	Raw water (Internal)	Loss of material	Fire Water	VII.G-12	3.3.1-70	A
38	Piping	Pressure boundary	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
39	Piping	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
40	Piping	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
41	Piping	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
42	Piping	Pressure boundary	Gray Cast Iron	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
43	Piping	Pressure boundary	Gray Cast Iron	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.G-25	3.3.1-19	A
44	Piping	Pressure boundary	Gray Cast Iron	Soil (External)	Loss of material	Selective Leaching Inspection	VII.G-15	3.3.1-85	A
45	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	C 0307
46	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
47	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
48	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
49	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
50	Piping	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
51	Piping	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
52	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
53	Piping	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
54	Piping	Pressure boundary	Steel	Concrete (External)	None	None	VII.J-21	3.3.1-96	A
55	Piping	Pressure boundary	Steel	Raw water (External)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A 0323
56	Piping	Pressure boundary	Steel	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.G-25	3.3.1-19	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
57	Piping	Structural integrity	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
58	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
59	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
60	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Moist air (Internal)	Loss of material	Selective Leaching Inspection	N/A	N/A	H 0321
61	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313
62	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
63	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
64	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
65	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Moist air (External)	Loss of material	Selective Leaching Inspection	N/A	N/A	G 0321
66	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Moist air (External)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313 0322
67	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Raw water (External)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
68	Pump Casing – Diesel fire pump (DB-P5-2)	Pressure boundary	Gray Cast Iron	Raw water (External)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
69	Pump Casing – Electric fire pump (DB-P5-1)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
70	Pump Casing – Electric fire pump (DB-P5-1)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
71	Pump Casing – Electric fire pump (DB-P5-1)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
72	Pump Casing – Fire water storage tank recirculation pump (DB-P114)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
73	Pump Casing – Fire water storage tank recirculation pump (DB-P114)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
74	Pump Casing – Fire water storage tank recirculation pump (DB-P114)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
75	Spray Nozzle	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	VIII.I-2	3.4.1-41	A 0307
76	Spray Nozzle	Pressure boundary	Copper Alloy > 15% Zn	Air-outdoor (Internal)	None	None	N/A	N/A	G
77	Spray Nozzle	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Fire Water	N/A	N/A	H
78	Spray Nozzle	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Fire Water	VII.G-12	3.3.1-70	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
79	Spray Nozzle	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-13	3.3.1-84	A
80	Spray Nozzle	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
81	Spray Nozzle	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
82	Spray Nozzle	Pressure boundary	Copper Alloy > 15% Zn	Air-outdoor (External)	None	None	N/A	N/A	G
83	Spray Nozzle	Spray	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	VIII.I-2	3.4.1-41	A 0307
84	Spray Nozzle	Spray	Copper Alloy > 15% Zn	Air-outdoor (Internal)	None	None	N/A	N/A	G
85	Spray Nozzle	Spray	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Fire Water	N/A	N/A	H
86	Spray Nozzle	Spray	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Fire Water	VII.G-12	3.3.1-70	A
87	Spray Nozzle	Spray	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-13	3.3.1-84	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
88	Spray Nozzle	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Fire Water	N/A	N/A	H
89	Spray Nozzle	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Fire Water	VII.G-12	3.3.1-70	A
90	Spray Nozzle	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-13	3.3.1-84	A
91	Spray Nozzle	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
92	Spray Nozzle	Structural integrity	Copper Alloy > 15% Zn	Air-outdoor (External)	None	None	N/A	N/A	G
93	Strainer (body)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
94	Strainer (body)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
95	Strainer (body)	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
96	Strainer (body)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
97	Strainer (body)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
98	Strainer (body)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
99	Strainer (body)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
100	Strainer (screen)	Filtration	Copper Alloy > 15% Zn	Raw water (External)	Cracking	Fire Water	N/A	N/A	H
101	Strainer (screen)	Filtration	Copper Alloy > 15% Zn	Raw water (External)	Loss of material	Fire Water	VII.G-12	3.3.1-70	A
102	Strainer (screen)	Filtration	Copper Alloy > 15% Zn	Raw water (External)	Loss of material	Selective Leaching Inspection	VII.G-13	3.3.1-84	A
103	Strainer (screen)	Filtration	Stainless Steel	Raw water (External)	Loss of material	Fire Water	VII.G-19	3.3.1-69	A
104	Tank – Fire water storage tank (DB-T81)	Pressure boundary	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313
105	Tank – Fire water storage tank (DB-T81)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	C

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
106	Tank – Fire water storage tank (DB-T81)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	Aboveground Steel Tanks Inspection	VII.H1-11	3.3.1-40	A
107	Tank – Retard chamber	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	VIII.I-2	3.4.1-41	C 0307
108	Tank – Retard chamber	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	C
109	Tank – Retard chamber	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	C
110	Tank – Retard chamber	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
111	Tank – Retard chamber	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
112	Tank – Retard chamber	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
113	Tubing	Pressure boundary	Copper Alloy	Raw water (Internal)	Loss of material	Fire Water	VII.G-12	3.3.1-70	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
114	Tubing	Pressure boundary	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
115	Tubing	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
116	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
117	Tubing	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
118	Tubing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
119	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
120	Tubing	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
121	Tubing	Structural integrity	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
122	Tubing	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
123	Valve Body	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (Internal)	None	None	VIII.I-2	3.4.1-41	A 0307
124	Valve Body	Pressure boundary	Copper Alloy	Air-outdoor (Internal)	None	None	N/A	N/A	G
125	Valve Body	Pressure boundary	Copper Alloy	Raw water (Internal)	Loss of material	Fire Water	VII.G-12	3.3.1-70	A
126	Valve Body	Pressure boundary	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
127	Valve Body	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
128	Valve Body	Pressure boundary	Copper Alloy	Air-outdoor (External)	None	None	N/A	N/A	G
129	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	VIII.I-2	3.4.1-41	A
130	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-outdoor (Internal)	None	None	N/A	N/A	G

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
131	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Fire Water	N/A	N/A	H
132	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Fire Water	VII.G-12	3.3.1-70	A
133	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-13	3.3.1-84	A
134	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
135	Valve Body	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
136	Valve Body	Pressure boundary	Gray Cast Iron	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
137	Valve Body	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
138	Valve Body	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
139	Valve Body	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
140	Valve Body	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
141	Valve Body	Pressure boundary	Gray Cast Iron	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
142	Valve Body	Pressure boundary	Gray Cast Iron	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.G-25	3.3.1-19	A
143	Valve Body	Pressure boundary	Gray Cast Iron	Soil (External)	Loss of material	Selective Leaching Inspection	VII.G-15	3.3.1-85	A
144	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
145	Valve Body	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
146	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
147	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
148	Valve Body	Structural integrity	Copper Alloy	Raw water (Internal)	Loss of material	Fire Water	VII.G-12	3.3.1-70	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
149	Valve Body	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
150	Valve Body	Structural integrity	Copper Alloy	Air-outdoor (External)	None	None	N/A	N/A	G
151	Valve Body	Structural integrity	Gray Cast Iron	Raw water (Internal)	Loss of material	Fire Water	VII.G-24	3.3.1-68	A
152	Valve Body	Structural integrity	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
153	Valve Body	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
Fire Pump Diesel Engine and Associated Components									
154	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
155	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
156	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
157	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
158	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	Bolting Integrity	VII.I-1	3.3.1-43	B
159	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
160	Compressor Casing – Turbocharger	Pressure boundary	Aluminum	Air-indoor uncontrolled (Internal)	None	None	V.F-2	3.2.1-50	A 0307
161	Compressor Casing – Turbocharger	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	V.F-2	3.2.1-50	A
162	Compressor Casing – Turbocharger	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
163	Compressor Casing – Turbocharger	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
164	Compressor Casing – Turbocharger	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
165	Filter Body	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-24	3.3.1-68	E
166	Filter Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
167	Filter Body	Pressure boundary	Steel	Lubricating oil (Internal)	None	None	N/A	N/A	I 0325
168	Filter Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
169	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (Internal)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
170	Flexible Connection	Pressure boundary	Elastomer	Fuel oil (Internal)	None	None	N/A	N/A	F
171	Flexible Connection	Pressure boundary	Elastomer	Lubricating oil (Internal)	None	None	N/A	N/A	F
172	Flexible Connection	Pressure boundary	Elastomer	Raw water (Internal)	Hardening and loss of strength	One-Time Inspection	VII.C1-1	3.3.1-75	E

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
173	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
174	Flexible Connection	Pressure boundary	Stainless Steel	Diesel exhaust (Internal)	Cracking	One-Time Inspection	VII.H2-1	3.3.1-06	E
175	Flexible Connection	Pressure boundary	Stainless Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
176	Flexible Connection	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.G-17	3.3.1-32	B
177	Flexible Connection	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.G-17	3.3.1-32	A
178	Flexible Connection	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-19	3.3.1-69	E
179	Flexible Connection	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
180	Gear Housing	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.G-22	3.3.1-14	C 0304

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
181	Gear Housing	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.G-22	3.3.1-14	C
182	Gear Housing	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
183	Heat Exchanger (shell) – Gear housing oil cooler	Pressure boundary	Aluminum	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	N/A	N/A	G
184	Heat Exchanger (shell) – Gear housing oil cooler	Pressure boundary	Aluminum	Lubricating oil (Internal)	Loss of material	One-Time Inspection	N/A	N/A	G
185	Heat Exchanger (shell) – Gear housing oil cooler	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	V.F-2	3.2.1-50	C
186	Heat Exchanger (tubes) – Gear housing oil cooler	Heat transfer	Copper Alloy	Raw water (Internal)	Reduction in heat transfer	Collection, Drainage, and Treatment Components Inspection	VII.C1-6	3.3.1-83	E

Table 3.3.2-14	Aging Management Review Results – Fire Protection System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
187	Heat Exchanger (tubes) – Gear housing oil cooler	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	Lubricating Oil Analysis	V.A-12	3.2.1-09	A
188	Heat Exchanger (tubes) – Gear housing oil cooler	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	One-Time Inspection	V.A-12	3.2.1-09	A
189	Heat Exchanger (tubes) – Gear housing oil cooler	Pressure boundary	Copper Alloy	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-12	3.3.1-70	E
190	Heat Exchanger (tubes) – Gear housing oil cooler	Pressure boundary	Copper Alloy	Lubricating oil (External)	None	None	VII.G-11	3.3.1-26	I 0302
191	Heat Exchanger (shell) – Radiator	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H
192	Heat Exchanger (shell) – Radiator	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-12	3.3.1-70	E

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
193	Heat Exchanger (shell) – Radiator	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.C1-4	3.3.1-84	A
194	Heat Exchanger (shell) – Radiator	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	C
195	Heat Exchanger (tubes) – Radiator	Heat transfer	Copper Alloy > 15% Zn	Raw water (Internal)	Reduction in heat transfer	Collection, Drainage, and Treatment Components Inspection	VII.C1-6	3.3.1-83	E
196	Heat Exchanger (tubes) – Radiator	Heat transfer	Copper Alloy > 15% Zn	Raw water (External)	Reduction in heat transfer	Collection, Drainage, and Treatment Components Inspection	VII.C1-6	3.3.1-83	E
197	Heat Exchanger (tubes) – Radiator	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H
198	Heat Exchanger (tubes) – Radiator	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-12	3.3.1-70	E 0303

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
199	Heat Exchanger (tubes) – Radiator	Pressure boundary	Copper Alloy > 15% Zn	Raw water (External)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H
200	Heat Exchanger (tubes) – Radiator	Pressure boundary	Copper Alloy > 15% Zn	Raw water (External)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-12	3.3.1-70	E 0303
201	Piping	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
202	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.G-22	3.3.1-14	A
203	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.G-22	3.3.1-14	A
204	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
205	Piping	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
206	Silencer (exhaust)	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
207	Silencer (exhaust)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
208	Tubing	Pressure boundary	Stainless Steel	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VII.H2-17	3.3.1-33	A
209	Tubing	Pressure boundary	Stainless Steel	Lubricating oil (External)	Loss of material	One-Time Inspection	VII.H2-17	3.3.1-33	A
210	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
211	Tubing	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
212	Tubing	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A
213	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.G-22	3.3.1-14	A
214	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.G-22	3.3.1-14	A

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
215	Tubing	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-24	3.3.1-68	E
216	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
217	Valve Body	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-24	3.3.1-68	E
218	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H
219	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-12	3.3.1-70	E
220	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.C1-4	3.3.1-84	C
221	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	C

Table 3.3.2-14 Aging Management Review Results – Fire Protection System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
222	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.G-22	3.3.1-14	A
223	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.G-22	3.3.1-14	A
224	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-15 Aging Management Review Results – Fuel Oil System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	G
2	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
4	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	Bolting Integrity	VII.I-1	3.3.1-43	B
5	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
6	Flexible Connection	Pressure boundary	Elastomer	Fuel oil (Internal)	None	None	N/A	N/A	F
7	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
8	Piping	Pressure boundary	Copper Alloy	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-3	3.3.1-32	B
9	Piping	Pressure boundary	Copper Alloy	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-3	3.3.1-32	A

Table 3.3.2-15 Aging Management Review Results – Fuel Oil System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
10	Piping	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
11	Piping	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B
12	Piping	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A
13	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
14	Piping	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
15	Piping	Pressure boundary	Steel	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.H1-9	3.3.1-19	A
16	Pump Casing – Diesel Oil Transfer Pump (DB-P8-1)	Pressure boundary	Gray cast iron	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B
17	Pump Casing – Diesel Oil Transfer Pump (DB-P8-1)	Pressure boundary	Gray cast iron	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A
18	Pump Casing – Diesel Oil Transfer Pump (DB-P8-1)	Pressure boundary	Gray cast iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-15 Aging Management Review Results – Fuel Oil System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
19	Strainer (body)	Pressure boundary	Gray cast iron	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
20	Strainer (body)	Pressure boundary	Gray cast iron	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A
21	Strainer (body)	Pressure boundary	Gray cast iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
22	Strainer (screen)	Filtration	Stainless Steel	Fuel oil (External)	Loss of material	Fuel Oil Chemistry	VII.H2-16	3.3.1-32	B
23	Strainer (screen)	Filtration	Stainless Steel	Fuel oil (External)	Loss of material	One-Time Inspection	VII.H2-16	3.3.1-32	A
24	Tank – Diesel Oil Storage Tank (DB-T45)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
25	Tank – Diesel Oil Storage Tank (DB-T45)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B
26	Tank – Diesel Oil Storage Tank (DB-T45)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A
27	Tank – Diesel Oil Storage Tank (DB-T45)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A

Table 3.3.2-15 Aging Management Review Results – Fuel Oil System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
28	Tank – Diesel Oil Storage Tank (DB-T45)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	Aboveground Steel Tanks Inspection	VII.H1-11	3.3.1-40	A 0333
29	Tank – Fire pump diesel day tank (DB-T47)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
30	Tank – Fire pump diesel day tank (DB-T47)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B
31	Tank – Fire pump diesel day tank (DB-T47)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A
32	Tank – Fire pump diesel day tank (DB-T47)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
33	Tubing	Pressure boundary	Copper Alloy	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-3	3.3.1-32	B
34	Tubing	Pressure boundary	Copper Alloy	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-3	3.3.1-32	A
35	Tubing	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A

Table 3.3.2-15 Aging Management Review Results – Fuel Oil System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
36	Tubing	Pressure boundary	Copper Alloy	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	N/A	N/A	G
37	Tubing	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B
38	Tubing	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A
39	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
40	Valve Body	Pressure boundary	Copper Alloy	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-3	3.3.1-32	B
41	Valve Body	Pressure boundary	Copper Alloy	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-3	3.3.1-32	A
42	Valve Body	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
43	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Fuel oil (Internal)	Cracking	Fuel Oil Chemistry	N/A	N/A	H
44	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Fuel oil (Internal)	Cracking	One-Time Inspection	N/A	N/A	H

Table 3.3.2-15 Aging Management Review Results – Fuel Oil System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
45	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-9	3.3.1-32	B
46	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-9	3.3.1-32	A
47	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	N/A	N/A	G
48	Valve Body	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-6	3.3.1-32	B
49	Valve Body	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-6	3.3.1-32	A
50	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
51	Valve Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H1-10	3.3.1-20	B
52	Valve Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H1-10	3.3.1-20	A
53	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-15 Aging Management Review Results – Fuel Oil System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
54	Valve Body	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
6	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
7	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Compressor Casing – Waste gas compresssor (DB-C10-1 & 2)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D
10	Compressor Casing – Waste gas compresssor (DB-C10-1 & 2)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
11	Compressor Casing – Waste gas compresssor (DB-C10-1 & 2)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
12	Compressor Casing – Waste gas compresssor (DB-C10-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
13	Compressor Casing – Waste gas compresssor (DB-C10-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
14	Filter Housing - Waste gas absolute filter (DB-F8)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
15	Filter Housing - Waste gas absolute filter (DB-F8)	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E
16	Filter Housing - Waste gas absolute filter (DB-F8)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
17	Filter Housing - Waste gas absolute filter (DB-F8)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
18	Heat Exchanger (shell) – Aftercooler (DB-C10-1 & 2)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
19	Heat Exchanger (shell) – Aftercooler (DB-C10-1 & 2)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
20	Heat Exchanger (shell) – Aftercooler (DB-C10-1 & 2)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	VII.C2-8	3.3.1-85	C
21	Heat Exchanger (shell) – Aftercooler (DB-C10-1 & 2)	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
22	Heat Exchanger (shell) – Aftercooler (DB-C10-1 & 2)	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
23	Orifice	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
24	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
25	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
26	Orifice	Throttling	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E
27	Orifice	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
28	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
29	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
30	Piping	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
31	Piping	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
32	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
33	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
34	Piping	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
35	Piping	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E
36	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
37	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
38	Pump Casing - Waste gas surge tank transfer pump (DB-P168)	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
39	Pump Casing - Waste gas surge tank transfer pump (DB-P168)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
40	Pump Casing - Waste gas surge tank transfer pump (DB-P168)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
41	Tank - Waste gas decay tanks (DB-T25-1, -2, & -3)	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
42	Tank - Waste gas decay tanks (DB-T25-1, -2, & -3)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
43	Tank - Waste gas decay tanks (DB-T25-1, -2, & -3)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
44	Tank - Waste gas surge tank (DB-T24)	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
45	Tank - Waste gas surge tank (DB-T24)	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E
46	Tank - Waste gas surge tank (DB-T24)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
47	Tank - Waste gas surge tank (DB-T24)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
48	Tubing	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
49	Tubing	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E
50	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
51	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
52	Tubing	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
53	Tubing	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E
54	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
55	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
56	Valve Body	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
57	Valve Body	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E
58	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
59	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
60	Valve Body	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-16 Aging Management Review Results – Gaseous Radwaste System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
61	Valve Body	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.D-4	3.3.1-54	E
62	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
63	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-17 Aging Management Review Results – Instrument Air System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
2	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
4	Bolting	Structural Integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
5	Bolting	Structural Integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
6	Bolting	Structural Integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
7	Drain Trap Body	Structural Integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
8	Drain Trap Body	Structural Integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A

Table 3.3.2-17 Aging Management Review Results – Instrument Air System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
9	Drain Trap Body	Structural Integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	Selective Leaching Inspection	VII.F1-18	3.3.1-85	A
10	Drain Trap Body	Structural Integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-2	3.3.1-53	E 0319
11	Moisture Separator Body	Structural Integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
12	Moisture Separator Body	Structural Integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A
13	Moisture Separator Body	Structural Integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	Selective Leaching Inspection	VII.F1-18	3.3.1-85	A
14	Moisture Separator Body	Structural Integrity	Gray Cast Iron	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-2	3.3.1-53	E 0319
15	Piping	Pressure boundary	Steel	Dried air (Internal)	None	None	VII.J-22	3.3.1-98	A 0318
16	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
17	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A

Table 3.3.2-17 Aging Management Review Results – Instrument Air System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
18	Piping	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0307
19	Piping	Structural integrity	Copper Alloy > 15% Zn	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A 0318
20	Piping	Structural integrity	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
21	Piping	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
22	Tubing	Structural integrity	Copper Alloy > 15% Zn	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A 0318
23	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
24	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0307
25	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
26	Tubing	Structural integrity	Stainless Steel	Air (Internal)	None	None	N/A	N/A	G

Table 3.3.2-17 Aging Management Review Results – Instrument Air System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
27	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
28	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
29	Tubing	Structural integrity	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-4	3.3.1-54	E 0319
30	Valve Body	Pressure boundary	Steel	Dried air (Internal)	None	None	VII.J-22	3.3.1-98	A 0318
31	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
32	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
33	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (Internal)	None	None	V.F-3	3.2.1-53	A 0307
34	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A 0318
35	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A

Table 3.3.2-17 Aging Management Review Results – Instrument Air System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
36	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
37	Valve Body	Structural integrity	Stainless Steel	Air (Internal)	None	None	N/A	N/A	G
38	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
39	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bearing Housing	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.E1-19	3.3.1-14	C 0304
2	Bearing Housing	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.E1-19	3.3.1-14	C
3	Bearing Housing	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
4	Bearing Housing	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
5	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
6	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
7	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
8	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
10	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
11	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
12	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
13	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
14	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
16	Filter Housing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
17	Filter Housing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
18	Filter Housing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
19	Filter Housing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
20	Gear Housing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.E1-19	3.3.1-14	C
21	Gear Housing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.E1-19	3.3.1-14	C
22	Gear Housing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
23	Gear Housing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
24	Heat Exchanger (channel) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-9	3.3.1-07	E 0315
25	Heat Exchanger (channel) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-9	3.3.1-07	A
26	Heat Exchanger (channel) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
27	Heat Exchanger (channel) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C 0329

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
28	Heat Exchanger (channel) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
29	Heat Exchanger (channel) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
30	Heat Exchanger (shell) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
31	Heat Exchanger (shell) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
32	Heat Exchanger (shell) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
33	Heat Exchanger (shell) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
34	Heat Exchanger (shell) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-6	3.3.1-48	B
35	Heat Exchanger (shell) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-6	3.3.1-48	E 0314

Table 3.3.2-18	Aging Management Review Results – Makeup and Purification System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
36	Heat Exchanger (shell) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-6	3.3.1-48	B
37	Heat Exchanger (shell) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-6	3.3.1-48	E 0314
38	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Reduction in heat transfer	Lubricating Oil Analysis	N/A	N/A	H
39	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
40	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (External)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.F1-12	3.3.1-52	B
41	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (External)	Reduction in heat transfer	One-Time Inspection	VII.F1-12	3.3.1-52	E 0314
42	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.E1-12	3.3.1-26	C

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
43	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.E1-12	3.3.1-26	C
44	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (External)	Cracking	Closed Cooling Water Chemistry	N/A	N/A	H
45	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (External)	Cracking	One-Time Inspection	N/A	N/A	H

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
46	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	VII.E1-2	3.3.1-51	B
47	Heat Exchanger (tubes) – Makeup pump lube oil coolers (DB-E188-1, 2 & DB-E212-1, 2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	VII.E1-2	3.3.1-51	E 0314
48	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Heat transfer	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H 0315
49	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Heat transfer	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Reduction in heat transfer	PWR Water Chemistry	N/A	N/A	H

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
50	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-9	3.3.1-07	E 0315
51	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-9	3.3.1-07	A
52	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
53	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C 0329
54	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Heat transfer	Stainless Steel	Closed cycle cooling water (External)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.E3-5	3.3.1-52	B

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
55	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Heat transfer	Stainless Steel	Closed cycle cooling water (External)	Reduction in heat transfer	One-Time Inspection	VII.E3-5	3.3.1-52	E 0314
56	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D
57	Heat Exchanger (tubes) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
58	Heat Exchanger (tubesheet) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-9	3.3.1-07	E 0315
59	Heat Exchanger (tubesheet) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-9	3.3.1-07	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
60	Heat Exchanger (tubesheet) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
61	Heat Exchanger (tubesheet) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C 0329
62	Heat Exchanger (tubesheet) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D
63	Heat Exchanger (tubesheet) – Seal return coolers (DB-E26-1 & 2)	Pressure boundary	Stainless Steel	Closed cycle cooling water (External)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
64	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
65	Orifice	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
66	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
67	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
68	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
69	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
70	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
71	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-18	Aging Management Review Results – Makeup and Purification System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
72	Orifice	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
73	Orifice	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
74	Orifice	Throttling	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
75	Orifice	Throttling	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
76	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
77	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
78	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
79	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
80	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
81	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
82	Piping	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
83	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
84	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
85	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.E1-1	3.3.1-89	A
86	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
87	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.E1-19	3.3.1-14	A
88	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.E1-19	3.3.1-14	A
89	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
90	Piping	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E
91	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
92	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
93	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
94	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
95	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
96	Piping	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
97	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
98	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
99	Pump Casing – Makeup pump lubrication oil pumps (DB-P371A-D & DB-P372A-D)	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.E1-19	3.3.1-14	A 0304
100	Pump Casing – Makeup pump lubrication oil pumps (DB-P371A-D & DB-P372A-D)	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.E1-19	3.3.1-14	A
101	Pump Casing – Makeup pump lubrication oil pumps (DB-P371A-D & DB-P372A-D)	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
102	Pump Casing – Makeup pump lubrication oil pumps (DB-P371A-D & DB-P372A-D)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
103	Pump Casing – Makeup pumps (DB-P37-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
104	Pump Casing – Makeup pumps (DB-P37-1 & 2)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
105	Pump Casing – Makeup pumps (DB-P37-1 & 2)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
106	Pump Casing – Makeup pumps (DB-P37-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
107	Strainer (body)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
108	Strainer (body)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
109	Strainer (body)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
110	Strainer (body)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
111	Strainer (screen)	Filtration	Stainless Steel	Treated borated water (External)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
112	Strainer (screen)	Filtration	Stainless Steel	Treated borated water (External)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
113	Strainer (body)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.E1-1	3.3.1-89	A
114	Strainer (body)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
115	Strainer (body)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.E1-19	3.3.1-14	A
116	Strainer (body)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.E1-19	3.3.1-14	A
117	Strainer (screen)	Pressure boundary	Steel	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VII.E1-19	3.3.1-14	A
118	Strainer (screen)	Pressure boundary	Steel	Lubricating oil (External)	Loss of material	One-Time Inspection	VII.E1-19	3.3.1-14	A
119	Tank – Air volume tanks	Pressure boundary	Aluminum	Dried air (Internal)	None	None	N/A	N/A	G 0318
120	Tank – Air volume tanks	Pressure boundary	Aluminum	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.E1-10	3.3.1-88	C
121	Tank – Air volume tanks	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	V.F-2	3.2.1-50	A
122	Tank – Air volume tanks	Pressure boundary	Steel	Dried air (Internal)	None	None	VII.J-22	3.3.1-98	C 0318
123	Tank – Makeup pump lubricating oil reservoir	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.E1-19	3.3.1-14	C

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
124	Tank – Makeup pump lubricating oil reservoir	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.E1-19	3.3.1-14	C
125	Tank – Makeup pump lubricating oil reservoir	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
126	Tank – Makeup pump lubricating oil reservoir	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
127	Tank – Air volume tanks (DB-T6406 & DB-T6407)	Pressure boundary	Steel	Dried air (Internal)	None	None	VII.J-22	3.3.1-98	C 0318
128	Tank – Air volume tanks (DB-T6406 & DB-T6407)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
129	Tank – Air volume tanks (DB-T6406 & DB-T6407)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
130	Tank – Makeup storage tank (DB-T4_MU)	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
131	Tank – Makeup storage tank (DB-T4_MU)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
132	Tank – Makeup storage tank (DB-T4_MU)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
133	Tank – Makeup storage tank (DB-T4_MU)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
134	Tank – Makeup storage tank (DB-T4_MU)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
135	Tank – Purification demineralizers (DB-T5-1, 2, & 3)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
136	Tank – Purification demineralizers (DB-T5-1, 2, & 3)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
137	Tank – Purification demineralizers (DB-T5-1, 2, & 3)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
138	Tank – Purification demineralizers (DB-T5-1, 2, & 3)	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
139	Tubing	Pressure boundary	Stainless Steel	Dried air (Internal)	None	None	VII.J-18	3.3.1-98	A
140	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
141	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
142	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
143	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
144	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
145	Tubing	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
146	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
147	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
148	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.E1-19	3.3.1-14	A

Table 3.3.2-18	Aging Management Review Results – Makeup and Purification System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
149	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.E1-19	3.3.1-14	A
150	Tubing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.E1-1	3.3.1-89	A
151	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
152	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
153	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
154	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
155	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
156	Valve Body	Pressure boundary	Copper Alloy	Lubricating oil (Internal)	None	None	VII.E1-12	3.3.1-26	I 0302

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
157	Valve Body	Pressure boundary	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
158	Valve Body	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
159	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
160	Valve Body	Pressure boundary	Stainless Steel	Dried air (Internal)	None	None	VII.J-18	3.3.1-98	A
161	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
162	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
163	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
164	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
165	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
166	Valve Body	Pressure boundary	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
167	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
168	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
169	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
170	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
171	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
172	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
173	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
174	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
175	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
176	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
177	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
178	Venturi	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E, 0315
179	Venturi	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
180	Venturi	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
181	Venturi	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
182	Venturi	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
183	Venturi	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
184	Venturi	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
185	Venturi	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
186	Venturi	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
187	Venturi	Throttling	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
188	Venturi	Throttling	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-18 Aging Management Review Results – Makeup and Purification System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
189	Venturi	Throttling	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-19 Aging Management Review Results – Makeup Water Treatment System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
2	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
3	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
4	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
5	Piping	Structural integrity	Copper Alloy	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-9	3.3.1-81	E
6	Piping	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
7	Piping	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A

Table 3.3.2-19 Aging Management Review Results – Makeup Water Treatment System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Piping	Structural integrity	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-19	3.3.1-76	E
9	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
10	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
11	Tubing	Structural integrity	Copper Alloy	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-9	3.3.1-81	E
12	Tubing	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
13	Tubing	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
14	Tubing	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H

Table 3.3.2-19 Aging Management Review Results – Makeup Water Treatment System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Tubing	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-9	3.3.1-81	E
16	Tubing	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.C1-10	3.3.1-84	A
17	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
18	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
19	Tubing	Structural integrity	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-19	3.3.1-76	E
20	Tubing	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
21	Tubing	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-19 Aging Management Review Results – Makeup Water Treatment System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
22	Valve Body	Structural integrity	Copper Alloy	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-9	3.3.1-81	E
23	Valve Body	Structural integrity	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
24	Valve Body	Structural integrity	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A

Table 3.3.2-20 Aging Management Review Results – Miscellaneous Building HVAC System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
2	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
3	Damper Housing	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0301
4	Damper Housing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Filter Body	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
6	Filter Body	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Filter Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
8	Filter Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
9	Filter Body	Structural integrity	Gray Cast Iron	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-19	3.3.1-76	E
10	Filter Body	Structural integrity	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.C1-11	3.3.1-85	A
11	Filter Body	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
12	Filter Body	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
13	Filter Body	Structural integrity	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-19	3.3.1-76	E

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
14	Filter Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
15	Filter Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
16	Flexible Connection	Structural integrity	Elastomer	Raw water (Internal)	Hardening and loss of strength	One-Time Inspection	VII.C1-1	3.3.1-75	E
17	Flexible Connection	Structural integrity	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
18	Orifice	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
19	Orifice	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
20	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
21	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
22	Piping	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
23	Piping	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
24	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
25	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
26	Pump Casing – Detergent waste drain tank pump (DB-P52_WM)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
27	Pump Casing – Detergent waste drain tank pump (DB-P52_WM)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
28	Pump Casing – Detergent waste drain tank pump (DB-P52_WM)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
29	Pump Casing – Detergent waste drain tank pump (DB-P52_WM)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
30	Pump Casing – Miscellaneous waste drain tank pump (DB-P51_WM)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
31	Pump Casing – Miscellaneous waste drain tank pump (DB-P51_WM)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
32	Pump Casing – Miscellaneous waste drain tank pump (DB-P51_WM)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-21	Aging Management Review Results – Miscellaneous Liquid Radwaste System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
33	Pump Casing – Miscellaneous waste drain tank pump (DB-P51_WM)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
34	Pump Casing – Miscellaneous waste monitor tank pump (DB-P54_WM)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
35	Pump Casing – Miscellaneous waste monitor tank pump (DB-P54_WM)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
36	Pump Casing – Miscellaneous waste monitor tank pump (DB-P54_WM)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
37	Pump Casing – Miscellaneous waste monitor tank pump (DB-P54_WM)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System									
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
38	Rupture Disc	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H, 0316
39	Rupture Disc	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
40	Rupture Disc	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
41	Rupture Disc	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
42	Strainer (body)	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H
43	Strainer (body)	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-9	3.3.1-81	E
44	Strainer (body)	Structural integrity	Copper Alloy > 15% Zn	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.C1-10	3.3.1-84	A

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
45	Strainer (body)	Structural integrity	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
46	Strainer (body)	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
47	Strainer (body)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
48	Strainer (body)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
49	Strainer (body)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
50	Strainer (body)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
51	Tank – DWDT 1-1 (DB-T27)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
52	Tank – DWDT 1-1 (DB-T27)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
53	Tank – DWDT 1-1 (DB-T27)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
54	Tank – DWDT 1-1 (DB-T27)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
55	Tank – DWDT 1-1 (DB-T27)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
56	Tank – DWDT 1-1 hold-up tank (DB-T161)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
57	Tank – DWDT 1-1 hold-up tank (DB-T161)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
58	Tank – DWDT 1-1 hold-up tank (DB-T161)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
59	Tank – DWDT 1-1 hold-up tank (DB-T161)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
60	Tank – DWDT 1-1 hold-up tank (DB-T161)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
61	Tank – Miscellaneous liquid waste monitor tank (DB-T29)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
62	Tank – Miscellaneous liquid waste monitor tank (DB-T29)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
63	Tank – Miscellaneous liquid waste monitor tank (DB-T29)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
64	Tank – Miscellaneous liquid waste monitor tank (DB-T29)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
65	Tank – Miscellaneous liquid waste monitor tank (DB-T29)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
66	Tank – Miscellaneous waste drain tank (DB-T26)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
67	Tank – Miscellaneous waste drain tank (DB-T26)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
68	Tank – Miscellaneous waste drain tank (DB-T26)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
69	Tank – Miscellaneous waste drain tank (DB-T26)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
70	Tank – Miscellaneous waste drain tank (DB-T26)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
71	Tank – Miscellaneous waste evaporator storage tank (DB-T28)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
72	Tank – Miscellaneous waste evaporator storage tank (DB-T28)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
73	Tank – Miscellaneous waste evaporator storage tank (DB-T28)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
74	Tank – Miscellaneous waste evaporator storage tank (DB-T28)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C

Table 3.3.2-21	Aging Management Review Results – Miscellaneous Liquid Radwaste System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
75	Tank – Miscellaneous waste evaporator storage tank (DB-T28)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
76	Tank – Radwaste Demineralizer skid vessel (1 through 5)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
77	Tank – Radwaste Demineralizer skid vessel (1 through 5)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
78	Tank – Radwaste Demineralizer skid vessel (1 through 5)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
79	Tank – Radwaste Demineralizer skid vessel (1 through 5)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
80	Tank – Waste polishing demineralizer (DB-T125)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
81	Tank – Waste polishing demineralizer (DB-T125)	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
82	Tank – Waste polishing demineralizer (DB-T125)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
83	Tank – Waste polishing demineralizer (DB-T125)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
84	Tank – Waste polishing demineralizer (DB-T125)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
85	Tubing	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
86	Tubing	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E

Table 3.3.2-21 Aging Management Review Results – Miscellaneous Liquid Radwaste System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
87	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
88	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
89	Valve Body	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0316
90	Valve Body	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
91	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
92	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-22 Aging Management Review Results – Nitrogen Gas System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
2	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
4	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
5	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
6	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
7	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B

Table 3.3.2-22 Aging Management Review Results – Nitrogen Gas System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
9	Piping	Pressure boundary	Steel	Gas (Internal)	None	None	VII.J-23	3.3.1-97	A
10	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
11	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A
12	Piping	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
13	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
14	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
15	Piping	Structural integrity	Steel	Gas (Internal)	None	None	VII.J-23	3.3.1-97	A

Table 3.3.2-22 Aging Management Review Results – Nitrogen Gas System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
16	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
17	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A
18	Tubing	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
19	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
20	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
21	Tubing	Pressure boundary	Steel	Gas (Internal)	None	None	VII.J-23	3.3.1-97	A
22	Tubing	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
23	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A

Table 3.3.2-22 Aging Management Review Results – Nitrogen Gas System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
24	Valve Body	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
25	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
26	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
27	Valve Body	Pressure boundary	Steel	Gas (Internal)	None	None	VII.J-23	3.3.1-97	A
28	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
29	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A
30	Valve Body	Structural Integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
31	Valve Body	Structural Integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-22 Aging Management Review Results – Nitrogen Gas System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
32	Valve Body	Structural Integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-23 Aging Management Review Results – Process and Area Radiation Monitoring System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
6	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
7	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B

Table 3.3.2-23 Aging Management Review Results – Process and Area Radiation Monitoring System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
8	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
9	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
10	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	C 0307
11	Duct	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
12	Duct	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.F1-2	3.3.1-56	A
13	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
14	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
15	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
16	Orifice	Throttling	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307

Table 3.3.2-23 Aging Management Review Results – Process and Area Radiation Monitoring System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
17	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
18	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
19	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
20	Pump Casing - Control room emergency ventilation system vacuum pumps (DB-MRE5327 & 5328)	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
21	Pump Casing - Control room emergency ventilation system vacuum pumps (DB-MRE5327 & 5328)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-23	Aging Management Review Results – Process and Area Radiation Monitoring System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
22	Pump Casing - Control room emergency ventilation system vacuum pumps (DB-MRE5327 & 5328)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
23	Pump Casing - Kaman radiation monitor pumps (DB-P273-1, -2, -3 & -4; and P274-1, -2, -3 & -4)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
24	Pump Casing - Kaman radiation monitor pumps (DB-P273-1, -2, -3, & -4, and P274-1, -2, -3, & -4)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-23 Aging Management Review Results – Process and Area Radiation Monitoring System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
25	Pump Casing - Kaman radiation monitor pumps (DB-P273-1, -2, -3 & -4; and P274-1, -2, -3 & -4)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
26	Trap Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
27	Trap Body	Pressure boundary	Stainless Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.F1-1	3.3.1-27	E
28	Trap Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
29	Trap Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
30	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
31	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-23 Aging Management Review Results – Process and Area Radiation Monitoring System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
32	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
33	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
34	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
35	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C

Table 3.3.2-24	Aging Management Review Results – Reactor Coolant Vent and Drain System								
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
6	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
7	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
8	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
10	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
11	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
12	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
13	Heat Exchanger (channel) - Quench tank cooler (DB-E36)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
14	Heat Exchanger (channel) - Quench tank cooler (DB-E36)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
15	Heat Exchanger (channel) - Quench tank cooler (DB-E36)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
16	Heat Exchanger (channel) - Quench tank cooler (DB-E36)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C

Table 3.3.2-24	Aging Management Review Results – Reactor Coolant Vent and Drain System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
17	Heat Exchanger (shell) - Quench tank cooler (DB-E36)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-6	3.3.1-48	E 0314
18	Heat Exchanger (shell) - Quench tank cooler (DB-E36)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-6	3.3.1-48	B
19	Heat Exchanger (shell) - Quench tank cooler (DB-E36)	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.E1-1	3.3.1-89	A
20	Heat Exchanger (shell) - Quench tank cooler (DB-E36)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
21	Orifice	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
22	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
23	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
24	Orifice	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
25	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
26	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
27	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
28	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
29	Orifice	Throttling	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
30	Piping	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
31	Piping	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
32	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
33	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
34	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
35	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
36	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
37	Piping	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
38	Piping	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
39	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
40	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
41	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
42	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
43	Piping	Structural integrity	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-10	3.3.1-76	E 0328
44	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.E1-1	3.3.1-89	A
45	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
46	Pump Casing - Quench tank circulation pump (DB-P87)	Structural integrity	Cast Austenitic Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
47	Pump Casing - Quench tank circulation pump (DB-P87)	Structural integrity	Cast Austenitic Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
48	Pump Casing - Quench tank circulation pump (DB-P87)	Structural integrity	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
49	Pump Casing - Quench tank circulation pump (DB-P87)	Structural integrity	Cast Austenitic Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
50	Pump Casing - Reactor coolant drain tank pump (DB-P46-1)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
51	Pump Casing - Reactor coolant drain tank pump (DB-P46-1)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
52	Pump Casing - Reactor coolant drain tank pump (DB-P46-1)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
53	Pump Casing - Reactor coolant drain tank pump (DB-P46-2)	Structural integrity	Cast Austenitic Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
54	Pump Casing - Reactor coolant drain tank pump (DB-P46-2)	Structural integrity	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
55	Pump Casing - Reactor coolant drain tank pump (DB-P46-2)	Structural integrity	Cast Austenitic Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
56	Rupture Disc	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
57	Rupture Disc	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
58	Rupture Disc	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
59	Rupture Disc	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
60	Tank - Pressurizer quench tank (DB-T3)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C
61	Tank - Pressurizer quench tank (DB-T3)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
62	Tank - Pressurizer quench tank (DB-T3)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
63	Tank - Pressurizer quench tank (DB-T3)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
64	Tank - Pressurizer quench tank (DB-T3)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
65	Tank - Reactor coolant drain tank (DB-T14)	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	C

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
66	Tank - Reactor coolant drain tank (DB-T14)	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
67	Tank - Reactor coolant drain tank (DB-T14)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
68	Tank - Reactor coolant drain tank (DB-T14)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
69	Tubing	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
70	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
71	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
72	Tubing	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
73	Tubing	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
74	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
75	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
76	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
77	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
78	Valve Body	Pressure boundary	Cast Austenitic Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
79	Valve Body	Pressure boundary	Cast Austenitic Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
80	Valve Body	Pressure boundary	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
81	Valve Body	Pressure boundary	Cast Austenitic Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
82	Valve Body	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
83	Valve Body	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
84	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
85	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
86	Valve Body	Structural integrity	Cast Austenitic Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
87	Valve Body	Structural integrity	Cast Austenitic Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
88	Valve Body	Structural integrity	Cast Austenitic Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
89	Valve Body	Structural integrity	Cast Austenitic Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
90	Valve Body	Structural integrity	Cast Austenitic Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-24 Aging Management Review Results – Reactor Coolant Vent and Drain System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
91	Valve Body	Structural integrity	Cast Austenitic Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
92	Valve Body	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
93	Valve Body	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E 0328
94	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
95	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
96	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
97	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-25			Aging Management Review Results – Sampling System						
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
6	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F

Table 3.3.2-25 Aging Management Review Results – Sampling System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
7	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
8	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
10	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
11	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
12	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B

Table 3.3.2-25 Aging Management Review Results – Sampling System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
13	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
14	Heat Exchanger (shell) - Local grab sample coolers	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D
15	Heat Exchanger (shell) - Local grab sample coolers	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
16	Heat Exchanger (shell) - Local grab sample coolers	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	Closed Cooling Water Chemistry	VII.E3-2	3.3.1-46	B
17	Heat Exchanger (shell) - Local grab sample coolers	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E3-2	3.3.1-46	E 0314

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
18	Heat Exchanger (shell) - Local grab sample coolers	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D 0310
19	Heat Exchanger (shell) - Local grab sample coolers	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314 0310
20	Heat Exchanger (shell) - Local grab sample coolers	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
21	Heat Exchanger (shell) - Local grab sample coolers	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
22	Heat Exchanger (shell) - PASS sample coolers (DB-E144-1, 2, 3, & 4)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
23	Heat Exchanger (shell) - PASS sample coolers (DB-E144-1, 2, 3, & 4)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
24	Heat Exchanger (shell) - PASS sample coolers (DB-E144-1, 2, 3, & 4)	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	Closed Cooling Water Chemistry	VII.E3-2	3.3.1-46	B
25	Heat Exchanger (shell) - PASS sample coolers (DB-E144-1, 2, 3, & 4)	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.C2-11	3.3.1-46	E 0314
26	Heat Exchanger (shell) - PASS sample coolers (DB-E144-1, 2, 3, & 4)	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D 0310

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
27	Heat Exchanger (shell) - PASS sample coolers (DB-E144-1, 2, 3, & 4)	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314 0310
28	Heat Exchanger (shell) - PASS sample coolers (DB-E144-1, 2, 3, & 4)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
29	Heat Exchanger (shell) - PASS sample coolers (DB-E144-1, 2, 3, & 4)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
30	Heat Exchanger (shell) - Reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204, & 205)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
31	Heat Exchanger (shell) - Reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204, & 205)	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
32	Heat Exchanger (shell) - Reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204, & 205)	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	Closed Cooling Water Chemistry	VII.E3-2	3.3.1-46	B
33	Heat Exchanger (shell) - Reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204, & 205)	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.C2-11	3.3.1-46	E 0314

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
34	Heat Exchanger (shell) - Reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204, & 205)	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	D 0310
35	Heat Exchanger (shell) - Reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204, & 205)	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314 0310
36	Heat Exchanger (shell) - Reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204, & 205)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C

Table 3.3.2-25 Aging Management Review Results – Sampling System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
37	Heat Exchanger (shell) - Reactor coolant primary grab sampling panel coolers (DB-E202, 203, 204, & 205)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
38	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
39	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
40	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
41	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
42	Piping	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
43	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
44	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
45	Piping	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
46	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
47	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
48	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
49	Piping	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
50	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
51	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
52	Piping	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B
53	Piping	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314
54	Piping	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B 0310
55	Piping	Structural integrity	Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314 0310
56	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
57	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
58	Sample Bomb	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
59	Sample Bomb	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
60	Sample Bomb	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
61	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
62	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
63	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	Closed Cooling Water Chemistry	VII.C2-11	3.3.1-46	B
64	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.C2-11	3.3.1-46	E 0314

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
65	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B 0310
66	Tubing	Pressure boundary	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314 0310
67	Tubing	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
68	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
69	Tubing	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
70	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
71	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
72	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
73	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
74	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	Closed Cooling Water Chemistry	VII.C2-11	3.3.1-46	B
75	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.C2-11	3.3.1-46	E 0314
76	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B 0310
77	Tubing	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314 0310

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
78	Tubing	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
79	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
80	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
81	Tubing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
82	Tubing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
83	Tubing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
84	Tubing	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
85	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A
86	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
87	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
88	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
89	Valve Body	Pressure boundary	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	Closed Cooling Water Chemistry	VII.C2-11	3.3.1-46	B

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
90	Valve Body	Pressure boundary	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.C2-11	3.3.1-46	E 0314
91	Valve Body	Pressure boundary	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B 0310
92	Valve Body	Pressure boundary	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314 0310
93	Valve Body	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
94	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
95	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
96	Valve Body	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	Closed Cooling Water Chemistry	VII.C2-11	3.3.1-46	B
97	Valve Body	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.C2-11	3.3.1-46	E 0314
98	Valve Body	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B 0310
99	Valve Body	Structural integrity	Stainless Steel	Closed cycle cooling water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314 0310
100	Valve Body	Structural integrity	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
101	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
102	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
103	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VII.E1-20	3.3.1-90	E 0315
104	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VII.E1-20	3.3.1-90	A
105	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315 0329
106	Valve Body	Structural integrity	Stainless Steel	Treated borated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A 0329
107	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VII.E3-15	3.3.1-24	A

Table 3.3.2-25 Aging Management Review Results – Sampling System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
108	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VII.E3-15	3.3.1-24	A
109	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
110	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Stainless Steel	Condensation (External)	Cracking	Bolting Integrity	N/A	N/A	F
6	Bolting	Pressure boundary	Stainless Steel	Condensation (External)	Loss of material	Bolting Integrity	VII.F1-1	3.3.1-27	E
7	Bolting	Pressure boundary	Stainless Steel	Condensation (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
8	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
9	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
10	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
11	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
12	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
13	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	Bolting Integrity	VII.I-1	3.3.1-43	B
14	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
15	Bolting	Pressure boundary	Steel	Condensation (External)	Cracking	Bolting Integrity	N/A	N/A	H
16	Bolting	Pressure boundary	Steel	Condensation (External)	Loss of material	Bolting Integrity	VII.D-1	3.3.1-44	B

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
17	Bolting	Pressure boundary	Steel	Condensation (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
18	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
19	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
20	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
21	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
22	Bolting	Structural integrity	Stainless Steel	Condensation (External)	Cracking	Bolting Integrity	N/A	N/A	F
23	Bolting	Structural integrity	Stainless Steel	Condensation (External)	Loss of material	Bolting Integrity	VII.F1-1	3.3.1-27	E
24	Bolting	Structural integrity	Stainless Steel	Condensation (External)	Loss of preload	Bolting Integrity	N/A	N/A	F

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
25	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
26	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
27	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
28	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
29	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
30	Bolting	Structural integrity	Steel	Air-outdoor (External)	Loss of material	Bolting Integrity	VII.I-1	3.3.1-43	B
31	Bolting	Structural integrity	Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
32	Bolting	Structural integrity	Steel	Condensation (External)	Cracking	Bolting Integrity	N/A	N/A	H
33	Bolting	Structural integrity	Steel	Condensation (External)	Loss of material	Bolting Integrity	VII.D-1	3.3.1-44	B

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
34	Bolting	Structural integrity	Steel	Condensation (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
35	Expansion Joint	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
36	Expansion Joint	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
37	Expansion Joint	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
38	Expansion Joint	Pressure boundary	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E
39	Flow Element	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
40	Flow Element	Pressure boundary	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E
41	Flow Element	Throttling	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
42	Orifice	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
43	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
44	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
45	Orifice	Pressure boundary	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E
46	Orifice	Throttling	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
47	Piping	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
48	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
49	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
50	Piping	Pressure boundary	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E
51	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
52	Piping	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
53	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
54	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
55	Piping	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
56	Piping	Pressure boundary	Steel	Concrete (External)	None	None	VII.J-21	3.3.1-96	A
57	Piping	Pressure boundary	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
58	Piping	Pressure boundary	Steel	Raw water (External)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
59	Piping	Pressure boundary	Steel	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.C1-18	3.3.1-19	A
60	Piping	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
61	Piping	Structural integrity	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
62	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
63	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
64	Piping	Structural integrity	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
65	Piping	Structural integrity	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
66	Piping	Structural integrity	Steel	Raw water (External)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
67	Piping	Structural integrity	Steel	Soil (External)	Loss of material	Buried Piping and Tanks Inspection	VII.C1-18	3.3.1-19	A
68	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
69	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.C1-11	3.3.1-85	A

Table 3.3.2-26			Aging Management Review Results – Service Water System						
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
70	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Gray Cast Iron	Raw water (External)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
71	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Gray Cast Iron	Raw water (External)	Loss of material	Selective Leaching Inspection	VII.C1-11	3.3.1-85	A
72	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
73	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313
74	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
75	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
76	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Steel	Moist air (External)	Loss of material	One-Time Inspection	N/A	N/A	G 0313

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
77	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
78	Pump Casing – Dilution pump (DB-P180)	Pressure boundary	Steel	Raw water (External)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
79	Pump Casing – Service water pump (DB-P3-1, 2, & 3)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
80	Pump Casing – Service water pump (DB-P3-1, 2, & 3)	Pressure boundary	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0313
81	Pump Casing – Service water pump (DB-P3-1, 2, & 3)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
82	Pump Casing – Service water pump (DB-P3-1, 2, & 3)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
83	Pump Casing – Service water pump (DB-P3-1, 2, & 3)	Pressure boundary	Steel	Moist air (External)	Loss of material	One-Time Inspection	N/A	N/A	G 0313
84	Pump Casing – Service water pump (DB-P3-1, 2, & 3)	Pressure boundary	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
85	Pump Casing – Service water pump (DB-P3-1, 2, & 3)	Pressure boundary	Steel	Raw water (External)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
86	Strainer (body)	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
87	Strainer (body)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
88	Strainer (body)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
89	Strainer (screen)	Filtration	Stainless Steel	Raw water (External)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	D

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
90	Strainer (tubes)	Filtration	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	D
91	Strainer (tubes)	Filtration	Stainless Steel	Raw water (External)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	D
92	Strainer (tubesheet)	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	D
93	Strainer (tubesheet)	Pressure boundary	Stainless Steel	Raw water (External)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	D
94	Tank	Pressure boundary	Steel	Dried air (Internal)	None	None	VII.J-22	3.3.1-98	C
95	Tank	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
96	Tank	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
97	Tubing	Pressure boundary	Copper Alloy	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A
98	Tubing	Pressure boundary	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
99	Tubing	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
100	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A
101	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
102	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
103	Tubing	Pressure boundary	Stainless Steel	Dried air (Internal)	None	None	VII.J-18	3.3.1-98	A
104	Tubing	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A
105	Tubing	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
106	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
107	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
108	Tubing	Pressure boundary	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E
109	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
110	Tubing	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
111	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
112	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
113	Tubing	Structural integrity	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E
114	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A
115	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
116	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
117	Valve Body	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
118	Valve Body	Pressure boundary	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.C1-11	3.3.1-85	A
119	Valve Body	Pressure boundary	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
120	Valve Body	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
121	Valve Body	Pressure boundary	Gray Cast Iron	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
122	Valve Body	Pressure boundary	Gray Cast Iron	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
123	Valve Body	Pressure boundary	Gray Cast Iron	Condensation (External)	Loss of material	Selective Leaching Inspection	N/A	N/A	G
124	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
125	Valve Body	Pressure boundary	Stainless Steel	Gas (Internal)	None	None	VII.J-19	3.3.1-97	A

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
126	Valve Body	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-15	3.3.1-79	B
127	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
128	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
129	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
130	Valve Body	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
131	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
132	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
133	Valve Body	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
134	Valve Body	Pressure boundary	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
135	Valve Body	Structural integrity	Gray Cast Iron	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B
136	Valve Body	Structural integrity	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.C1-11	3.3.1-85	A
137	Valve Body	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
138	Valve Body	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
139	Valve Body	Structural integrity	Gray Cast Iron	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
140	Valve Body	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
141	Valve Body	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	Selective Leaching Inspection	N/A	N/A	G
142	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
143	Valve Body	Structural integrity	Steel	Raw water (Internal)	Loss of material	Open-Cycle Cooling Water	VII.C1-19	3.3.1-76	B

Table 3.3.2-26 Aging Management Review Results – Service Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
144	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
145	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
146	Valve Body	Structural integrity	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
147	Valve Body	Structural integrity	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
6	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
8	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
9	Filter Housing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
10	Filter Housing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
11	Filter Housing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
12	Filter Housing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
13	Heat Exchanger (channel) - Spent fuel pool heat exchangers (DB-E23-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
14	Heat Exchanger (channel) - Spent fuel pool heat exchangers (DB-E23-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
15	Heat Exchanger (channel) - Spent fuel pool heat exchangers (DB-E23-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
16	Heat Exchanger (channel) - Spent fuel pool heat exchangers (DB-E23-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
17	Heat Exchanger (shell) – Spent fuel pool heat exchangers (DB-E23-1 & 2)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-6	3.3.1-48	E 0314

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
18	Heat Exchanger (shell) – Spent fuel pool heat exchangers (DB-E23-1 & 2)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-6	3.3.1-48	B
19	Heat Exchanger (shell) – Spent fuel pool heat exchangers (DB-E23-1 & 2)	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.E1-1	3.3.1-89	A
20	Heat Exchanger (shell) – Spent fuel pool heat exchangers (DB-E23-1 & 2)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
21	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
22	Orifice	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
23	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
24	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
25	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307
26	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
27	Piping	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
28	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
29	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
30	Piping	Pressure boundary	Stainless Steel	Treated borated water (External)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
31	Piping	Pressure boundary	Stainless Steel	Treated borated water (External)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
32	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VII.J-15	3.3.1-94	A 0307

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
33	Piping	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E
34	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
35	Piping	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
36	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
37	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
38	Piping	Structural integrity	Stainless Steel	Moist air (External)	Loss of material	One-Time Inspection	N/A	N/A	G
39	Piping	Structural integrity	Stainless Steel	Treated borated water (External)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
40	Piping	Structural integrity	Stainless Steel	Treated borated water (External)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
41	Pump Casing – Spent fuel pool pumps (DB-P44-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
42	Pump Casing – Spent fuel pool pumps (DB-P44-1 & 2)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
43	Pump Casing – Spent fuel pool pumps (DB-P44-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
44	Pump Casing – Spent fuel pool pumps (DB-P44-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
45	Pump Casing – Spent fuel pool skimmer pump (DB-P45)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
46	Pump Casing – Spent fuel pool skimmer pump (DB-P45)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
47	Pump Casing – Spent fuel pool skimmer pump (DB-P45)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
48	Pump Casing – Spent fuel pool skimmer pump (DB-P45)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
49	Pump Casing – Refueling canal skimmer pump (DB-P134)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
50	Pump Casing – Refueling canal skimmer pump (DB-P134)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
51	Pump Casing – Refueling canal skimmer pump (DB-P134)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
52	Pump Casing – Refueling canal skimmer pump (DB-P134)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
53	Strainer (body)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
54	Strainer (body)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
55	Strainer (body)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
56	Strainer (body)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
57	Tank – Spent fuel pool demineralizer (DB-T18)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
58	Tank – Spent fuel pool demineralizer (DB-T18)	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	C
59	Tank – Spent fuel pool demineralizer (DB-T18)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
60	Tank – Spent fuel pool demineralizer (DB-T18)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	C
61	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
62	Tubing	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
63	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
64	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
65	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
66	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
67	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
68	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
69	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (External)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
70	Valve Body	Pressure boundary	Stainless Steel	Treated borated water (External)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
71	Valve Body	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C3-7	3.3.1-78	E

Table 3.3.2-27 Aging Management Review Results – Spent Fuel Pool Cooling and Cleanup System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
72	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	One-Time Inspection	VII.E1-17	3.3.1-91	E 0315
73	Valve Body	Structural integrity	Stainless Steel	Treated borated water (Internal)	Loss of material	PWR Water Chemistry	VII.E1-17	3.3.1-91	A
74	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
75	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-28 Aging Management Review Results – Spent Resin Transfer System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Flexible Connection	Structural integrity	Elastomer	Treated water > 60°C (> 140°F) (Internal)	Hardening and loss of strength	One-Time Inspection	VII.A4-1	3.3.1-12	E 0311
6	Flexible Connection	Structural integrity	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
7	Orifice	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A 0315

Table 3.3.2-28 Aging Management Review Results – Spent Resin Transfer System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Orifice	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
9	Orifice	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0311
10	Orifice	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0311
11	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
12	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
13	Piping	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A 0315
14	Piping	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
15	Piping	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0311

Table 3.3.2-28 Aging Management Review Results – Spent Resin Transfer System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
16	Piping	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0311
17	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
18	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
19	Pump Casing – Spent resin tank overflow pump (DB-P140)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A 0315
20	Pump Casing – Spent resin tank overflow pump (DB-P140)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
21	Pump Casing – Spent resin tank overflow pump (DB-P140)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0311
22	Pump Casing – Spent resin tank overflow pump (DB-P140)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0311

Table 3.3.2-28 Aging Management Review Results – Spent Resin Transfer System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
23	Pump Casing – Spent resin tank overflow pump (DB-P140)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
24	Pump Casing – Spent resin tank overflow pump (DB-P140)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
25	Pump Casing – Spent resin transfer pump (DB-P121-1 & 2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A
26	Pump Casing – Spent resin transfer pump (DB-P121-1 & 2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
27	Pump Casing – Spent resin transfer pump (DB-P121-1 & 2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0311
28	Pump Casing – Spent resin transfer pump (DB-P121-1 & 2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0311

Table 3.3.2-28			Aging Management Review Results – Spent Resin Transfer System						
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
29	Pump Casing – Spent resin transfer pump (DB-P121-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
30	Pump Casing – Spent resin transfer pump (DB-P121-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
31	Rupture Disc	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A
32	Rupture Disc	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
33	Rupture Disc	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0311
34	Rupture Disc	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0311
35	Rupture Disc	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-28 Aging Management Review Results – Spent Resin Transfer System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
36	Rupture Disc	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
37	Strainer (body)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A
38	Strainer (body)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
39	Strainer (body)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0311
40	Strainer (body)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0311
41	Strainer (body)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
42	Strainer (body)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
43	Tank – Resin fill tank (DB-T17-2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A

Table 3.3.2-28 Aging Management Review Results – Spent Resin Transfer System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
44	Tank – Resin fill tank (DB-T17-2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
45	Tank – Resin fill tank (DB-T17-2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	C 0311
46	Tank – Resin fill tank (DB-T17-2)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	C 0311
47	Tank – Resin fill tank (DB-T17-2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
48	Tank – Resin fill tank (DB-T17-2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
49	Tank – Spent resin storage tank (DB-T22)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A
50	Tank – Spent resin storage tank (DB-T22)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
51	Tank – Spent resin storage tank (DB-T22)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	C 0311

Table 3.3.2-28 Aging Management Review Results – Spent Resin Transfer System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
52	Tank – Spent resin storage tank (DB-T22)	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	C 0311
53	Tank – Spent resin storage tank (DB-T22)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
54	Tank – Spent resin storage tank (DB-T22)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
55	Tubing	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A
56	Tubing	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
57	Tubing	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0311
58	Tubing	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0311
59	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.3.2-28 Aging Management Review Results – Spent Resin Transfer System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
60	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
61	Valve Body	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A
62	Valve Body	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
63	Valve Body	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0311
64	Valve Body	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0311
65	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
66	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-29 Aging Management Review Results – Station Air System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
2	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
4	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
5	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
6	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
7	Filter Housing	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-2	3.3.1-53	E 0319
8	Filter Housing	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-29 Aging Management Review Results – Station Air System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
9	Filter Housing	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A
10	Piping	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
11	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
12	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A
13	Piping	Structural integrity	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
14	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
15	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A
16	Tubing	Structural integrity	Copper Alloy > 15% Zn	Condensation (Internal)	Loss of material	One-Time Inspection	VII.G-9	3.3.1-28	E 0319

Table 3.3.2-29 Aging Management Review Results – Station Air System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
17	Tubing	Structural integrity	Copper Alloy > 15% Zn	Condensation (Internal)	Loss of material	Selective Leaching Inspection	N/A	N/A	G 0320
18	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
19	Tubing	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
20	Tubing	Structural integrity	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
21	Tubing	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
22	Tubing	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A 0307
23	Tubing	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A
24	Valve Body	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312

Table 3.3.2-29 Aging Management Review Results – Station Air System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
25	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
26	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A
27	Valve Body	Structural integrity	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
28	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A 0307
29	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
30	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.D-3	3.3.1-57	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
2	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
4	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
5	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	Bolting Integrity	VII.I-1	3.3.1-43	B
6	Bolting	Pressure boundary	Steel	Air-outdoor (External)	Loss of preload	Bolting Integrity	N/A	N/A	H
7	Compressor Casing – Turbocharger	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
8	Compressor casing – Turbocharger	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
9	Compressor Casing – Turbocharger	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
10	Filter Body	Pressure boundary	Aluminum	Air (Internal)	None	None	N/A	N/A	G
11	Filter Body	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	VII.J-1	3.3.1-95	A
12	Filter Body	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
13	Filter Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
14	Filter Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A
15	Filter Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
16	Filter Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
17	Filter Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
18	Flexible Connection	Pressure boundary	Elastomer	Air-outdoor (Internal)	Hardening and loss of strength	External Surfaces Monitoring	VII.G-2	3.3.1-61	E
19	Flexible Connection	Pressure boundary	Elastomer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	VII.F1-7	3.3.1-11	E
20	Flexible Connection	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
21	Flexible Connection	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
22	Flexible Connection	Pressure boundary	Stainless Steel	Diesel exhaust (Internal)	Cracking	One-Time Inspection	VII.H2-1	3.3.1-06	E
23	Flexible Connection	Pressure boundary	Stainless Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
24	Flexible Connection	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-16	3.3.1-32	B
25	Flexible Connection	Pressure boundary	Stainless Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-16	3.3.1-32	A
26	Flexible Connection	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
27	Heat Exchanger (shell) – Aftercooler (DB-E215-1 & 2)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
28	Heat Exchanger (shell) – Aftercooler (DB-E215-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
29	Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.C2-2	3.3.1-52	B
30	Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	One-Time Inspection	VII.C2-2	3.3.1-52	E
31	Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Heat transfer	Copper Alloy > 15% Zn	Air-outdoor (External)	Reduction in heat transfer	One-Time Inspection	N/A	N/A	H

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
32	Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	Closed Cooling Water Chemistry	N/A	N/A	H
33	Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	One-Time Inspection	N/A	N/A	H
34	Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-2	3.3.1-51	B
35	Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-2	3.3.1-51	E 0314
36	Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	VII.H2-12	3.3.1-84	C

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
37	Heat Exchanger (tubes) – Aftercooler (DB-E215-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Air-outdoor (External)	None	None	N/A	N/A	G
38	Heat Exchanger (shell) – SBO diesel lube oil immersion heater (DB-E216)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
39	Heat Exchanger (shell) – SBO diesel lube oil immersion heater (DB-E216)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
40	Heat Exchanger (shell) – SBO diesel lube oil immersion heater (DB-E216)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
41	Heat Exchanger (shell) – Lube oil cooler (DB-E214)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-5	3.3.1-21	A
42	Heat Exchanger (shell) – Lube oil cooler (DB-E214)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-5	3.3.1-21	A
43	Heat Exchanger (shell) – Lube oil cooler (DB-E214)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
44	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.C2-2	3.3.1-52	B
45	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	One-Time Inspection	VII.C2-2	3.3.1-52	E
46	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (External)	Reduction in heat transfer	Lubricating Oil Analysis	V.D1-8	3.2.1-09	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
47	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (External)	Reduction in heat transfer	One-Time Inspection	V.D1-8	3.2.1-09	A
48	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	Closed Cooling Water Chemistry	N/A	N/A	H
49	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	One-Time Inspection	N/A	N/A	H
50	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-2	3.3.1-51	B
51	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-2	3.3.1-51	E 0314
52	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	VII.H2-12	3.3.1-84	C

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
53	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VII.H2-10	3.3.1-26	C 0304
54	Heat Exchanger (tubes) – Lube oil cooler (DB-E214)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (External)	Loss of material	One-Time Inspection	VII.H2-10	3.3.1-26	C
55	Heat Exchanger (channel) – Radiator (DB-E211)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
56	Heat Exchanger (channel) – Radiator (DB-E211)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
57	Heat Exchanger (channel) – Radiator (DB-E211)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
58	Heat Exchanger (fins) – Radiator (DB-E211)	Heat transfer	Aluminum	Air-outdoor (External)	Reduction in heat transfer	External Surfaces Monitoring	N/A	N/A	G

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
59	Heat Exchanger (tubes) – Radiator (DB-E211)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	Closed Cooling Water Chemistry	VII.C2-2	3.3.1-52	B 0303
60	Heat Exchanger (tubes) – Radiator (DB-E211)	Heat transfer	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Reduction in heat transfer	One-Time Inspection	VII.C2-2	3.3.1-52	E 0303
61	Heat Exchanger (tubes) – Radiator (DB-E211)	Heat transfer	Copper Alloy > 15% Zn	Air-outdoor (External)	Reduction in heat transfer	External Surfaces Monitoring	N/A	N/A	G
62	Heat Exchanger (tubes) – Radiator (DB-E211)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	Closed Cooling Water Chemistry	N/A	N/A	H
63	Heat Exchanger (tubes) – Radiator (DB-E211)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	One-Time Inspection	N/A	N/A	H
64	Heat Exchanger (tubes) – Radiator (DB-E211)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-2	3.3.1-51	B 0303

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
65	Heat Exchanger (tubes) – Radiator (DB-E211)	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-2	3.3.1-51	E 0303 0314
66	Heat Exchanger (tubes) – Radiator (DB-E211)	Pressure boundary	Copper Alloy > 15% Zn	Air-outdoor (External)	None	None	N/A	N/A	G
67	Heat Exchanger (tubesheet) – Radiator (DB-E211)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
68	Heat Exchanger (tubesheet) – Radiator (DB-E211)	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
69	Heat Exchanger (tubesheet) – Radiator (DB-E211)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
70	Orifice	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B

Table 3.3.2-30	Aging Management Review Results – Station Blackout Diesel Generator System								
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
71	Orifice	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
72	Orifice	Pressure boundary	Stainless Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-17	3.3.1-33	A
73	Orifice	Pressure boundary	Stainless Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-17	3.3.1-33	A
74	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
75	Orifice	Throttling	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
76	Orifice	Throttling	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314
77	Orifice	Throttling	Stainless Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-17	3.3.1-33	A
78	Orifice	Throttling	Stainless Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-17	3.3.1-33	A
79	Piping	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
80	Piping	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.H2-23	3.3.1-47	B
81	Piping	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.H2-23	3.3.1-47	E 0314
82	Piping	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-2	3.3.1-53	E
83	Piping	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
84	Piping	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
85	Piping	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
86	Piping	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A
87	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
88	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
89	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
90	Piping	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A
91	Pump Casing – DC Turbocharger lube pump (DB-P280C)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
92	Pump Casing – DC Turbocharger lube pump (DB-P280C)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
93	Pump Casing – DC Turbocharger lube pump (DB-P280C)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
94	Pump Casing – Engine-driven main lube oil pump (DB-P286A)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
95	Pump Casing – Engine-driven main lube oil pump (DB-P286A)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
96	Pump Casing – Engine-driven main lube oil pump (DB-P286A)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
97	Pump Casing – Engine-driven piston cooling oil pump (DB-P286B)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
98	Pump Casing – Engine-driven piston cooling oil pump (DB-P286B)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
99	Pump Casing – Engine-driven piston cooling oil pump (DB-P286B)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
100	Pump Casing – Engine-driven lube oil scavenger pump (DB-P286C)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
101	Pump Casing – Engine-driven lube oil scavenger pump (DB-P286C)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
102	Pump Casing – Engine-driven lube oil scavenger pump (DB-P286C)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
103	Pump Casing – Fuel priming pump (DB-P281-2)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
104	Pump Casing – Fuel priming pump (DB-P281-2)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A
105	Pump Casing – Fuel priming pump (DB-P281-2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
106	Silencer (exhaust)	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
107	Silencer (exhaust)	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A

Table 3.3.2-30	Aging Management Review Results – Station Blackout Diesel Generator System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
108	Strainer (body)	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
109	Strainer (body)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
110	Strainer (body)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
111	Strainer (body)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
112	Strainer (screen)	Filtration	Stainless Steel	Air (External)	None	None	N/A	N/A	G
113	Strainer (screen)	Filtration	Stainless Steel	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VII.H2-17	3.3.1-33	A
114	Strainer (screen)	Filtration	Stainless Steel	Lubricating oil (External)	Loss of material	One-Time Inspection	VII.H2-17	3.3.1-33	A
115	Tank – Air receiver tank (DB-T209-1 & 2)	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
116	Tank – Air receiver tank (DB-T209-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
117	Tank – Jacket water expansion tank	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	C 0307
118	Tank – Jacket water expansion tank	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.H2-23	3.3.1-47	B
119	Tank – Jacket water expansion tank	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.H2-23	3.3.1-47	E 0314
120	Tank – Jacket water expansion tank	Pressure boundary	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0313
121	Tank – Jacket water expansion tank	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
122	Tank – SBODG day tank (DB-T210)	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
123	Tank – SBODG day tank (DB-T210)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
124	Tank – SBODG day tank (DB-T210)	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
125	Tank – SBODG day tank (DB-T210)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
126	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air (Internal)	None	None	N/A	N/A	G
127	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
128	Tubing	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.H2-23	3.3.1-47	B
129	Tubing	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.H2-23	3.3.1-47	E 0314
130	Tubing	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
131	Tubing	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312
132	Tubing	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
133	Tubing	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
134	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.G-22	3.3.1-14	A
135	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.G-22	3.3.1-14	A
136	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
137	Valve Body	Pressure boundary	Aluminum	Air (Internal)	None	None	N/A	N/A	G
138	Valve Body	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	VII.J-1	3.3.1-95	A
139	Valve Body	Pressure boundary	Copper Alloy	Air (Internal)	None	None	N/A	N/A	G
140	Valve Body	Pressure boundary	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-2	3.3.1-51	B
141	Valve Body	Pressure boundary	Copper Alloy	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-2	3.3.1-51	E 0314
142	Valve Body	Pressure boundary	Copper Alloy	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-9	3.3.1-32	B

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
143	Valve Body	Pressure boundary	Copper Alloy	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-9	3.3.1-32	A
144	Valve Body	Pressure boundary	Copper Alloy	Lubricating oil (Internal)	None	None	VII.C1-8	3.3.1-26	I 0302
145	Valve Body	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	V.F-3	3.2.1-53	A
146	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air (Internal)	None	None	N/A	N/A	G
147	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	Closed Cooling Water Chemistry	N/A	N/A	H
148	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Cracking	One-Time Inspection	N/A	N/A	H
149	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.E1-2	3.3.1-51	B
150	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.E1-2	3.3.1-51	E 0314
151	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	VII.H2-12	3.3.1-84	A

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
152	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Fuel oil (Internal)	Cracking	Fuel Oil Chemistry	N/A	N/A	H
153	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Fuel oil (Internal)	Cracking	One-Time Inspection	N/A	N/A	H
154	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-9	3.3.1-32	B
155	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-9	3.3.1-32	A
156	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-10	3.3.1-26	A 0304
157	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-10	3.3.1-26	A
158	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	N/A	N/A	G
159	Valve Body	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-10	3.3.1-50	B
160	Valve Body	Pressure boundary	Stainless Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-10	3.3.1-50	E 0314

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
161	Valve Body	Pressure boundary	Stainless Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-17	3.3.1-33	A
162	Valve Body	Pressure boundary	Stainless Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-17	3.3.1-33	A
163	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
164	Valve Body	Pressure boundary	Steel	Air-outdoor (Internal)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	C 0307
165	Valve Body	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.H2-23	3.3.1-47	B
166	Valve Body	Pressure boundary	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.H2-23	3.3.1-47	E 0314
167	Valve Body	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VII.D-2	3.3.1-53	E
168	Valve Body	Pressure boundary	Steel	Diesel exhaust (Internal)	Loss of material	One-Time Inspection	VII.H2-2	3.3.1-18	E
169	Valve Body	Pressure boundary	Steel	Air (Internal)	Loss of material	One-Time Inspection	VII.H2-21	3.3.1-71	E 0312

Table 3.3.2-30 Aging Management Review Results – Station Blackout Diesel Generator System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
170	Valve Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	Fuel Oil Chemistry	VII.H2-24	3.3.1-20	B
171	Valve Body	Pressure boundary	Steel	Fuel oil (Internal)	Loss of material	One-Time Inspection	VII.H2-24	3.3.1-20	A
172	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VII.H2-20	3.3.1-14	A
173	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VII.H2-20	3.3.1-14	A
174	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
175	Valve Body	Pressure boundary	Steel	Air-outdoor (External)	Loss of material	External Surfaces Monitoring	VII.I-9	3.3.1-58	A

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A
6	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
7	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
8	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
9	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
10	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
11	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
12	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
13	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-2	3.3.1-89	A

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
14	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
15	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VII.I-6	3.3.1-42	B
16	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
17	Orifice	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0330
18	Orifice	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
19	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
20	Piping	Pressure boundary	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0312 0332

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
21	Piping	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
22	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
23	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
24	Piping	Pressure boundary	Stainless Steel	Raw water (External)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
25	Piping	Pressure boundary	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0312
26	Piping	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-19	3.3.1-76	E
27	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
28	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
29	Piping	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
30	Piping	Structural integrity	Gray Cast Iron	Condensation (External)	Loss of material	Selective Leaching Inspection	N/A	N/A	G
31	Piping	Structural integrity	Gray Cast Iron	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0312
32	Piping	Structural integrity	Gray Cast Iron	Moist air (Internal)	Loss of material	Selective Leaching Inspection	N/A	N/A	G
33	Piping	Structural integrity	Gray Cast Iron	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.G-24	3.3.1-68	E
34	Piping	Structural integrity	Gray Cast Iron	Raw water (Internal)	Loss of material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
35	Piping	Structural integrity	Gray Cast Iron	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A

Table 3.3.2-31	Aging Management Review Results – Station Plumbing, Drains, and Sumps System								
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
36	Piping	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
37	Piping	Structural integrity	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0312 0332
38	Piping	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0330
39	Piping	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
40	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
41	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
42	Piping	Structural integrity	Stainless Steel	Concrete (External)	None	None	VII.J-17	3.3.1-96	A
43	Piping	Structural integrity	Stainless Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.F1-1	3.3.1-27	E

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
44	Piping	Structural integrity	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0312
45	Piping	Structural integrity	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-19	3.3.1-76	E
46	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
47	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
48	Piping	Structural integrity	Steel	Concrete (External)	None	None	VII.J-21	3.3.1-96	A
49	Piping	Structural integrity	Steel	Condensation (External)	Loss of material	External Surfaces Monitoring	VII.I-11	3.3.1-58	A
50	Pump Casing - ECCS sump pumps (DB-P89-1, 2, & 3)	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
51	Pump Casing - ECCS sump pumps (DB-P89-1, 2, & 3)	Pressure boundary	Stainless Steel	Raw water (External)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
52	Tubing	Structural integrity	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0312 0332
53	Tubing	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0330
54	Tubing	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
55	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
56	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
57	Valve Body	Pressure boundary	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0312 0332

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
58	Valve Body	Pressure boundary	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
59	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
60	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
61	Valve Body	Pressure boundary	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0312
62	Valve Body	Pressure boundary	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-19	3.3.1-76	E
63	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
64	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
65	Valve Body	Structural integrity	Stainless Steel	Moist air (Internal)	Loss of material	One-Time Inspection	V.D1-29	3.2.1-08	E 0312 0332
66	Valve Body	Structural integrity	Stainless Steel	Raw water (Internal)	Cracking	Collection, Drainage, and Treatment Components Inspection	N/A	N/A	H 0330
67	Valve Body	Structural integrity	Stainless Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-15	3.3.1-79	E
68	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
69	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VII.J-15	3.3.1-94	A
70	Valve Body	Structural integrity	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	VII.G-23	3.3.1-71	E 0312
71	Valve Body	Structural integrity	Steel	Raw water (Internal)	Loss of material	Collection, Drainage, and Treatment Components Inspection	VII.C1-19	3.3.1-76	E

Table 3.3.2-31 Aging Management Review Results – Station Plumbing, Drains, and Sumps System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
72	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-10	3.3.1-89	A
73	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-32 Aging Management Review Results – Turbine Plant Cooling Water System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
1	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VII.I-3	3.3.1-41	B
2	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VII.I-4	3.3.1-43	B
3	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VII.I-5	3.3.1-45	B
4	Heat Exchanger (channel) – Startup feed pump lube oil cooler (DB-E30)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
5	Heat Exchanger (channel) – Startup feed pump lube oil cooler (DB-E30)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314

Table 3.3.2-32 Aging Management Review Results – Turbine Plant Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
6	Heat Exchanger (channel) – Startup feed pump lube oil cooler (DB-E30)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Selective Leaching Inspection	VII.F3-18	3.3.1-85	C
7	Heat Exchanger (channel) – Startup feed pump lube oil cooler (DB-E30)	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
8	Heat Exchanger (channel) – Startup feed pump seal water cooler (DB-E99)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
9	Heat Exchanger (channel) – Startup feed pump seal water cooler (DB-E99)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314

Table 3.3.2-32 Aging Management Review Results – Turbine Plant Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
10	Heat Exchanger (channel) – Startup feed pump seal water cooler (DB-E99)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
11	Heat Exchanger (shell) – Startup feed pump lube oil cooler (DB-E30)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
12	Heat Exchanger (shell) – Startup feed pump lube oil cooler (DB-E30)	Structural integrity	Gray Cast Iron	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
13	Heat Exchanger (shell) – Startup feed pump lube oil cooler (DB-E30)	Structural integrity	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-32 Aging Management Review Results – Turbine Plant Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
14	Heat Exchanger (shell) – Startup feed pump seal water cooler (DB-E99)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-1	3.3.1-48	B
15	Heat Exchanger (shell) – Startup feed pump seal water cooler (DB-E99)	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-1	3.3.1-48	E 0314
16	Heat Exchanger (shell) – Startup feed pump seal water cooler (DB-E99)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
17	Piping	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B
18	Piping	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314
19	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Table 3.3.2-32 Aging Management Review Results – Turbine Plant Cooling Water System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
20	Tubing	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B
21	Tubing	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314
22	Tubing	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A
23	Valve Body	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	Closed Cooling Water Chemistry	VII.C2-14	3.3.1-47	B
24	Valve Body	Structural integrity	Steel	Closed cycle cooling water (Internal)	Loss of material	One-Time Inspection	VII.C2-14	3.3.1-47	E 0314
25	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VII.I-8	3.3.1-58	A

Generic Notes:	
A	Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
B	Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
C	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
D	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
E	Consistent with NUREG-1801 item for material, environment, and aging effect, but a different aging management program is credited or NUREG-1801 identifies a plant-specific aging management program.
F	Material not in NUREG-1801 for this component.
G	Environment not in NUREG-1801 for this component and material.
H	Aging effect not in NUREG-1801 for this component, material and environment combination.
I	Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.
J	Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-Specific Notes:	
0301	This environment is the same as the NUREG-1801 environment except that it is an internal rather than an external environment. Also, for the purposes of AMR and NUREG-1801 comparison, outdoor air as an internal environment is essentially the same as the uncontrolled indoor air environment because the subject internal surfaces are not exposed to weather.
0302	This material is copper alloy < 15% Zn and is not in contact with a more cathodic metal; therefore, there are no aging effects requiring management in the lubricating oil environment.
0303	Material is admiralty brass, which is an inhibited copper alloy. Therefore, loss of material due to selective leaching is not an aging effect requiring management in this environment.

Plant-Specific Notes:	
0304	The Lubricating Oil Analysis Program also manages loss of material due to selective leaching for susceptible materials by ensuring that water contamination is minimized.
0305	Instrumentation tubing (fittings) and valve bodies in the Emergency Ventilation System and Fuel-Handling Area Heating and Ventilation System.
0306	Airborne boric acid residue may collect inside (ECCS pump room) cooling units.
0307	This environment is the same as the NUREG-1801 environment except that it is an internal rather than an external environment.
0308	The "Condensation (Internal)" environment is evaluated as equivalent to the "Treated water" NUREG-1801 environment.
0309	The internal environment of the upper portion of the tank (this does not include the air-water interface which is evaluated as moist air) is not the same as the external environment, however the external environment is more aggressive, and aging effects are more likely to occur on the external surface prior to occurrence on the internal surface.
0310	For the purposes of NUREG-1801 comparison, "Closed cycle cooling water > 60°C (> 140°F)" is equivalent to the "Closed cycle cooling water" NUREG-1801 environment for this material and aging effect.
0311	For the purposes of NUREG-1801 comparison, "Treated water > 60°C (> 140°F)" is equivalent to the "Treated water" NUREG-1801 environment for this material and aging effect.
0312	The One-Time Inspection will confirm the absence of aging effects or that aging is slow acting so as to not affect the subject component's intended function during the period of extended operation.
0313	The One-Time Inspection will detect and characterize loss of material at the air-water interface.
0314	The One-Time Inspection will provide verification of Closed Cooling Water Chemistry Program effectiveness.
0315	The One-Time Inspection will provide verification of PWR Water Chemistry Program effectiveness.
0316	Cracking due to stess corrosion cracking /intergranular attack (SCC/IGA) is an aging effect requiring management for components with a normal operating temperature above 140°F.
0317	Flow-accelerated corrosion was determined to be an applicable aging effect in accordance with the flow-accelerated corrosion susceptibility study.
0318	The Air Quality Monitoring Program ensures that the Instrument Air System remains dry and free of contaminants, thereby sustaining the aging management review conclusion that there are no aging effects that require management.

Plant-Specific Notes:	
0319	The One-Time Inspection will confirm, for station air and instrument air drainage components, the absence of aging effects or that periodic exposure to condensation does not affect the subject component's intended function during the period of extended operation.
0320	The Selective Leaching Inspection will confirm, for station air drainage components, the absence of selective leaching of copper alloy > 15% Zn tubing from periodic exposure to condensation.
0321	The Selective Leaching Inspection will detect and characterize loss of material due to selective leaching at the air-water interface on the diesel fire protection pump.
0322	Environment is considered a match even though the environment is internal rather than external for this NUREG-1801 item.
0323	The subject piping exposed to a raw water (external) environment is submerged inside the fire water storage tank (DB-T81).
0324	The subject bolting exposed to a raw water (external) environment is associated with the diesel fire pump (DB-P5-2) casing.
0325	The aging effects of steel in a lubricating oil environment are not applicable in the air intake filter bodies in the diesel systems due to the regular replacement of the lubricating oil.
0326	The subject piping exposed to a fuel oil (external) environment is submerged inside the fuel oil storage tanks (DB-T153-1 & 2).
0327	Not Used
0328	Environment is evaluated as raw water since the source of water is from treated water systems (both borated and unborated) that are not chemistry controlled.
0329	For the purposes of NUREG-1801 comparison, "Treated borated water > 60°C (> 140°F)" is equivalent to the "Treated borated water" NUREG-1801 environment for this material and aging effect.
0330	Cracking due to SCC/IGA is an aging effect requiring management for components with a normal operating temperature above 140°F only (HCC-49 and associated components).
0331	Loss of material due to boric acid wastage or galvanic corrosion (of aluminum fins), inside cooling units could affect the heat transfer function of the fins.
0332	The "Moist air (internal)" environment is enveloped by the NUREG-1801 Chapter IX definition of "Condensation (internal/external)".
0333	The Aboveground Steel Tanks Inspection focuses on the tank bottom and the interface between the tank and foundation. The External Surfaces Monitoring Program manages the external surfaces of the tank above the foundation.

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3.4 AGING MANAGEMENT OF STEAM AND POWER CONVERSION SYSTEMS

3.4.1 INTRODUCTION

Section 3.4 provides the results of the aging management reviews (AMRs) for those components identified in Section 2.3.4, Steam and Power Conversion Systems, as subject to AMR. The systems or portions of systems are described in the indicated sections of the Application.

- Auxiliary Feedwater System (Section 2.3.4.1)
- Condensate Storage System (Section 2.3.4.2)
- Main Feedwater System (Section 2.3.4.3)
- Main Steam System (Section 2.3.4.4)

Table 3.4.1, Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801, provides the summary of the programs evaluated in NUREG-1801 that are applicable to component and commodity groups in this section. Text addressing summary items requiring further evaluation is provided in Section 3.4.2.2.

3.4.2 RESULTS

The following tables summarize the results of the AMR for the Steam and Power Conversion Systems.

Table 3.4.2-1 Aging Management Review Results - Auxiliary Feedwater System

Table 3.4.2-2 Aging Management Review Results - Condensate Storage System

Table 3.4.2-3 Aging Management Review Results - Main Feedwater System

Table 3.4.2-4 Aging Management Review Results - Main Steam System

3.4.2.1 Materials, Environments, Aging Effects Requiring Management, and Aging Management Programs

The materials from which specific components and commodities are fabricated, the environments to which they are exposed, the aging effects requiring management, and the aging management programs (AMPs) used to manage these aging effects are provided for each of the above systems in the following sections.

3.4.2.1.1 Auxiliary Feedwater System

Materials

The materials of construction for the subject mechanical components of the Auxiliary Feedwater System are:

- Copper alloy
- Gray cast iron
- Stainless steel
- Steel

Environments

The subject mechanical components of the Auxiliary Feedwater System are exposed to the following normal plant operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam and water leakage
- Lubricating oil
- Treated water
- Treated water > 60°C (> 140°F)

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Auxiliary Feedwater System:

- Cracking
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for the subject mechanical components of the Auxiliary Feedwater System:

- Bolting Integrity Program
- Boric Acid Corrosion Program

- External Surfaces Monitoring Program
- Lubricating Oil Analysis Program
- One-Time Inspection
- PWR Water Chemistry Program

3.4.2.1.2 Condensate Storage System

Materials

The materials of construction for the subject mechanical components of the Condensate Storage System are:

- Aluminum
- Stainless steel
- Steel

Environments

The subject mechanical components of the Condensate Storage System are exposed to the following normal plant operating environments:

- Air-indoor uncontrolled
- Air with steam and water leakage
- Moist air
- Treated water

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Condensate Storage System:

- Cracking
- Loss of material
- Loss of preload

Aging Management Programs

The following aging management programs manage the aging effects for the subject mechanical components of the Condensate Storage System:

- Bolting Integrity Program
- External Surfaces Monitoring Program

- One-Time Inspection
- PWR Water Chemistry Program

3.4.2.1.3 Main Feedwater System

Materials

The materials of construction for subject mechanical components of the Main Feedwater System are:

- Aluminum
- Copper alloy
- Copper alloy > 15% Zn
- Gray cast iron
- Stainless steel
- Steel

Environments

Subject mechanical components of the Main Feedwater System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Dried air
- Lubricating oil
- Treated water
- Treated water > 60°C (> 140°F)

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Main Feedwater System:

- Cracking
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Main Feedwater System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program
- Flow Accelerated Corrosion (FAC) Program
- Lubricating Oil Analysis Program
- One-Time Inspection
- PWR Water Chemistry Program

3.4.2.1.4 Main Steam System

Materials

The materials of construction for subject mechanical components of the Main Steam System are:

- Aluminum
- Copper alloy
- Copper alloy > 15% Zn
- Gray cast iron
- Polymer
- Stainless steel
- Steel

Environments

Subject mechanical components of the Main Steam System are exposed to the following normal operating environments:

- Air-indoor uncontrolled
- Air with borated water leakage
- Air with steam or water leakage
- Condensation
- Dried air

- Lubricating oil
- Steam
- Treated water
- Treated water > 60°C (> 140°F)

Aging Effects Requiring Management

The following aging effects require management for the subject mechanical components of the Main Steam System:

- Cracking
- Hardening and loss of strength
- Loss of material
- Loss of preload
- Reduction in heat transfer

Aging Management Programs

The following aging management programs manage the aging effects for subject mechanical components of the Main Steam System:

- Bolting Integrity Program
- Boric Acid Corrosion Program
- External Surfaces Monitoring Program
- Flow-Accelerated Corrosion (FAC) Program
- Lubricating Oil Analysis Program
- One-Time Inspection
- PWR Water Chemistry Program
- Selective Leaching Inspection

3.4.2.2 Aging Management Review Results for Which Further Evaluation is Recommended by NUREG-1801

For the Steam and Power Conversion systems, those items requiring further evaluation are addressed in the following sections.

3.4.2.2.1 Cumulative Fatigue Damage

Fatigue is a time-limited aging analysis as defined in 10 CFR 54.3. Time-limited aging analyses are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluations of the fatigue time-limited aging analyses are addressed in Section 4.

3.4.2.2.2 Loss of Material due to General, Pitting, and Crevice Corrosion

3.4.2.2.2.1 Steel Piping, Piping Components, Piping Elements, Tanks, and Heat Exchangers-Treated Water and Steam

Loss of material due to general, pitting and crevice corrosion could occur for steel piping, piping components, piping elements, tanks, and heat exchanger components exposed to treated water and for steel piping, piping components, and piping elements exposed to steam. At Davis-Besse, loss of material due to general, pitting, and crevice corrosion for steel (including gray cast iron) piping, piping components, piping elements, tanks, and heat exchanger components that are exposed to treated water (including steam) is managed by the PWR Water Chemistry Program. The PWR Water Chemistry Program manages loss of material through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material.

3.4.2.2.2.2 Steel Piping, Piping Components, and Piping Elements – Lubricating Oil

Loss of material due to general, pitting and crevice corrosion could occur for steel piping, piping components, and piping elements exposed to lubricating oil. Loss of material due to general, pitting, and crevice corrosion for Davis-Besse steel piping, piping components, and piping elements that are exposed to lubricating oil in the Steam and Power Conversion Systems is managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. This item is also applied to steel tanks in the Steam and Power Conversion Systems that are exposed to lubricating oil.

3.4.2.2.3 Loss of Material due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion (MIC), and Fouling

Loss of material due to general, pitting, crevice, and MIC, and fouling could occur in steel piping, piping components, and piping elements exposed to raw water. The

Davis-Besse Steam and Power Conversion Systems do not contain steel piping, piping components, and piping elements that are exposed to raw water and subject to aging management review.

3.4.2.2.4 Reduction of Heat Transfer due to Fouling

3.4.2.2.4.1 Stainless Steel and Copper Alloy Heat Exchanger Tubes – Treated Water

Reduction of heat transfer due to fouling could occur for stainless steel and copper alloy heat exchanger tubes exposed to treated water. At Davis-Besse, reduction in heat transfer due to fouling for stainless steel and copper alloy heat exchanger tubes that are exposed to treated water in the Steam and Power Conversion Systems is managed by the PWR Water Chemistry Program. The PWR Water Chemistry Program manages reduction in heat transfer through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage reduction in heat transfer.

3.4.2.2.4.2 Steel, Stainless Steel, and Copper Alloy Heat Exchanger Tubes – Lubricating Oil

Reduction of heat transfer due to fouling could occur for steel, stainless steel, and copper alloy heat exchanger tubes exposed to lubricating oil. Reduction in heat transfer due to fouling for Davis-Besse copper alloy heat exchanger tubes that are exposed to lubricating oil in the Steam and Power Conversion Systems is managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages reduction in heat transfer through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage reduction in heat transfer. The Steam and Power Conversion Systems do not contain steel or stainless steel heat exchanger tubes that are exposed to lubricating oil and subject to aging management review.

3.4.2.2.5 Loss of Material due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion

3.4.2.2.5.1 Steel Piping, Piping Components, and Piping Elements - Soil

Loss of material due to general, pitting and crevice corrosion, and MIC could occur in steel (with or without coating or wrapping) piping, piping components, piping elements and tanks exposed to soil. The Davis-Besse Steam and Power Conversion Systems do not contain steel (with or without coating or wrapping) piping, piping components, piping elements, or tanks that are exposed to soil and subject to aging management review.

3.4.2.2.5.2 Steel Heat Exchanger Components – Lubricating Oil

Loss of material due to general, pitting and crevice corrosion, and MIC could occur in steel heat exchanger components exposed to lubricating oil. At Davis-Besse, loss of material due to general, pitting and crevice corrosion in steel and gray cast iron heat exchanger components, and loss of material due to selective leaching in gray cast iron heat exchanger components, that are exposed to lubricating oil in the Steam and Power Conversion Systems are managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material.

3.4.2.2.6 Cracking due to Stress Corrosion Cracking (SCC)

Cracking due to SCC could occur in the stainless steel piping, piping components, piping elements, tanks, and heat exchanger components exposed to treated water greater than 60°C (>140°F), and for stainless steel piping, piping components, and piping elements exposed to steam. Cracking due to SCC for Davis-Besse stainless steel piping, piping components, and piping elements that are exposed to treated water greater than 60°C (>140°F) is managed by the PWR Water Chemistry Program. The PWR Water Chemistry Program manages cracking through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage cracking. The Steam and Power Conversion Systems do not contain stainless steel tanks or heat exchanger components that are exposed to treated water greater than 60°C (>140°F) or steam and subject to aging management review.

3.4.2.2.7 Loss of Material due to Pitting and Crevice Corrosion

3.4.2.2.7.1 Stainless Steel, Aluminum, and Copper Alloy Piping, Piping Components, Piping Elements, Tanks, and Heat Exchanger Components-Treated Water

Loss of material due to pitting and crevice corrosion could occur for stainless steel, aluminum, and copper alloy piping, piping components and piping elements and for stainless steel tanks and heat exchanger components exposed to treated water. At Davis-Besse, loss of material due to pitting and crevice corrosion for stainless steel piping, piping components, piping elements, tanks, and heat exchanger components that are exposed to treated water (including treated water greater than 60°C (>140°F)) is managed by the PWR Water Chemistry Program. The PWR Water Chemistry Program manages loss of material through periodic monitoring and control of contaminants. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. This item is also applied to copper alloy heat exchanger components in the Davis-Besse Steam and Power Conversion Systems that are exposed to treated water. The Steam and Power Conversion Systems do not contain aluminum or copper alloy piping, piping components, or piping elements that are exposed to treated water and subject to aging management review.

3.4.2.2.7.2 Stainless Steel Piping, Piping Components, Piping Elements - Soil

Loss of material due to pitting and crevice corrosion could occur for stainless steel piping, piping components, and piping elements exposed to soil. The Davis-Besse Steam and Power Conversion Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to soil and subject to aging management review.

3.4.2.2.7.3 Copper Alloy Piping, Piping Components, Piping Elements – Lubricating Oil

Loss of material due to pitting and crevice corrosion could occur for copper alloy piping, piping components, and piping elements exposed to lubricating oil. At Davis-Besse, loss of material due to pitting and crevice corrosion, and selective leaching, for copper alloy (copper alloy > 15% Zn) piping, piping components, and piping elements that are exposed to lubricating oil in the Steam and Power Conversion Systems is managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. This item is also applied to copper alloy (copper alloy > 15% Zn) heat exchanger components that are exposed to lubricating oil in the Steam and Power Conversion Systems.

3.4.2.2.8 Loss of Material due to Pitting, Crevice, and Microbiologically-Influenced Corrosion

Loss of material due to pitting, crevice, and MIC could occur in stainless steel piping, piping components, piping elements, and heat exchanger components exposed to lubricating oil. Loss of material due to pitting and crevice corrosion for Davis-Besse stainless steel piping, piping components, and piping elements that are exposed to lubricating oil in the Steam and Power Conversion Systems is managed by the Lubricating Oil Analysis Program. The Lubricating Oil Analysis Program manages loss of material through periodic monitoring and control of contaminants, including water. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material.

3.4.2.2.9 Loss of Material due to General, Pitting, Crevice, and Galvanic Corrosion

Loss of material for Boling Water Reactor (BWR) steel heat exchanger components exposed to treated water is applicable to BWR plants only.

3.4.2.2.10 Quality Assurance for Aging Management of Nonsafety-Related Components

See Appendix B, Section B.1.3, for a discussion of FirstEnergy Nuclear Operating Company quality assurance procedures and administrative controls for aging management programs

3.4.2.3 Time-Limited Aging Analyses

The time-limited aging analysis identified below is associated with the Steam and Power Conversion Systems components. The section of the application that contains the time-limited aging analysis review results is indicated in parentheses.

- Metal Fatigue (Section 4.3, Metal Fatigue)

3.4.3 CONCLUSIONS

The Steam and Power Conversion Systems components and commodities subject to AMR have been identified in accordance with 10 CFR 54.21. The aging management programs selected to manage the effects of aging for the mechanical components and commodities are identified in the following tables and Section 3.4.2.1. A description of the aging management programs is provided in Appendix B, along with the demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the demonstration provided in Appendix B, the effects of aging associated with the Steam and Power Conversion Systems components and commodities will be managed so that there is reasonable assurance that the intended functions will be maintained consistent with the current licensing basis during the period of extended operation.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-01	Steel piping, piping components, and piping elements exposed to steam or treated water	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA	Fatigue is a TLAA. Further evaluation is documented in Section 3.4.2.2.1.
3.4.1-02	Steel piping, piping components, and piping elements exposed to steam	Loss of material due to general, pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to general, pitting, and crevice corrosion in steel (including gray cast iron) piping, piping components, and piping elements that are exposed to steam is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. For loss of material for steel piping, piping components, and piping elements exposed to steam in the Main Steam System, refer to Item Number 3.4.1-37. Further evaluation is documented in Section 3.4.2.2.2.1.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-03	Steel heat exchanger components exposed to treated water	Loss of material due to general, pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to general, pitting, and crevice corrosion in steel heat exchanger components that are exposed to treated water is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. Further evaluation is documented in Section 3.4.2.2.2.1.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-04	Steel piping, piping components, and piping elements exposed to treated water	Loss of material due to general, pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to general, pitting, and crevice corrosion in steel piping, piping components, and piping elements that are exposed to treated water (including treated water > 60°C (> 140°F)) is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. This item is also applied to gray cast iron (steel) heat exchanger components that are exposed to treated water. Further evaluation is documented in Section 3.4.2.2.2.1.
3.4.1-05	BWR only				

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-06	Steel and stainless steel tanks exposed to treated water	Loss of material due to general (steel only) pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to general, pitting, and crevice corrosion in steel tanks that are exposed to treated water is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. For loss of material for stainless steel tanks that are exposed to treated water, refer to Item Number 3.4.1-16. Further evaluation is documented in Section 3.4.2.2.2.1.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-07	Steel piping, piping components, and piping elements exposed to lubricating oil	Loss of material due to general, pitting and crevice corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to general, pitting, and crevice corrosion in steel piping, piping components, and piping elements that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. This item is also applied to steel tanks that are exposed to lubricating oil. Further evaluation is documented in Section 3.4.2.2.2.2.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-08	Steel piping, piping components, and piping elements exposed to raw water	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Plant specific	Yes, plant specific	Not applicable. The Steam and Power Conversion Systems do not contain steel piping, piping components, or piping elements that are exposed to raw water and subject to aging management review. Further evaluation is documented in Section 3.4.2.2.3.
3.4.1-09	Stainless steel and copper alloy heat exchanger tubes exposed to treated water	Reduction of heat transfer due to fouling	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Reduction in heat transfer due to fouling for stainless steel and copper alloy (including copper alloy > 15% Zn) heat exchanger tubes that are exposed to treated water is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage reduction in heat transfer. Further evaluation is documented in Section 3.4.2.2.4.1.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-10	Steel, stainless steel, and copper alloy heat exchanger tubes exposed to lubricating oil	Reduction of heat transfer due to fouling	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Reduction in heat transfer due to fouling for copper alloy (including copper alloy > 15% Zn) heat exchanger tubes that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage reduction in heat transfer. The Steam and Power Conversion Systems do not contain steel or stainless steel heat exchanger tubes that are exposed to lubricating oil and subject to aging management review. Further evaluation is documented in Section 3.4.2.2.4.2.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-11	Buried steel piping, piping components, piping elements, and tanks (with or without coating or wrapping) exposed to soil	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion	Buried Piping and Tanks Surveillance Or Buried Piping and Tanks Inspection	No Yes, detection of aging effects and operating experience are to be further evaluated	Not applicable. The Steam and Power Conversion Systems do not contain steel (with or without coating or wrapping) piping, piping components, piping elements, or tanks that are exposed to soil and subject to aging management review. Further evaluation is documented in Section 3.4.2.2.5.1.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-12	Steel heat exchanger components exposed to lubricating oil	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to general, pitting and crevice corrosion in steel and gray cast iron heat exchanger components is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. This item is also applied to loss of material due to selective leaching in gray cast iron heat exchanger components that are exposed to lubricating oil. Further evaluation is documented in Section 3.4.2.2.5.2.
3.4.1-13	BWR only				

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-14	Stainless steel piping, piping components, piping elements, tanks, and heat exchanger components exposed to treated water >60 °C (>140 °F)	Cracking due to stress corrosion cracking	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Cracking due to SCC in stainless steel piping, piping components, piping elements, and tanks that are exposed to treated water > 60°C (> 140°F) is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage cracking. The Steam and Power Conversion Systems do not contain stainless steel heat exchanger components that are exposed to treated water > 60°C (> 140°F) and subject to aging management review. For stainless steel piping, piping components, and piping elements in the Steam and Power Conversion Systems that are exposed to steam, refer to Item Number 3.4.1-39. Further evaluation is documented in Section 3.4.2.2.6.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-15	Aluminum and copper alloy piping, piping components, and piping elements exposed to treated water	Loss of material due to pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. The Steam and Power Conversion Systems do not contain aluminum or copper alloy piping, piping components, or piping elements that are exposed to treated water and subject to aging management review. This item is, however, applied to copper alloy heat exchanger components that are exposed to treated water. Loss of material due to pitting and crevice corrosion in copper alloy (including copper alloy > 15% Zn) heat exchanger components that are exposed to treated water is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. Further evaluation is documented in Section 3.4.2.2.7.1.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-16	Stainless steel piping, piping components, and piping elements; tanks, and heat exchanger components exposed to treated water	Loss of material due to pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to pitting and crevice corrosion in stainless steel piping, piping components, piping elements, tanks, and heat exchanger components that are exposed to treated water (including treated water > 60°C (> 140°F)) is managed by the PWR Water Chemistry Program. The One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material. Further evaluation is documented in Section 3.4.2.2.7.1.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-17	Stainless steel piping, piping components, and piping elements exposed to soil	Loss of material due to pitting and crevice corrosion	Plant specific	Yes, plant specific	Not applicable. The Steam and Power Conversion Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to soil and subject to aging management review. Further evaluation is documented in Section 3.4.2.2.7.2.
3.4.1-18	Copper alloy piping, piping components, and piping elements exposed to lubricating oil	Loss of material due to pitting and crevice corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to pitting and crevice corrosion in copper alloy (copper alloy > 15% Zn) piping, piping components, and piping elements that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. [continued]

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-18 [cont'd]	Copper alloy piping, piping components, and piping elements exposed to lubricating oil	Loss of material due to pitting and crevice corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Loss of material due to pitting and crevice corrosion was not identified as an aging effect requiring management for copper alloy piping, piping components, and piping elements with a zinc content less than 15% that are exposed to lubricating oil. This item is also applied to copper alloy (copper alloy > 15% Zn) heat exchanger components that are exposed to lubricating oil.This item is also applied to loss of material due to selective leaching for copper alloy (copper alloy > 15% Zn) components that are exposed to lubricating oil. Further evaluation is documented in Section 3.4.2.2.7.3.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-19	Stainless steel piping, piping components, piping elements, and heat exchanger components exposed to lubricating oil	Loss of material due to pitting, crevice, and microbiologically influenced corrosion	Lubricating Oil Analysis and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. Loss of material due to pitting and crevice corrosion in stainless steel piping, piping components, and piping elements that are exposed to lubricating oil is managed by the Lubricating Oil Analysis Program. The One-Time Inspection will provide verification of the effectiveness of the Lubricating Oil Analysis Program to manage loss of material. Further evaluation is documented in Section 3.4.2.2.8.
3.4.1-20	Steel tanks exposed to air – outdoor (external)	Loss of material/ general, pitting, and crevice corrosion	Aboveground Steel Tanks	No	Not applicable. The Steam and Power Conversion Systems do not contain steel tanks that are exposed to air-outdoor (external) and subject to aging management review.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-21	High-strength steel closure bolting exposed to air with steam or water leakage	Cracking due to cyclic loading, stress corrosion cracking	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Cracking in high-strength steel bolting that is exposed to air with steam or water leakage is managed by the Bolting Integrity Program.
3.4.1-22	Steel bolting and closure bolting exposed to air with steam or water leakage, air – outdoor (external) or air – indoor uncontrolled (external);	Loss of material due to general, pitting and crevice corrosion; loss of preload due to thermal effects, gasket creep, and self-loosening	Bolting Integrity	No	Consistent with NUREG-1801, with exceptions. Loss of material and loss of preload in steel bolting that is exposed to air with steam or water leakage and air-indoor uncontrolled (external) are managed by the Bolting Integrity Program.
3.4.1-23	Stainless steel piping, piping components, and piping elements exposed to closed-cycle cooling water >60 °C (>140 °F)	Cracking due to stress corrosion cracking	Closed-Cycle Cooling Water System	No	Not applicable. The Steam and Power Conversion Systems do not contain stainless steel piping, piping components, or piping elements that are exposed to closed cycle cooling water > 60°C (> 140°F) and subject to aging management review.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-24	Steel heat exchanger components exposed to closed cycle cooling water	Loss of material due to general, pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	Not applicable. The Steam and Power Conversion Systems do not contain steel heat exchanger components that are exposed to closed cycle cooling water and subject to aging management review.
3.4.1-25	Stainless steel piping, piping components, piping elements, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to pitting and crevice corrosion	Closed-Cycle Cooling Water System	No	Not applicable. The Steam and Power Conversion Systems do not contain stainless steel piping, piping components, piping elements, or heat exchanger components that are exposed to closed cycle cooling water and subject to aging management review.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-26	Copper alloy piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	Not applicable. The Steam and Power Conversion Systems do not contain copper alloy piping, piping components, or piping elements that are exposed to closed cycle cooling water and subject to aging management review.
3.4.1-27	Steel, stainless steel, and copper alloy heat exchanger tubes exposed to closed cycle cooling water	Reduction of heat transfer due to fouling	Closed-Cycle Cooling Water System	No	Not applicable. The Steam and Power Conversion Systems do not contain steel, stainless steel, or copper alloy heat exchanger tubes that are exposed to closed cycle cooling water and subject to aging management review.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-28	Steel external surfaces exposed to air – indoor uncontrolled (external), condensation (external) or air outdoor (external)	Loss of material due to general corrosion	External Surfaces Monitoring	No	Consistent with NUREG-1801. Loss of material for external surfaces of steel components, except for bolting, that are exposed to air-indoor uncontrolled (external) is managed by the External Surfaces Monitoring Program. For bolting, loss of material is managed by the Bolting Integrity Program (see Item Number 3.4.1-22). This item is also applied to internal surfaces of steel piping, piping components, and piping elements that are exposed to air-indoor uncontrolled (internal) where it has been demonstrated that the internal environment is the same as the external environment. The Steam and Power Conversion Systems do not contain steel components that are exposed to condensation (external) or air-outdoor (external) and subject to aging management review.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-29	Steel piping, piping components, and piping elements exposed to steam or treated water	Wall thinning due to flow-accelerated corrosion	Flow-Accelerated Corrosion	No	Consistent with NUREG-1801. Loss of material (wall thinning) due to FAC in steel piping, piping components, and piping elements that are exposed to steam or treated water (> 60°C (> 140°F)) is managed by the Flow-Accelerated Corrosion (FAC) Program.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-30	Steel piping, piping components, and piping elements exposed to air outdoor (internal) or condensation (internal)	Loss of material due to general, pitting, and crevice corrosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	No	Consistent with NUREG-1801, but a different aging management program is assigned. Loss of material due to general, pitting, and crevice corrosion in steel piping, piping components, and piping elements that are exposed to condensation (internal) will be detected and characterized by the One-Time Inspection. The Steam and Power Conversion Systems do not contain steel piping, piping components, or piping elements that are exposed to air outdoor (internal) and subject to aging management review.
3.4.1-31	Steel heat exchanger components exposed to raw water	Loss of material due to general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Not applicable. The Steam and Power Conversion Systems do not contain steel heat exchanger components that are exposed to raw water and subject to aging management review.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-32	Stainless steel and copper alloy piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion	Open-Cycle Cooling Water System	No	Not applicable. The Steam and Power Conversion Systems do not contain stainless steel or copper alloy piping, piping components, or piping elements that are exposed to raw water and subject to aging management review.
3.4.1-33	Stainless steel heat exchanger components exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Not applicable. The Steam and Power Conversion Systems do not contain stainless steel heat exchanger components that are exposed to raw water and subject to aging management review.
3.4.1-34	Steel, stainless steel, and copper alloy heat exchanger tubes exposed to raw water	Reduction of heat transfer due to fouling	Open-Cycle Cooling Water System	No	Not applicable. The Steam and Power Conversion Systems do not contain steel, stainless steel, or copper alloy heat exchanger tubes that are exposed to raw water and subject to aging management review.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-35	Copper alloy >15% Zn piping, piping components, and piping elements exposed to closed cycle cooling water, raw water or treated water	Loss of material due to selective leaching	Selective Leaching of Materials	No	Consistent with NUREG-1801. The Steam and Power Conversion Systems do not contain copper alloy >15% Zn piping, piping components, or piping elements that are exposed to closed cycle cooling water, raw water or treated water and subject to aging management review. However, loss of material due to selective leaching in copper alloy >15% Zn heat exchanger components that are exposed to treated water will be detected and characterized by the Selective Leaching Inspection.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-36	Gray cast iron piping, piping components, and piping elements exposed to soil, treated water or raw water	Loss of material due to selective leaching	Selective Leaching of Materials	No	Consistent with NUREG-1801. The Steam and Power Conversion Systems do not contain gray cast iron piping, piping components, or piping elements that are exposed to soil, treated water or raw water and subject to aging management review. However, loss of material due to selective leaching for gray cast iron heat exchanger components that are exposed to treated water will be detected and characterized by the Selective Leaching Inspection.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-37	Steel, stainless steel, and nickel-based alloy piping, piping components, and piping elements exposed to steam	Loss of material due to pitting and crevice corrosion	Water Chemistry	No	Consistent with NUREG-1801. Loss of material in steel, stainless steel, and nickel alloy piping, piping components, and piping elements that are exposed to steam is managed by the PWR Water Chemistry Program. This item is also applied to steel and stainless steel heat exchanger components that are exposed to steam. In addition, the One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage loss of material.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-38	Steel bolting and external surfaces exposed to air with borated water leakage	Loss of material due to boric acid corrosion	Boric Acid Corrosion	No	Consistent with NUREG-1801. Loss of material for external surfaces of steel bolting and steel (including gray cast iron) external surfaces that are exposed to air with borated water leakage is managed by the Boric Acid Corrosion Program.
3.4.1-39	Stainless steel piping, piping components, and piping elements exposed to steam	Cracking due to stress corrosion cracking	Water Chemistry	No	Consistent with NUREG-1801. Cracking in stainless steel piping, piping components, and piping elements that are exposed to steam is managed by the PWR Water Chemistry Program. In addition, the One-Time Inspection will provide verification of the effectiveness of the PWR Water Chemistry Program to manage cracking.
3.4.1-40	Glass piping elements exposed to air, lubricating oil, raw water, and treated water	None	None	NA - No AEM or AMP	Not applicable. The Steam and Power Conversion Systems do not contain glass piping elements that are subject to aging management review.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-41	Stainless steel, copper alloy, and nickel alloy piping, piping components, and piping elements exposed to air – indoor uncontrolled (external)	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. No aging effects requiring management were identified for stainless steel or copper alloy (including copper alloy > 15% Zn) piping, piping components, or piping elements that are exposed to air-indoor uncontrolled (external). This item is also applied to stainless steel and copper alloy (including copper alloy > 15% Zn) heat exchanger components and tanks that are exposed to an air-indoor uncontrolled (external). This item is also applied to internal surfaces of stainless steel and copper alloy piping, piping components, and piping elements, and tanks that are exposed to air-indoor uncontrolled (internal) where it has been demonstrated that the internal environment is the same as the external environment.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-42	Steel piping, piping components, and piping elements exposed to air – indoor controlled (external)	None	None	NA - No AEM or AMP	Not applicable. The Steam and Power Conversion Systems do not contain steel piping, piping components, or piping elements that are exposed to air-indoor controlled (external) because all air-indoor environments were conservatively evaluated as uncontrolled environments.
3.4.1-43	Steel and stainless steel piping, piping components, and piping elements in concrete	None	None	NA - No AEM or AMP	Not applicable. The Steam and Power Conversion Systems do not contain steel or stainless steel piping, piping components, or piping elements that are embedded in concrete and subject to aging management review.

Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-44	Steel, stainless steel, aluminum, and copper alloy piping, piping components, and piping elements exposed to gas	None	None	NA - No AEM or AMP	Not applicable. The Steam and Power Conversion Systems do not contain steel, stainless steel, aluminum, or copper alloy piping, piping components, or piping elements that are exposed to gas and subject to aging management review.

Table 3.4.2-1 Aging Management Review Results – Auxiliary Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
2	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
3	Bolting	Pressure boundary	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
4	Bolting	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
5	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-2	3.4.1-38	A
6	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VIII.H-3	3.4.1-21	B
7	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VIII.H-4	3.4.1-22	B

Table 3.4.2-1 Aging Management Review Results – Auxiliary Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VIII.H-5	3.4.1-22	B
9	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
10	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F
11	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
12	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
13	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-2	3.4.1-38	A
14	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VIII.H-3	3.4.1-21	B

Table 3.4.2-1 Aging Management Review Results – Auxiliary Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VIII.H-4	3.4.1-22	B
16	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VIII.H-5	3.4.1-22	B
17	Flow Element	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
18	Flow Element	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A
19	Flow Element	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
20	Flow Element	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
21	Flow Element	Throttling	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
22	Flow Element	Throttling	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A

Table 3.4.2-1			Aging Management Review Results – Auxiliary Feedwater System						
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
23	Heat Exchanger (casing) – AFW pump oil coolers	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.G-6	3.4.1-12	A 0403
24	Heat Exchanger (casing) – AFW pump oil coolers	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.G-6	3.4.1-12	A
25	Heat Exchanger (casing) – AFW pump oil coolers	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
26	Heat Exchanger (fins) – AFW pump oil coolers	Heat transfer	Copper Alloy	Treated water (Internal)	Reduction in heat transfer	One-Time Inspection	VIII.E-10	3.4.1-09	C
27	Heat Exchanger (fins) – AFW pump oil coolers	Heat transfer	Copper Alloy	Treated water (Internal)	Reduction in heat transfer	PWR Water Chemistry	VIII.E-10	3.4.1-09	C
28	Heat Exchanger (fins) – AFW pump oil coolers	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	Lubricating Oil Analysis	VIII.G-8	3.4.1-10	C

Table 3.4.2-1			Aging Management Review Results – Auxiliary Feedwater System						
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
29	Heat Exchanger (fins) – AFW pump oil coolers	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	One-Time Inspection	VIII.G-8	3.4.1-10	C
30	Heat Exchanger (tubes) – AFW pump oil coolers	Heat transfer	Copper Alloy	Treated water (Internal)	Reduction in heat transfer	One-Time Inspection	VIII.E-10	3.4.1-09	A
31	Heat Exchanger (tubes) – AFW pump oil coolers	Heat transfer	Copper Alloy	Treated water (Internal)	Reduction in heat transfer	PWR Water Chemistry	VIII.E-10	3.4.1-09	A
32	Heat Exchanger (tubes) – AFW pump oil coolers	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	Lubricating Oil Analysis	VIII.G-8	3.4.1-10	A
33	Heat Exchanger (tubes) – AFW pump oil coolers	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	One-Time Inspection	VIII.G-8	3.4.1-10	A
34	Heat Exchanger (tubes) – AFW pump oil coolers	Pressure boundary	Copper Alloy	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.F-15	3.4.1-15	C

Table 3.4.2-1 Aging Management Review Results – Auxiliary Feedwater System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
35	Heat Exchanger (tubes) – AFW pump oil coolers	Pressure boundary	Copper Alloy	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.F-15	3.4.1-15	C
36	Heat Exchanger (tubes) – AFW pump oil coolers	Pressure boundary	Copper Alloy	Lubricating oil (External)	None	None	VII.C1-8	3.3.1-26	I 0413
37	Orifice	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
38	Orifice	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A
39	Orifice	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
40	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
41	Orifice	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
42	Orifice	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A

Table 3.4.2-1 Aging Management Review Results – Auxiliary Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
43	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
44	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
45	Orifice	Throttling	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
46	Orifice	Throttling	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A
47	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	C 0405
48	Piping	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-38	3.4.1-04	A
49	Piping	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-38	3.4.1-04	A
50	Piping	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.G-38	3.4.1-04	A 0402

Table 3.4.2-1 Aging Management Review Results – Auxiliary Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
51	Piping	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.G-38	3.4.1-04	A 0402
52	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
53	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
54	Piping	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	C 0405
55	Piping	Structural integrity	Steel	Lubricating Oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.G-35	3.4.1-07	A
56	Piping	Structural integrity	Steel	Lubricating Oil (Internal)	Loss of material	One-Time Inspection	VIII.G-35	3.4.1-07	A
57	Piping	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-38	3.4.1-04	A
58	Piping	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-38	3.4.1-04	A

Table 3.4.2-1			Aging Management Review Results – Auxiliary Feedwater System						
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
59	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
60	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
61	Pump Casing – AFW pumps (DB-P14-1 & 2)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-38	3.4.1-04	A
62	Pump Casing – AFW pumps (DB-P14-1 & 2)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-38	3.4.1-04	A
63	Pump Casing – AFW pumps (DB-P14-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
64	Strainer (body)	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
65	Strainer (body)	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A
66	Strainer (body)	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.4.2-1 Aging Management Review Results – Auxiliary Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
67	Strainer (body)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
68	Strainer (body)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-38	3.4.1-04	A
69	Strainer (body)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-38	3.4.1-04	A
70	Strainer (body)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
71	Strainer (screen)	Filtration	Stainless Steel	Treated water (External)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
72	Strainer (screen)	Filtration	Stainless Steel	Treated water (External)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A
73	Tubing	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
74	Tubing	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A
75	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.4.2-1			Aging Management Review Results – Auxiliary Feedwater System						
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
76	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
77	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
78	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A
79	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
80	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
81	Valve Body	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-32	3.4.1-16	A
82	Valve Body	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-32	3.4.1-16	A
83	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.4.2-1 Aging Management Review Results – Auxiliary Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
84	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
85	Valve Body	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-38	3.4.1-04	A
86	Valve Body	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-38	3.4.1-04	A
87	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
88	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
89	Valve Body	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.G-38	3.4.1-04	A
90	Valve Body	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.G-38	3.4.1-04	A
91	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A

Table 3.4.2-1 Aging Management Review Results – Auxiliary Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
92	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A

Table 3.4.2-2 Aging Management Review Results – Condensate Storage System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VIII.H-3	3.4.1-21	B
2	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VIII.H-4	3.4.1-22	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VIII.H-5	3.4.1-22	B
4	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	C 0405
5	Piping	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.E-34	3.4.1-04	A
6	Piping	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.E-34	3.4.1-04	A
7	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
8	Tank - Condensate storage tanks (DB-T31-1 & 2)	Pressure boundary	Steel	Moist air (Internal)	Loss of material	One-Time Inspection	N/A	N/A	G 0404

Table 3.4.2-2 Aging Management Review Results – Condensate Storage System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
9	Tank - Condensate storage tanks (DB-T31-1 & 2)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.E-40	3.4.1-06	A
10	Tank - Condensate storage tanks (DB-T31-1 & 2)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.E-40	3.4.1-06	A
11	Tank - Condensate storage tanks (DB-T31-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	C 0405
12	Tank - Condensate storage tanks (DB-T31-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
13	Tubing	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.E-29	3.4.1-16	A
14	Tubing	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.E-29	3.4.1-16	A
15	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A

Table 3.4.2-2 Aging Management Review Results – Condensate Storage System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
16	Tubing	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.E-34	3.4.1-04	A
17	Tubing	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.E-34	3.4.1-04	A
18	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
19	Valve Body	Pressure boundary	Aluminum	Air-indoor uncontrolled (Internal)	None	None	V.F-2	3.2.1-50	A
20	Valve Body	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	V.F-2	3.2.1-50	A
21	Valve Body	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.E-34	3.4.1-04	A
22	Valve Body	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.E-34	3.4.1-04	A
23	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-2	3.4.1-38	A
2	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VIII.H-3	3.4.1-21	B
3	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VIII.H-4	3.4.1-22	B
4	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VIII.H-5	3.4.1-22	B
5	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-2	3.4.1-38	A
6	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VIII.H-3	3.4.1-21	B
7	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VIII.H-4	3.4.1-22	B

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VIII.H-5	3.4.1-22	B
9	Filter Housing	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	V.F-2	3.2.1-50	A
10	Filter Housing	Pressure boundary	Aluminum	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	N/A	N/A	G
11	Filter Housing	Pressure boundary	Aluminum	Lubricating oil (Internal)	Loss of material	One-Time Inspection	N/A	N/A	G
12	Filter Housing	Pressure boundary	Aluminum	Dried air (Internal)	None	None	N/A	N/A	G 0406
13	Filter Housing	Structural integrity	Aluminum	Air-indoor uncontrolled (External)	None	None	V.F-2	3.2.1-50	A
14	Filter Housing	Structural integrity	Aluminum	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	N/A	N/A	G
15	Filter Housing	Structural integrity	Aluminum	Lubricating oil (Internal)	Loss of material	One-Time Inspection	N/A	N/A	G

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
16	Heat Exchanger (casing) – MDFP LO cooler (DB-E183)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
17	Heat Exchanger (casing) – MDFP LO cooler (DB-E183)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.E-37	3.4.1-03	A
18	Heat Exchanger (casing) – MDFP LO cooler (DB-E183)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.E-37	3.4.1-03	A
19	Heat Exchanger (casing) - MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	C

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
20	Heat Exchanger (casing) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.E-36	3.4.1-16	A
21	Heat Exchanger (casing) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.E-36	3.4.1-16	A
22	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (External)	Cracking	PWR Water Chemistry	N/A	N/A	H
23	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (External)	Cracking	One-Time Inspection	N/A	N/A	H

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
24	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (External)	Loss of material	PWR Water Chemistry	VIII.A-5	3.4.1-15	C 0410
25	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (External)	Loss of material	One-Time Inspection	VIII.A-5	3.4.1-15	C
26	Heat Exchanger (tubes) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.E-36	3.4.1-16	A
27	Heat Exchanger (tubes) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.E-36	3.4.1-16	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
28	Heat Exchanger (tubes) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (External)	Loss of material	PWR Water Chemistry	VIII.E-36	3.4.1-16	A
29	Heat Exchanger (tubes) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (External)	Loss of material	One-Time Inspection	VIII.E-36	3.4.1-16	A
30	Heat Exchanger (tubesheet) – MDFP LO cooler (DB-E183)	Pressure boundary	Steel	Treated water (External)	Loss of material	PWR Water Chemistry	VIII.E-37	3.4.1-03	A
31	Heat Exchanger (tubesheet) – MDFP LO cooler (DB-E183)	Pressure boundary	Steel	Treated water (External)	Loss of material	One-Time Inspection	VIII.E-37	3.4.1-03	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
32	Heat Exchanger (tubesheet) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.E-36	3.4.1-16	A
33	Heat Exchanger (tubesheet) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.E-36	3.4.1-16	A
34	Heat Exchanger (tubesheet) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (External)	Loss of material	PWR Water Chemistry	VIII.E-36	3.4.1-16	A
35	Heat Exchanger (tubesheet) – MDFP seal water coolers (DB-184-1 & 2)	Pressure boundary	Stainless Steel	Treated water (External)	Loss of material	One-Time Inspection	VIII.E-36	3.4.1-16	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
36	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Heat transfer	Copper Alloy > 15% Zn	Treated water (External)	Reduction in heat Transfer	PWR Water Chemistry	VIII.E-10	3.4.1-09	A
37	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Heat transfer	Copper Alloy > 15% Zn	Treated water (External)	Reduction in heat Transfer	One-Time Inspection	VIII.E-10	3.4.1-09	A
38	Heat Exchanger (tubes) – MDFP seal water coolers (DB-184-1 & 2)	Heat transfer	Stainless Steel	Treated water (Internal)	Reduction in heat Transfer	PWR Water Chemistry	VIII.E-13	3.4.1-09	A
39	Heat Exchanger (tubes) – MDFP seal water coolers (DB-184-1 & 2)	Heat transfer	Stainless Steel	Treated water (Internal)	Reduction in heat Transfer	One-Time Inspection	VIII.E-13	3.4.1-09	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
40	Heat Exchanger (tubes) – MDFP seal water coolers (DB-184-1 & 2)	Heat transfer	Stainless Steel	Treated water (External)	Reduction in heat Transfer	PWR Water Chemistry	VIII.E-13	3.4.1-09	A
41	Heat Exchanger (tubes) – MDFP seal water coolers (DB-184-1 & 2)	Heat transfer	Stainless Steel	Treated water (External)	Reduction in heat Transfer	One-Time Inspection	VIII.E-13	3.4.1-09	A
42	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.G-19	3.4.1-18	C
43	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.G-19	3.4.1-18	C

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
44	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Reduction in heat transfer	Lubricating Oil Analysis	VIII.G-8	3.4.1-10	A
45	Heat Exchanger (tubes) – MDFP LO cooler (DB-E183)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Reduction in heat transfer	One-Time Inspection	VIII.G-8	3.4.1-10	A
46	Heat Exchanger (tubesheet) – MDFP LO cooler (DB-E183)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.G-6	3.4.1-12	A
47	Heat Exchanger (tubesheet) – MDFP LO cooler (DB-E183)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.G-6	3.4.1-12	A
48	Orifice	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
49	Orifice	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-4	3.4.1-16	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
50	Orifice	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-4	3.4.1-16	A
51	Orifice	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
52	Orifice	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
53	Orifice	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-4	3.4.1-16	A
54	Orifice	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-4	3.4.1-16	A
55	Orifice	Throttling	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-4	3.4.1-16	A
56	Orifice	Throttling	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-4	3.4.1-16	A
57	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VIII.I-10	3.4.1-41	A 0405

Table 3.4.2-3			Aging Management Review Results – Main Feedwater System						
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
58	Piping	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
59	Piping	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
60	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A 0405
61	Piping	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A
62	Piping	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A
63	Piping	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A 0402
64	Piping	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.D1-9	3.4.1-29	A 0402
65	Piping	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A 0402

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
66	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
67	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
68	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	None	None	VIII.H-7	3.4.1-28	I 0408
69	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-6	3.4.1-07	A
70	Piping	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-6	3.4.1-07	A
71	Piping	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A
72	Piping	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A
73	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
74	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
75	Pump Casing – MDFP (DB-P241)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A
76	Pump Casing – MDFP (DB-P241)	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A
77	Pump Casing – MDFP (DB-P241)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
78	Pump Casing – Motor driven MDFP LO pump (DB-P242-1)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-6	3.4.1-07	A
79	Pump Casing – Motor driven MDFP LO pump (DB-P242-1)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-6	3.4.1-07	A
80	Pump Casing – Motor driven MDFP LO pump (DB-P242-1)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
81	Pump Casing – Shaft driven MDFP LO pump (DB-P242-2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-6	3.4.1-07	A
82	Pump Casing – Shaft driven MDFP LO pump (DB-P242-2)	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-6	3.4.1-07	A
83	Pump Casing – Shaft driven MDFP LO pump (DB-P242-2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
84	Pump Casing – Motor driven SUFP LO pump	Structural integrity	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-6	3.4.1-07	A
85	Pump Casing – Motor driven SUFP LO pump	Structural integrity	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-6	3.4.1-07	A
86	Pump Casing – Motor driven SUFP LO pump	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
87	Pump Casing – Shaft driven SUFP LO pump	Structural integrity	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-6	3.4.1-07	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
88	Pump Casing – Shaft driven SUFP LO pump	Structural integrity	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-6	3.4.1-07	A
89	Pump Casing – Shaft driven SUFP LO pump	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
90	Pump Casing – SUFP (DB-P15)	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A
91	Pump Casing – SUFP (DB-P15)	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A
92	Pump Casing – SUFP (DB-P15)	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
93	Tank – Air volume tank	Pressure boundary	Steel	Dried air (Internal)	None	None	VII.J-22	3.3.1-98	A 0406
94	Tank – Air volume tank	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
95	Tank – MDFP LO reservoir	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
96	Tank – MDFP LO reservoir	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A 0405
97	Tank – MDFP LO reservoir	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-6	3.4.1-07	C
98	Tank – MDFP LO reservoir	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-6	3.4.1-07	C
99	Tank – SUFP LO reservoir	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
100	Tank – SUFP LO reservoir	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A 0405
101	Tank – SUFP LO reservoir	Structural integrity	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-6	3.4.1-07	C
102	Tank – SUFP LO reservoir	Structural integrity	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-6	3.4.1-07	C
103	Tubing	Pressure boundary	Copper Alloy	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A 0406
104	Tubing	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
105	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A 0406
106	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
107	Tubing	Pressure boundary	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.D1-5	3.4.1-14	A
108	Tubing	Pressure boundary	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.D1-5	3.4.1-14	A
109	Tubing	Pressure boundary	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.D1-4	3.4.1-16	A 0402
110	Tubing	Pressure boundary	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-4	3.4.1-16	A 0402
111	Tubing	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
112	Tubing	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
113	Tubing	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A
114	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-6	3.4.1-07	A
115	Tubing	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-6	3.4.1-07	A
116	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
117	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
118	Tubing	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A
119	Tubing	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A
120	Tubing	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
121	Tubing	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
122	Valve Body	Pressure boundary	Aluminum	Dried air (Internal)	None	None	N/A	N/A	G 0406
123	Valve Body	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	V.F-2	3.2.1-50	A
124	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A 0406
125	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-2	3.4.1-18	A 0403
126	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-2	3.4.1-18	A
127	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
128	Valve Body	Pressure Boundary	Gray Cast Iron	Dried air (Internal)	None	None	VII.J-22	3.3.1-98	A 0406
129	Valve Body	Pressure Boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
130	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VIII.I-10	3.4.1-41	A 0405
131	Valve Body	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-4	3.4.1-16	A
132	Valve Body	Pressure boundary	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-4	3.4.1-16	A
133	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
134	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A 0405
135	Valve Body	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A 0402
136	Valve Body	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.D1-9	3.4.1-29	A 0402
137	Valve Body	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A 0402

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
138	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
139	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
140	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	None	None	VIII.H-7	3.4.1-28	I 0408
141	Valve Body	Pressure boundary	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A
142	Valve Body	Pressure boundary	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A
143	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-6	3.4.1-07	A
144	Valve Body	Pressure boundary	Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-6	3.4.1-07	A
145	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.D1-2	3.4.1-18	A 0403
146	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.D1-2	3.4.1-18	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
147	Valve Body	Structural integrity	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
148	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-4	3.4.1-16	A
149	Valve Body	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-4	3.4.1-16	A
150	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
151	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
152	Valve Body	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.D1-8	3.4.1-04	A
153	Valve Body	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.D1-8	3.4.1-04	A
154	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A

Table 3.4.2-3 Aging Management Review Results – Main Feedwater System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
155	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
1	Bolting	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-2	3.4.1-38	A
2	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VIII.H-3	3.4.1-21	B
3	Bolting	Pressure boundary	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VIII.H-6	3.4.1-22	B
4	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VIII.H-4	3.4.1-22	B
5	Bolting	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VIII.H-5	3.4.1-22	B
6	Bolting	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	C
7	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	N/A	N/A	F

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
8	Bolting	Structural integrity	Stainless Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	N/A	N/A	F
9	Bolting	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	N/A	N/A	F
10	Bolting	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-2	3.4.1-38	A
11	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Cracking	Bolting Integrity	VIII.H-3	3.4.1-21	B
12	Bolting	Structural integrity	Steel	Air with steam or water leakage (External)	Loss of material	Bolting Integrity	VIII.H-6	3.4.1-22	B
13	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	Bolting Integrity	VIII.H-4	3.4.1-22	B
14	Bolting	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of preload	Bolting Integrity	VIII.H-5	3.4.1-22	B

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
15	Heat Exchanger (fins) – AFW pump turbine bearing lube oil cooler	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	Lubricating Oil Analysis	VIII.G-8	3.4.1-10	A
16	Heat Exchanger (fins) – AFW pump turbine bearing lube oil cooler	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	One-Time Inspection	VIII.G-8	3.4.1-10	A
17	Heat Exchanger (tubes) – AFW pump turbine bearing lube oil cooler	Heat transfer	Copper Alloy	Treated water (Internal)	Reduction in heat transfer	PWR Water Chemistry	VIII.E-10	3.4.1-09	A
18	Heat Exchanger (tubes) – AFW pump turbine bearing lube oil cooler	Heat transfer	Copper Alloy	Treated water (Internal)	Reduction in heat transfer	One-Time Inspection	VIII.E-10	3.4.1-09	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
19	Heat Exchanger (shell) – AFW pump turbine bearing lube oil cooler	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.G-6	3.4.1-12	A 0403
20	Heat Exchanger (shell) – AFW pump turbine bearing lube oil cooler	Pressure boundary	Gray Cast Iron	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.G-6	3.4.1-12	A
21	Heat Exchanger (shell) – AFW pump turbine bearing lube oil cooler	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
22	Heat Exchanger (tubes) – AFW pump turbine bearing lube oil cooler	Pressure boundary	Copper Alloy	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.F-15	3.4.1-15	C

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
23	Heat Exchanger (tubes) – AFW pump turbine bearing lube oil cooler	Pressure boundary	Copper Alloy	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.F-15	3.4.1-15	C
24	Heat Exchanger (tubes) – AFW pump turbine bearing lube oil cooler	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	Lubricating Oil Analysis	VIII.G-8	3.4.1-10	A
25	Heat Exchanger (tubes) – AFW pump turbine bearing lube oil cooler	Heat transfer	Copper Alloy	Lubricating oil (External)	Reduction in heat transfer	One-Time Inspection	VIII.G-8	3.4.1-10	A
26	Heat Exchanger (tubes) – AFW pump turbine bearing lube oil cooler	Pressure boundary	Copper Alloy	Lubricating oil (External)	None	None	VII.C1-8	3.3.1-26	I 0413

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
27	Heat Exchanger (channel) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Gray Cast Iron	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.B1-11	3.4.1-04	C
28	Heat Exchanger (channel) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Gray Cast Iron	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-11	3.4.1-04	C
29	Heat Exchanger (channel) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Gray Cast Iron	Treated water (Internal)	Loss of material	Selective Leaching Inspection	VIII.G-26	3.4.1-36	C

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
30	Heat Exchanger (channel) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Gray Cast Iron	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
31	Heat Exchanger (shell) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.G-19	3.4.1-18	C 0403
32	Heat Exchanger (shell) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.G-19	3.4.1-18	C

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
33	Heat Exchanger (shell) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	C
34	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Heat transfer	Copper Alloy > 15% Zn	Treated water (Internal)	Reduction in heat transfer	PWR Water Chemistry	VIII.E-10	3.4.1-09	A
35	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Heat transfer	Copper Alloy > 15% Zn	Treated water (Internal)	Reduction in heat transfer	One-Time Inspection	VIII.E-10	3.4.1-09	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
36	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (External)	Reduction in heat transfer	Lubricating Oil Analysis	VIII.G-8	3.4.1-10	A
37	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Heat transfer	Copper Alloy > 15% Zn	Lubricating oil (External)	Reduction in heat transfer	One-Time Inspection	VIII.G-8	3.4.1-10	A
38	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (Internal)	Cracking	One-Time Inspection	N/A	N/A	H

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
39	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (Internal)	Cracking	PWR Water Chemistry	N/A	N/A	H
40	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.F-15	3.4.1-15	C 0410
41	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.F-15	3.4.1-15	C 0410

Table 3.4.2-4		Aging Management Review Results – Main Steam System							
Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
42	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VIII.G-19	3.4.1-18	C 0403 0410
43	Heat Exchanger (tubes) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (External)	Loss of material	One-Time Inspection	VIII.G-19	3.4.1-18	C 0410
44	Heat Exchanger (tubesheet) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.F-15	3.4.1-15	C

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
45	Heat Exchanger (tubesheet) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.F-15	3.4.1-15	C
46	Heat Exchanger (tubesheet) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Treated water (Internal)	Loss of material	Selective Leaching Inspection	VIII.G-23	3.4.1-35	C
47	Heat Exchanger (tubesheet) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (External)	Loss of material	Lubricating Oil Analysis	VIII.G-19	3.4.1-18	C 0403

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
48	Heat Exchanger (tubesheet) – AFW pump turbine governor lube oil cooler (DB-E194-1 & 2)	Pressure boundary	Copper Alloy > 15% Zn	Lubricating oil (External)	Loss of material	One-Time Inspection	VIII.G-19	3.4.1-18	C
49	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	C 0405 0409
50	Piping	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VIII.B1-7	3.4.1-30	E
51	Piping	Pressure boundary	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-8	3.4.1-37	E 0411
52	Piping	Pressure boundary	Steel	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.B1-9	3.4.1-29	A
53	Piping	Pressure boundary	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-8	3.4.1-37	A
54	Piping	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-11	3.4.1-04	A 0402

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
55	Piping	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.F-26	3.4.1-29	A 0402
56	Piping	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-11	3.4.1-04	A 0402
57	Piping	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
58	Piping	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A 0409
59	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VIII.I-10	3.4.1-41	A 0405
60	Piping	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
61	Piping	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
62	Piping	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	C 0405 0409

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
63	Piping	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VIII.B1-7	3.4.1-30	E
64	Piping	Structural integrity	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-8	3.4.1-37	E 0411
65	Piping	Structural integrity	Steel	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.B1-9	3.4.1-29	A
66	Piping	Structural integrity	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-8	3.4.1-37	A
67	Piping	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.B1-11	3.4.1-04	A
68	Piping	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-11	3.4.1-04	A
69	Piping	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
70	Piping	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A 0409

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
71	Pump Casing – Steam generator wet layup chemical addition metering pump (DB-P259-1 & 2)	Structural integrity	Polymer	Treated water (Internal)	None	None	N/A	N/A	F
72	Pump Casing – Steam generator wet layup chemical addition metering pump (DB-P259-1 & 2)	Structural integrity	Polymer	Air with borated water leakage (External)	None	None	N/A	N/A	F
73	Pump Casing – Steam generator wet layup chemical addition metering pump (DB-P259-1 & 2)	Structural integrity	Polymer	Air-indoor uncontrolled (External)	Hardening and loss of strength	External Surfaces Monitoring	N/A	N/A	F

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
74	Pump Casing – Steam generator wet layup chemical addition metering pump (DB-P182-1 & 2)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A
75	Pump Casing – Steam generator wet layup chemical addition metering pump (DB-P182-1 & 2)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A
76	Pump Casing – Steam generator wet layup chemical addition metering pump (DB-P182-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
77	Pump Casing – Steam generator wet layup chemical addition metering pump (DB-P182-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
78	Tank – Air volume tank (DB-T143-1 & 2)	Pressure boundary	Steel	Dried air (Internal)	None	None	VII.J-22	3.3.1-98	A 0406
79	Tank – Air volume tank (DB-T143-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
80	Tank – Air volume tank (DB-T191-1 & 2)	Pressure boundary	Steel	Dried air (Internal)	None	None	VII.J-22	3.3.1-98	A 0406
81	Tank – Air volume tank (DB-T191-1 & 2)	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
82	Tank – Air volume tank (DB-T191-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
83	Tank – Steam generator wet layup chemical addition tank (DB-T139-1 & 2)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A
84	Tank – Steam generator wet layup chemical addition tank (DB-T139-1 & 2)	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A
85	Tank – Steam generator wet layup chemical addition tank (DB-T139-1 & 2)	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
86	Tank – Steam generator wet layup chemical addition tank (DB-T139-1 & 2)	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	C
87	Trap Body	Pressure boundary	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-8	3.4.1-37	E 0411
88	Trap Body	Pressure boundary	Steel	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.B1-9	3.4.1-29	A
89	Trap Body	Pressure boundary	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-8	3.4.1-37	A
90	Trap Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
91	Trap Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A 0409
92	Trap Body	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	C 0405 0409

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
93	Trap Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
94	Trap Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A 0409
95	Tubing	Pressure boundary	Copper Alloy	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A 0406
96	Tubing	Pressure boundary	Copper Alloy	Air with borated water leakage (External)	None	None	VII.J-5	3.3.1-99	A
97	Tubing	Pressure boundary	Copper Alloy	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
98	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A 0406
99	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
100	Tubing	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System									
Row No.	**Component Type**	**Intended Function(s)**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801, Volume 2 Item**	**Table 1 Item**	**Notes**
101	Tubing	Pressure boundary	Stainless Steel	Lubricating oil (Internal)	Loss of material	Lubricating Oil Analysis	VIII.G-29	3.4.1-19	A
102	Tubing	Pressure boundary	Stainless Steel	Lubricating oil (Internal)	Loss of material	One-Time Inspection	VIII.G-29	3.4.1-19	A
103	Tubing	Pressure boundary	Stainless Steel	Steam (Internal)	Cracking	One-Time Inspection	VIII.B1-2	3.4.1-39	E 0411
104	Tubing	Pressure boundary	Stainless Steel	Steam (Internal)	Cracking	PWR Water Chemistry	VIII.B1-2	3.4.1-39	A
105	Tubing	Pressure boundary	Stainless Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-3	3.4.1-37	E 0411
106	Tubing	Pressure boundary	Stainless Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-3	3.4.1-37	A
107	Tubing	Pressure boundary	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A
108	Tubing	Pressure boundary	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
109	Tubing	Pressure boundary	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0402
110	Tubing	Pressure boundary	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0402
111	Tubing	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
112	Tubing	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
113	Tubing	Structural integrity	Stainless Steel	Steam (Internal)	Cracking	One-Time Inspection	VIII.B1-2	3.4.1-39	E 0411
114	Tubing	Structural integrity	Stainless Steel	Steam (Internal)	Cracking	PWR Water Chemistry	VIII.B1-2	3.4.1-39	A
115	Tubing	Structural integrity	Stainless Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-3	3.4.1-37	E 0411
116	Tubing	Structural integrity	Stainless Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-3	3.4.1-37	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
117	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A
118	Tubing	Structural integrity	Stainless Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A
119	Tubing	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	One-Time Inspection	VIII.B1-5	3.4.1-14	A
120	Tubing	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Cracking	PWR Water Chemistry	VIII.B1-5	3.4.1-14	A
121	Tubing	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-4	3.4.1-16	A 0402
122	Tubing	Structural integrity	Stainless Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-4	3.4.1-16	A 0402
123	Tubing	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
124	Tubing	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
125	Turbine Casing – AFW turbine casing (DB-K3-1 & 2)	Pressure boundary	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-8	3.4.1-37	E 0411
126	Turbine Casing – AFW turbine casing (DB-K3-1 & 2)	Pressure boundary	Steel	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.B1-9	3.4.1-29	A
127	Turbine Casing – AFW turbine casing (DB-K3-1 & 2)	Pressure boundary	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-8	3.4.1-37	A
128	Turbine Casing – AFW turbine casing (DB-K3-1 & 2)	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
129	Valve Body	Pressure boundary	Aluminum	Dried air (Internal)	None	None	N/A	N/A	G 0406
130	Valve Body	Pressure boundary	Aluminum	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.A3-4	3.3.1-88	A
131	Valve Body	Pressure boundary	Aluminum	Air-indoor uncontrolled (External)	None	None	V.F-2	3.2.1-50	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
132	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Dried air (Internal)	None	None	VII.J-3	3.3.1-98	A 0406
133	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VII.I-12	3.3.1-88	A
134	Valve Body	Pressure boundary	Copper Alloy > 15% Zn	Air-indoor uncontrolled (External)	None	None	VIII.I-2	3.4.1-41	A
135	Valve Body	Pressure boundary	Stainless Steel	Dried air (Internal)	None	None	VII.J-18	3.3.1-98	A 0406
136	Valve Body	Pressure boundary	Stainless Steel	Steam (Internal)	Cracking	One-Time Inspection	VIII.B1-2	3.4.1-39	E 0411
137	Valve Body	Pressure boundary	Stainless Steel	Steam (Internal)	Cracking	PWR Water Chemistry	VIII.B1-2	3.4.1-39	A
138	Valve Body	Pressure boundary	Stainless Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-3	3.4.1-37	E 0411
139	Valve Body	Pressure boundary	Stainless Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-3	3.4.1-37	A

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
140	Valve Body	Pressure boundary	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
141	Valve Body	Pressure boundary	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
142	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	C 0405 0409
143	Valve Body	Pressure boundary	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VIII.B1-7	3.4.1-30	E
144	Valve Body	Pressure boundary	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-8	3.4.1-37	E 0411
145	Valve Body	Pressure boundary	Steel	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.B1-9	3.4.1-29	A
146	Valve Body	Pressure boundary	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-8	3.4.1-37	A
147	Valve Body	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	One-Time Inspection	VIII.B1-11	3.4.1-04	A 0402

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
148	Valve Body	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.F-26	3.4.1-29	A 0402
149	Valve Body	Pressure boundary	Steel	Treated water > 60°C (> 140°F) (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-11	3.4.1-04	A 0402
150	Valve Body	Pressure boundary	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
151	Valve Body	Pressure boundary	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A
152	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (Internal)	None	None	VIII.I-10	3.4.1-41	A 0405
153	Valve Body	Structural integrity	Stainless Steel	Air with borated water leakage (External)	None	None	VII.J-16	3.3.1-99	A
154	Valve Body	Structural integrity	Stainless Steel	Air-indoor uncontrolled (External)	None	None	VIII.I-10	3.4.1-41	A
155	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (Internal)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	C 0405 0409

Table 3.4.2-4 Aging Management Review Results – Main Steam System

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801, Volume 2 Item	Table 1 Item	Notes
156	Valve Body	Structural integrity	Steel	Condensation (Internal)	Loss of material	One-Time Inspection	VIII.B1-7	3.4.1-30	E
157	Valve Body	Structural integrity	Steel	Steam (Internal)	Loss of material	One-Time Inspection	VIII.B1-8	3.4.1-37	E 0411
158	Valve Body	Structural integrity	Steel	Steam (Internal)	Loss of material	Flow-Accelerated Corrosion (FAC)	VIII.B1-9	3.4.1-29	A
159	Valve Body	Structural integrity	Steel	Steam (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-8	3.4.1-37	A
160	Valve Body	Structural integrity	Steel	Treated water (Internal)	Loss of material	One-Time Inspection	VIII.B1-11	3.4.1-04	A
161	Valve Body	Structural integrity	Steel	Treated water (Internal)	Loss of material	PWR Water Chemistry	VIII.B1-11	3.4.1-04	A
162	Valve Body	Structural integrity	Steel	Air with borated water leakage (External)	Loss of material	Boric Acid Corrosion	VIII.H-9	3.4.1-38	A
163	Valve Body	Structural integrity	Steel	Air-indoor uncontrolled (External)	Loss of material	External Surfaces Monitoring	VIII.H-7	3.4.1-28	A

Generic Notes:	
A	Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
B	Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
C	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
D	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
E	Consistent with NUREG-1801 item for material, environment, and aging effect, but a different aging management program is credited or NUREG-1801 identifies a plant-specific aging management program.
F	Material not in NUREG-1801 for this component.
G	Environment not in NUREG-1801 for this component and material.
H	Aging effect not in NUREG-1801 for this component, material and environment combination.
I	Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.
J	Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-Specific Notes:	
0401	Not used.
0402	For the purposes of NUREG-1801 comparison, Treated water > 60°C (> 140°F) is equivalent to Treated water for this material and aging effect.
0403	The Lubricating Oil Analysis Program will also manage loss of material due to selective leaching by controlling water contamination of the lubricating oil environment.
0404	The air-water interface is evaluated as a moist air environment.
0405	This environment is the same as the NUREG-1801 environment except that it is an internal rather than an external environment.
0406	The Air Quality Monitoring Program will ensure that the control air environment, supplied from the Instrument Air System, remains dry and free of contaminants, thereby sustaining the aging management review conclusion that there are no aging effects that require management.
0407	Not used.
0408	Except for the motor-driven feedwater pump (MDFP) and startup feed pump (SUFP) portions of the Main Feedwater System, the control air supply components associated with the main and start-up control valves, and bolting exposed to "air with steam or water leakage", loss of material due to general corrosion is not an aging effect requiring management for the external surfaces of steel components in the Main Feedwater System that are exposed to the "air-indoor uncontrolled" because the surface temperature is greater than 212°F and, therefore, the surface is expected to be dry.
0409	This aging effect is only applicable for components with temperatures less than 212°F.
0410	The component is admiralty brass, which is an inhibited copper alloy, and, therefore, loss of material due to selective leaching is not an applicable aging mechanism.
0411	One-Time Inspection will provide verification of PWR Water Chemistry Program effectiveness.
0412	Not used.
0413	This material is copper alloy < 15% Zn and is not in contact with a more cathodic metal; therefore, there are no aging effects requiring management in the lubricating oil environment.

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