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NL-12-123

September 26, 2012

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Correction to Previous Responses Regarding Unit 1 Buried Piping and Unit 2 Auxiliary Feedwater Pump Room Fire Event
Indian Point Nuclear Generating Unit Nos. 1, 2 & 3
Docket Nos. 50-003, 50-247 and 50-286
License Nos. DPR-5, DPR-26 and DPR-64

REFERENCE:

1. NRC letter dated December 30, 2008, "Request for Additional Information for the Review of the Indian Point Nuclear Generating Unit Numbers 2 and 3, License Renewal Application – Miscellaneous Items"
2. Entergy letter (NL-09-018), "Reply to Request for Additional Information – Miscellaneous Items," dated January 27, 2009
3. NRC Letter dated May 20, 2009, "Request for Additional Information for the Review of the Indian Point Nuclear Generating Unit Numbers 2 and 3, License Renewal Application - Offsite Power, Refueling Cavity, and Unit 2 Auxiliary Feedwater Pump Room Fire Event"
4. Entergy letter (NL-09-079), "Reply to Request for Additional Information Regarding Offsite Power, Refueling Cavity, and Unit 2 Auxiliary Feedwater Pump Room Fire Event," dated June 12, 2009
5. Entergy letter (NL-12-032), dated January 30, 2012, "Correction to Previous Response Regarding Unit 1 Buried Piping"
6. Entergy letter (NL-09-106), "Questions Regarding Buried Piping Inspections," dated July 27, 2009

Dear Sir or Madam:

Entergy Nuclear Operations, Inc is providing corrections, as shown in Attachment 1 to the responses provided by references 2 and 4 for license renewal application (LRA) Appendix B, Section 1.6. Reference 1 provided a Request for Additional Information (RAI) for miscellaneous items after review of the submittal application and supplemental letters for renewal of the operating licenses for Indian Point Units 2 and 3. A new Buried Piping and Tanks Inspection Program was proposed for Indian Point as described in the LRA in Section B.1.6. The reference 2 and 4 response to RAI's 2.3A.4.5-2, 3.4.2-1 and 3.4.2-2 added components to the scope of license renewal for the auxiliary feedwater pump room fire event (Reference 2) and additional information on aging management review (AMR) results for added components (Reference 4). Reference 4 provided a response to NRC RAI 3.4.2-2 (Reference 3) regarding additional information on aging effects and aging management programs to manage the aging

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NRR

effects for the component types that support the AFW pump room fire event that were not already included in the scope and subject to AMR. As a result of discovery of an omission in the response to RAIs 2.3.A.4.5-2, 3.4.2-1 and 3.4.2-2 corrections were provided by Reference 5 for a portion of the river water system. Subsequently, a potential discrepancy was found during the review of NRC testimony for the NYS-5 contention on buried piping in that the testimony prepared by Entergy for the same contention did not include the circulating water system on IP2 as being in the scope of Buried Piping and Tanks Inspection Program for license renewal. Upon further review of this item it was confirmed that on page 21 and 22 of Attachment 1 of letter NL-09-079 (Reference 4) line items for bolting and piping and in the circulating water system at IP2 credit the Buried Piping and Tanks Inspection Program. However, on page 1 of Attachment 1 of letter NL-09-106 (Reference 6) the circulating water system was omitted from the list of systems in the scope of the license renewal Buried Piping and Tanks Inspection Program. The buried piping in the circulating water system that is subject to aging management review had been included and remains in the IPEC buried piping program established in response to the industry initiative on buried piping. A review of the NL-09-079 (Reference 4) submittal identified no additional systems that were not included in the reference 6 submittal. The omission of the circulating water system from the reference 6 list of systems in the scope of the license renewal condition was recorded in the Indian Point Energy Center (IPEC) Corrective Action Program.

As a result of these discoveries, an extent of condition review was performed of the aging management review (AMR) report for the Auxiliary Feedwater Pump Room Fire Event and additional changes to the AMR were identified for the LRA as shown in Attachment 2.

If you have any questions, or require additional information, please contact Mr. Robert Walpole at 914-254-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on

9-26-12.

Sincerely,

Patricia W. Conway acting for F. Dacimo

FRD/cbr

Attachments: 1. Revised Appendix B, Section 1.6
2. Auxiliary Feedwater Pump Room Fire Event LRA Table and Appendix A and B Changes

cc: Mr. William Dean, Regional Administrator, NRC Region I
Mr. Sherwin E. Turk, NRC Office of General Counsel, Special Counsel
Mr. Dave Wrona, NRC Branch Chief, Engineering Review Branch I
Mr. John Daily, NRC Sr. Project Manager, Division of License Renewal
Mr. Douglas Pickett, NRR Senior Project Manager
Mrs. Bridget Frymire, New York State Public Service Commission
NRC Resident Inspector's Office
Mr. Francis J. Murray, Jr., President and CEO NYSERDA

ATTACHMENT 1 TO NL-12-123

Correction to Previous Response Regarding Unit 1 Buried Piping

REVISED APPENDIX B, SECTION 1.6

Changes are shown with ~~striketrough~~ for deletions and underline for additions in the revised Appendix B Section 1.6

ENERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 1, 2 & 3
DOCKET NOS. 50-003, 50-247 AND 50-286

B.1.6 BURIED PIPING AND TANKS INSPECTION

Program Description

The Buried Piping and Tanks Inspection Program is a new program that includes (a) preventive measures to mitigate corrosion and (b) inspections to manage the effects of corrosion on the pressure-retaining capability of buried carbon steel, gray cast iron, and stainless steel components. Preventive measures are in accordance with standard industry practice for maintaining external coatings and wrappings. Buried components are inspected when excavated during maintenance. If trending within the corrective action program identifies susceptible locations, the areas with a history of corrosion problems are evaluated for the need for additional inspection, alternate coating, or replacement. The program applies to buried components in the following systems.

- Safety injection
- Service water
- Fire protection
- Fuel oil
- Security generator
- City water
- Plant drains
- Auxiliary feedwater
- Containment isolation support
- River water service (IP1)
- Circulating Water System (IP2)

Of these systems, only the safety injection system contains radioactive fluids during normal operations. The safety injection system buried components are stainless steel. Stainless steel is used in the safety injection system for its corrosion resistance.

The Buried Piping and Tanks Inspection Program will be modified based on operating experience to include a risk assessment of in-scope buried piping and tanks that includes consideration of the impacts of buried piping tank or tank leakage and of conditions affecting the risk for corrosion. The program will classify pipe segments and tanks as having a high, medium or low impact of leakage based on the safety class, the hazard posed by fluid contained in the piping and the impact of leakage on reliable plant operation. Corrosion risk will be determined through consideration of piping or tank material, soil resistivity, drainage, the presence of cathodic protection and the type of coating. Inspection priority and frequency for periodic inspections of the in-scope piping and tanks will be based on the results of the risk assessment. Inspections will be performed using qualified inspection techniques with demonstrated effectiveness. Inspections will begin prior to the period of extended operation.

Prior to entering the period of extended operation, plant operating experience will be reviewed and multiple inspections will be completed within the past ten years. Additional periodic inspections will be performed within the first ten years of the period of extended operation.

The program will be implemented prior to the period of extended operation.

NUREG-1801 Consistency

The Buried Piping and Tanks Inspection Program will be consistent with program attributes described in NUREG-1801, Section XI.M34, Buried Piping and Tanks Inspection.

Exceptions to NUREG-1801

None

Enhancements

None

Operating Experience

The Buried Piping and Tanks Inspection Program is a new program. Plant and industry operating experience will be considered when implementing this program. Industry operating experience that forms the basis for the program is described in the operating experience element of the NUREG-1801 program description. IPEC plant-specific operating experience is not inconsistent with the operating experience in the NUREG-1801 program description.

The IPEC program is based on the program description in NUREG-1801, which in turn is based on industry operating experience. As such, operating experience assures that implementation of the Buried Piping and Tanks Inspection program will manage the effects of aging such that applicable components will continue to perform their intended functions consistent with the current licensing basis through the period of extended operation.

Conclusion

The Buried Piping and Tanks Inspection Program will be effective for managing aging effects since it will incorporate proven monitoring techniques, acceptance criteria, corrective actions, and administrative controls. The Buried Piping and Tanks Inspection Program assures the effects of aging will be managed such that applicable components will continue to perform their intended functions consistent with the current licensing basis through the period of extended operation.

ATTACHMENT 2 TO NL-12-123

Auxiliary Feedwater Pump Room Fire Event LRA Table and Appendix A and B Changes

The following tables include changes as a result of the additional review of the auxiliary feedwater pump room fire event aging management review tables. Changes are shown with ~~strike through~~ for deletions and underline for additions to the tables submitted in letter NL-09-079.

Conventional Closed Cooling System

Added, deleted and revised line items to change materials to admiralty (inhibited) tubes and muntz (copper alloy > 15% Zn) tube sheets

Condensate System

Added line item for stainless steel expansion joints

Added line items for elastomer expansion joints located at condensate pump suction

Added line items for titanium heat exchanger (tubes) subject to treated water (internal) for gland steam condenser

Deleted duplicative row for titanium heat exchanger (tubes) in steam (ext) for loss of material and fouling

Changed material for sight glasses to stainless steel/Added line item for 'cracking' for stainless steel sight glasses

Deleted line items for piping, thermowells, tubing and valve bodies at main condenser with Metal Fatigue - TLAA identified as the aging management program since water temperatures are not expected to reach levels where fatigue is a concern.

Circulating Water System

Deleted line item for carbon steel pump casing in raw water external

City Water System

Line items deleted for sight glasses

Wash Water System

Added line items for cast iron and fiberglass pipe

Deleted line items for expansion joints since they are short lived

Deleted line items for nozzles since they are part of the Service Water system

Deleted line items for flex hose since they are part of the City Water system

Added line items for gray cast iron valves

Instrument Air System

Added line items for IA Aftercooler heat exchanger shell,

Deleted line item for loss of material due to selective leaching for the tubes

Added line items for plastic tube sheets

Added line item for intake filters and housings

Added line item for carbon steel piping subject to condensation (internal)

Added line items for stainless steel and copper alloy tubing subject to condensation (internal)

Added line items for carbon steel, stainless steel, copper alloy and copper alloy > 15% Zn and aluminum valve bodies subject to condensation (internal)

Added line item for filter

Instrument Air Closed Cooling Water System

Added line items for copper alloy > 15% Zn tube sheets for heat exchanger

Service Water System

Added line items for gray cast iron and copper alloy valve bodies in raw water

Changed nozzle intended function to flow control and material to stainless steel

Lube Oil System

Corrected heat exchanger tubes to show lube oil (external) and raw water (internal).

IP1 Station Air System

Added line items for:

Compressor casing/Condensation(int)

Filter housing (Carbon steel)/Lube oil(int)

Dryer housing/condensation(int)

Lube oil heat exchanger tubes/Lube oil(ext)-Treated Water(int)

Intake air filter housing/Indoor Air(int)

Lube oil piping/Lube Oil(int)

Aftercooler heat exchanger/Condensation(int)-Treated Water(ext)

Lube oil pump casing/Lube oil(int)

Lube oil tank/Lube oil(int)

Strainer housing/Condensation(int)

Filter housing (Stainless Steel) /Condensation(int)

Valves (Carbon Steel & Gray Cast Iron)/Lube Oil(int)

Valves (Copper Alloy >15% Zn)/Condensation(int)

**Table 3.4.2-5-1-IP2
 Conventional Closed Cooling System
 Components Required to Support AFW Pump Room Fire Event
 Summary of Aging Management Review**

Table 3.4.2-5-1-IP2 Conventional Closed Cooling System (CCC)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger (tubes)	Pressure boundary	Copper alloy > 15% Zn (inhibited)	Treated water (ext)	Loss of material	Water Chemistry Control – Closed Cooling Water	VII.E1-2 (AP-34)	3.3.1-51	D
Heat exchanger (tubes)	Heat transfer	Copper alloy > 15% Zn (inhibited)	Treated water (ext)	Fouling	Water Chemistry Control – Closed Cooling Water	VII.C2-2 (AP-80)	3.3.1-52	B
Heat exchanger (tubes)	Pressure boundary	Copper alloy > 15% Zn	Treated water (int)	Loss of material	Selective Leaching	VII.C2-6 (AP-43)	3.3.1-84	<u>C</u>
Heat exchanger (tubes)	Pressure boundary	Copper alloy > 15% Zn (inhibited)	Raw water (int)	Loss of material	Service Water Integrity	VII.C1-3 (A-65)	3.3.1-82	C
Heat exchanger (tubes)	Heat transfer	Copper alloy > 15% Zn (inhibited)	Raw water (int)	Fouling	Service Water Integrity	VII.C1-6 (A-72)	3.3.1-83	C
Heat exchanger (tubes)	Pressure boundary	Copper alloy > 15% Zn	Treated water (ext)	Loss of material	Selective Leaching	VII.C1-4 (A-66)	3.3.1-84	<u>C</u>
Heat exchanger (tube sheet)	Pressure boundary	Copper alloy > 15% Zn	Treated water (int)	Loss of material	Water Chemistry Control – Closed Cooling Water	VII.E1-2 (AP-34)	3.3.1-51	D
Heat exchanger (tube sheet)	Pressure boundary	Copper alloy > 15% Zn	Treated water (int)	Loss of material	Selective Leaching	VII.C2-6 (AP-43)	3.3.1-84	<u>C</u>
Heat exchanger (tube sheet)	Pressure boundary	Copper alloy > 15% Zn	Raw water (ext)	Loss of material	Selective Leaching	VII.C1-4 (A-66)	3.3.1-84	<u>C</u>

Table 3.4.2-5-1-IP2 Conventional Closed Cooling System (CCC)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
<u>Heat exchanger (tube sheet)</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Raw water (ext)</u>	<u>Loss of material</u>	<u>Service Water Integrity</u>	<u>VII.C1-3 (A-65)</u>	<u>3.3.1-82</u>	<u>C</u>

**Table 3.4.2-5-2-IP2
Condensate System
Components Required to Support AFW Pump Room Fire Event
Summary of Aging Management Review**

Table 3.4.2-5-2-IP2 Condensate System (COND)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Bolting	Pressure boundary	Carbon steel	Air-indoor-(ext)	Loss of Material	Bolting Integrity	VIII.H-4 (S-34)	3.4.1-22	A
Bolting	Pressure boundary	Stainless steel	Air-indoor-(ext)	None	None	VIII.I-10 (SP-12)	3.4.1-41	C
<u>Expansion joint</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Air-indoor(ext)</u>	<u>None</u>	<u>None</u>	<u>VIII.I-10 (SP-12)</u>	<u>3.4.1-41</u>	<u>A</u>
<u>Expansion joint</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Treated water >140°F (int)</u>	<u>Loss of Material</u>	<u>Water Chemistry Control-Primary & Secondary</u>	<u>VIII.E-29 (SP-16)</u>	<u>3.4.1-16</u>	<u>A, 404</u>
<u>Expansion joint</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Treated water >140°F (int)</u>	<u>Cracking</u>	<u>Water Chemistry Control-Primary & Secondary</u>	<u>VIII.E-30 (SP-17)</u>	<u>3.4.1-14</u>	<u>A, 404</u>
<u>Expansion joint</u>	<u>Pressure boundary</u>	<u>Elastomer</u>	<u>Treated water (int)</u>	<u>Cracking</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>--</u>	<u>--</u>	<u>G</u>
<u>Expansion joint</u>	<u>Pressure boundary</u>	<u>Elastomer</u>	<u>Treated water (int)</u>	<u>Change in material properties</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>--</u>	<u>--</u>	<u>G</u>
<u>Expansion joint</u>	<u>Pressure boundary</u>	<u>Elastomer</u>	<u>Air-indoor-(ext)</u>	<u>Cracking</u>	<u>Periodic Surveillance and Preventive</u>	<u>VII.F2-7 (A-17)</u>	<u>3.3.1-11</u>	<u>E</u>

Table 3.4.2-5-2-IP2 Condensate System (COND)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
					Maintenance			
<u>Expansion joint</u>	<u>Pressure boundary</u>	<u>Elastomer</u>	<u>Air-indoor-(ext)</u>	<u>Change in material properties</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.F2-7 (A-17)</u>	<u>3.3.1-11</u>	<u>E</u>
Heat exchanger (shell)	Pressure boundary	Carbon steel	Steam (ext)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.A-16 (S-06)	3.4.1-2	C, 404
Heat exchanger (shell)	Pressure boundary	Carbon steel	Treated water (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.E-34 (S-10)	3.4.1-4	A, 404
Heat exchanger (shell)	Pressure boundary	Carbon steel	Air-indoor-(ext)	Loss of Material	External Surfaces Monitoring	VIII.H-7 (S-29)	3.4.1-28	A
Heat exchanger (tubes)	Pressure boundary	Titanium	Steam (ext)	Loss of Material	Water Chemistry Control-Primary & Secondary	-	-	F
Heat exchanger (tubes)	Heat transfer	Titanium	Steam (ext)	Fouling	Water Chemistry Control-Primary & Secondary	-	-	F
Heat exchanger (tubes)	Pressure boundary	Titanium	Raw water (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	-	-	F
Heat exchanger (tubes)	Heat transfer	Titanium	Raw water (int)	Fouling	Periodic Surveillance and Preventive Maintenance	-	-	F

Table 3.4.2-5-2-IP2 Condensate System (COND)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger (tubes)	Pressure boundary	Titanium	Treated water (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	--	--	F
Heat exchanger (tubes)	Heat transfer	Titanium	Treated water (int)	Fouling	Water Chemistry Control-Primary & Secondary	--	--	F
Heat exchanger (tubes)	Pressure boundary	Copper alloy	Treated water (int)	Loss of material	Water Chemistry Control – Primary & Secondary	VIII.A-5 (SP-61)	3.4.1-15	D, 404
Heat exchanger (tubes)	Heat transfer	Copper alloy	Treated water (int)	Fouling	Water Chemistry Control-Primary & Secondary	VIII.E-10 (SP-58)	3.4.1-9	A, 404
Heat exchanger (tubes)	Pressure boundary	Copper alloy	Lube oil (ext)	Loss of Material	Oil Analysis	VIII.G-8 (SP-53)	3.4.1-10	D, 405
Heat exchanger (tubes)	Heat transfer	Copper alloy	Lube oil (ext)	Fouling	Oil Analysis	VIII.G-8 (SP-53)	3.4.1-10	D, 405
Heat exchanger (tubes)	Pressure boundary	Stainless steel	Steam (ext)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.B1-3 (SP-43)	3.4.1-37	C
Heat exchanger (tubes)	Pressure boundary	Stainless steel	Steam (ext)	Cracking	Water Chemistry Control-Primary & Secondary	VIII.B1-2 (SP-44)	3.4.1-39	C
Heat exchanger	Heat	Stainless	Steam (ext)	Fouling	Water	-	--	G

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
(tubes)	transfer	steel			Chemistry Control-Primary & Secondary			
Heat exchanger (tubes)	Pressure boundary	Stainless steel	Treated water >140°F (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.E-36 (S-22)	3.4.1-16	A, 404
Heat exchanger (tubes)	Pressure boundary	Stainless steel	Treated water >140°F (int)	Cracking	Water Chemistry Control-Primary & Secondary	VIII.E-30 (SP-17)	3.4.1-14	C, 404
Heat exchanger (tubes)	Heat transfer	Stainless steel	Treated water >140°F (int)	Fouling	Water Chemistry Control-Primary & Secondary	VIII.E-13 (SP-40)	3.4.1-9	A, 404
Heat exchanger (tubes)	Pressure boundary	Titanium	Steam (ext)	Loss of Material	Water Chemistry Control-Primary & Secondary	-	-	F
Heat exchanger (tubes)	Heat transfer	Titanium	Steam (ext)	Fouling	Water Chemistry Control-Primary & Secondary	-	-	F
Piping	Pressure boundary	Carbon steel	Treated water (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.E-34 (S-10)	3.4.1-4	A, 404
Piping	Pressure boundary	Carbon steel	Treated water (int)	Cracking-fatigue	Metal Fatigue-TLAA	VIII.B1-10 (S-08)	3.4.1-1	G
Piping	Pressure boundary	Carbon steel	Air-indoor-(ext)	Loss of Material	External Surfaces	VIII.H-7 (S-29)	3.4.1-28	A

Table 3.4.2-5-2-IP2 Condensate System (COND)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
					Monitoring			
Sight glass	Pressure boundary	Carbon <u>Stainless steel</u>	Air-indoor-(ext)	Loss of Material <u>None</u>	External Surfaces Monitoring <u>None</u>	VIII.H-7 (S-29) <u>VIII.I-10 (SP-12)</u>	3.4.1-28 <u>3.4.1-41</u>	408 <u>A</u>
Sight glass	Pressure boundary	Carbon <u>Stainless steel</u>	Treated water >140°F (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.E-34 (SP-10) <u>VIII.E-29 (SP-16)</u>	3.4.1-28 <u>3.4.1-16</u>	A <u>A, 404</u>
<u>Sight glass</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Treated water >140°F (int)</u>	<u>Cracking</u>	<u>Water Chemistry Control-Primary & Secondary</u>	<u>VIII.E-30 (SP-17)</u>	<u>3.4.1-14</u>	<u>A, 314</u>
Sight glass	Pressure boundary	Glass	Air-indoor-(ext)	None	None	<u>VIII.I-5 (SP-9)</u>	<u>3.4.1-40</u>	<u>A</u>
Sight glass	Pressure boundary	Glass	Treated water (int)	None	None	VIII.I-8 (SP-35)	3.4.1-40	A
Thermowell	Pressure boundary	Carbon steel	Air-indoor-(ext)	Loss of Material	External Surfaces Monitoring	VIII.H-7 (S-29)	3.4.1-28	A
Thermowell	Pressure boundary	Carbon steel	Treated water (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.E-34 (S-10)	3.4.1-4	A, 404
Thermowell	Pressure boundary	Carbon steel	Treated water (int)	Cracking-fatigue	Metal Fatigue-TLAA	VIII.B1-10 (S-08)	3.4.1-1	C
Thermowell	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VIII.I-10 (SP-12)	3.4.1-41	A

Table 3.4.2-5-2-IP2 Condensate System (COND)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Thermowell	Pressure boundary	Stainless steel	Treated water >140°F (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.E-29 (SP-16)	3.4.1-16	A, 404
Thermowell	Pressure boundary	Stainless steel	Treated water >140°F (int)	Cracking	Water Chemistry Control-Primary & Secondary	VIII.E-30 (SP-17)	3.4.1-14	A, 404
Thermowell	Pressure boundary	Stainless steel	Treated water >140°F (int)	Cracking-fatigue	Metal Fatigue-TLAA	VII.E1-16 (A-57)	3.3.1-2	C, 406
Tubing	Pressure boundary	Stainless steel	Air-indoor-(ext)	None	None	VIII.I-10 (SP-12)	3.4.1-41	A
Tubing	Pressure boundary	Stainless steel	Treated water >140°F (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.E-29 (SP-16)	3.4.1-16	A, 404
Tubing	Pressure boundary	Stainless steel	Treated water >140°F (int)	Cracking	Water Chemistry Control-Primary & Secondary	VIII.E-30 (SP-17)	3.4.1-14	A, 404
Tubing	Pressure boundary	Stainless steel	Treated water >140°F (int)	Cracking-fatigue	Metal Fatigue-TLAA	VII.E1-16 (A-57)	3.3.1-2	C, 406
Valve body	Pressure boundary	Carbon steel	Treated water (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.E-34 (S-10)	3.4.1-4	A, 404
Valve body	Pressure boundary	Carbon steel	Treated water (int)	Cracking-fatigue	Metal Fatigue-TLAA	VIII.B1-10 (S-08)	3.4.1-1	C

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Valve body	Pressure boundary	Carbon steel	Air-indoor-(ext)	Loss of Material	External Surfaces Monitoring	VIII.H-7 (S-29)	3.4.1-28	A
Valve body	Pressure boundary	Stainless steel	Treated water >140°F (int)	Loss of Material	Water Chemistry Control-Primary & Secondary	VIII.E-29 (SP-16)	3.4.1-16	A, 404
Valve body	Pressure boundary	Stainless steel	Treated water >140°F (int)	Cracking	Water Chemistry Control-Primary & Secondary	VIII.E-30 (SP-17)	3.4.1-14	A, 404
Valve body	Pressure boundary	Stainless steel	Treated water >140°F (int)	Cracking-fatigue	Metal Fatigue-TLAA	VII.E1-16 (A-57)	3.3.1-2	C, 406
Valve body	Pressure boundary	Stainless steel	Air-indoor-(ext)	None	None	VIII.I-10 (SP-12)	3.4.1-41	A

**Table 3.4.2-5-3-IP2
 Circulating Water System
 Components Required to Support AFW Pump Room Fire Event
 Summary of Aging Management Review**

Table 3.4.2-5-3-IP2 Circulating Water System (CIRC)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Bolting	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of material	Bolting Integrity	VII.I-1 (AP-28)	3.3.1-43	C
Bolting	Pressure boundary	Carbon steel	Soil (ext)	Loss of material	Buried Piping and Tanks Inspection	VIII.E-1 (S-01)	3.4.1-11	C
Bolting	Pressure boundary	Carbon steel	Raw water (ext)	Loss of material	Periodic Surveillance and Preventive Maintenance	VIII.G-36 (S-12)	3.4.1-8	E
Expansion joints	Pressure boundary	Elastomer	Raw water (int)	Cracking	Periodic Surveillance and Preventive Maintenance	VII.C1-1 (AP-75)	3.3.1-75	E
Expansion joints	Pressure boundary	Elastomer	Raw water (int)	Change in material properties	Periodic Surveillance and Preventive Maintenance	VII.C1-1 (AP-75)	3.3.1-75	E
Expansion joints	Pressure boundary	Elastomer	Air-outdoor (ext)	Cracking	Periodic Surveillance and Preventive Maintenance	--	--	G
Expansion joints	Pressure boundary	Elastomer	Air-outdoor (ext)	Change in material properties	Periodic Surveillance and Preventive Maintenance	--	--	G
Piping	Pressure	Carbon	Soil (ext)	Loss of	Buried Piping	VIII.E-1	3.4.1-11	C

Table 3.4.2-5-3-IP2 Circulating Water System (CIRC)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
	boundary	steel		material	and Tanks Inspection	(S-01)		
Piping	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of material	External Surfaces Monitoring	VIII.H-8 (S-41)	3.4.1-28	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Loss of material	Periodic Surveillance and Preventive Maintenance	VIII.G-36 (S-12)	3.4.1-8	E
Pump casing	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of material	External Surfaces Monitoring	VIII.H-8 (S-41)	3.4.1-28	A
Pump casing	Pressure boundary	Carbon steel	Raw water (int)	Loss of material	Periodic Surveillance and Preventive Maintenance	VIII.G-36 (S-12)	3.4.1-8	E
Pump casing	Pressure boundary	Carbon steel	Raw water (ext)	Loss of material	Periodic Surveillance and Preventive Maintenance	VIII.G-36 (S-12)	3.4.1-8	E
Pump casing	Pressure boundary	Stainless steel	Raw water (int)	Loss of material	Periodic Surveillance and Preventive Maintenance	VIII.E-27 (SP-36)	3.4.1-32	E
Pump casing	Pressure boundary	Stainless steel	Raw water (ext)	Loss of material	Periodic Surveillance and Preventive Maintenance	VIII.E-27 (SP-36)	3.4.1-32	E
Pump casing	Pressure boundary	Gray cast iron	Air-outdoor (ext)	Loss of material	External Surfaces Monitoring	VIII.E-27 (SP-36)	3.4.1-28	A
Pump casing	Pressure	Gray cast	Raw water (int)	Loss of	Periodic	VIII.G-36	3.4.1-8	E

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
	boundary	iron		material	Surveillance and Preventive Maintenance	(S-12)		
Pump casing	Pressure boundary	Gray cast iron	Raw water (int)	Loss of material	Selective Leaching	VIII.A-7 (SP-28)	3.4.1-36	C
Pump casing	Pressure boundary	Gray cast iron	Raw water (ext)	Loss of material	Periodic Surveillance and Preventive Maintenance	VIII.G-36 (S-12)	3.4.1-8	E
Pump casing	Pressure boundary	Gray cast iron	Raw water (ext)	Loss of material	Selective Leaching	VIII.A-7 (SP-28)	3.4.1-36	C

**Table 3.4.2-5-4-IP2
 City Water System
 Components Required to Support AFW Pump Room Fire Event
 Summary of Aging Management Review**

Table 3.4.2-5-4-IP2 City Water System (CYW)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Bolting	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of Material	Bolting Integrity	VII.I-1 (AP-28)	3.3.1-43	A
Bolting	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of Material	Bolting Integrity	--	--	G
Bolting	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	Bolting Integrity	VII.I-4 (AP-27)	3.3.1-43	A
Bolting	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	C
Flex hose	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Flex hose	Pressure boundary	Stainless steel	Treated water (int)	Loss of Material	One-Time Inspection	--	--	G, 407
Piping	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.I-8 (A-77)	3.3.1-58	A
Piping	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	VII.I-9 (A-78)	3.3.1-58	A
Piping	Pressure boundary	Carbon steel	Treated water(int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	--	--	G, 407
Piping	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Piping	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	--	--	<u>G</u>

Table 3.4.2-5-4-IP2 City Water System (CYW)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Piping	Pressure boundary	Stainless steel	Treated water(int)	Loss of Material	One-Time Inspection	--	--	G, 407
Sight glass	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of material	External Surfaces Monitoring	VII.I-9 (A-78)	3.3.1-58	A
Sight glass	Pressure boundary	Carbon steel	Treated water (int)	Loss of material	Periodic Surveillance and Preventive Maintenance	--	--	G, 407
Sight glass	Pressure boundary	Glass	Air-outdoor (ext)	None	None	--	--	G
Sight glass	Pressure boundary	Glass	Treated water (int)	None	None	--	--	G, 407
Strainer	Filtration	Stainless steel	Treated water(int)	Loss of Material	One-Time Inspection	--	--	G, 407
Strainer	Filtration	Stainless steel	Treated water(ext)	Loss of Material	One-Time Inspection	--	--	G, 407
Strainer housing	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.I-8 (A-77)	3.3.1-58	A
Strainer housing	Pressure boundary	Carbon steel	Treated water(int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	--	--	G, 407
Strainer housing	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Strainer housing	Pressure boundary	Stainless steel	Treated water(int)	Loss of Material	One-Time Inspection	--	--	G, 407
Strainer housing	Pressure boundary	Copper alloy >15% Zn	Air-indoor (ext)	None	None	V.F-3 (EP-10)	3.2.1-53	C
Strainer housing	Pressure	Copper	Treated	Loss of	Periodic	--	--	G, 407

Table 3.4.2-5-4-IP2 City Water System (CYW)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
	boundary	alloy >15% Zn	water(int)	Material	Surveillance and Preventive Maintenance			
Strainer housing	Pressure boundary	Copper alloy >15% Zn	Treated water(int)	Loss of Material	Selective Leaching	--	--	G, 407
Tubing	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	--	--	G, 407
Tubing	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Tubing	Pressure boundary	Stainless steel	Treated water(int)	Loss of Material	One-Time Inspection	--	--	G, 407
Valve body	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	VII.I-9 (A-78)	3.3.1-58	A
Valve body	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.I-8 (A-77)	3.3.1-58	A
Valve body	Pressure boundary	Carbon steel	Treated water(int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	--	--	G, 407
Valve body	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	--	--	G
Valve body	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Valve body	Pressure boundary	Stainless steel	Treated water (int)	Loss of Material	One-Time Inspection	--	--	G, 407

**Table 3.4.2-5-5-IP2
 Wash Water System
 Components Required to Support AFW Pump Room Fire Event
 Summary of Aging Management Review**

Table 3.4.2-5-5-IP2 Wash Water System (WW)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Bolting	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of Material	Bolting Integrity	VII.I-1 (AP-28)	3.3.1-43	A
Bolting	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of Material	Bolting Integrity	--	--	G
Bolting	Pressure boundary	Stainless steel	Raw water (ext)	Loss of Material	Bolting Integrity	VII.C1-15 (A-54)	3.3.1-79	C
Expansion joint	Pressure boundary	Elastomer	Air-outdoor (ext)	Cracking	Periodic Surveillance and Preventive Maintenance	--	--	G
Expansion joint	Pressure boundary	Elastomer	Air-outdoor (ext)	Change of material properties	Periodic Surveillance and Preventive Maintenance	--	--	G
Expansion joint	Pressure boundary	Elastomer	Raw water (int)	Cracking	Periodic Surveillance and Preventive Maintenance	VII.C1-1 (AP-75)	3.3.1-75	E
Expansion joint	Pressure boundary	Elastomer	Raw water (int)	Change of material properties	Periodic Surveillance and Preventive Maintenance	VII.C1-1 (AP-75)	3.3.1-75	E
Flex hose	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of material	External Surfaces Monitoring		--	G

Table 3.4.2-5-5-IP2 Wash Water System (WW)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Flex hose	Pressure boundary	Stainless steel	Raw water (int)	Loss of material	Periodic Surveillance and Preventive Maintenance	VII.C1-15 (A-54)	3.3.1-79	E
Nozzles	Pressure boundary Flow control	Stainless steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	VII.I-9 (A-78)	3.3.1-58	A
Nozzles	Pressure boundary Flow control	Stainless steel	Raw water (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.C1-19 (A-38)	3.3.1-76	E
Piping	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	VII.I-9 (A-78)	3.3.1-58	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.C1-19 (A-38)	3.3.1-76	E
<u>Piping</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Air-outdoor (ext)</u>	<u>Loss of Material</u>	<u>External Surfaces Monitoring</u>	<u>VII.I-9 (A-78)</u>	<u>3.3.1-58</u>	<u>A</u>
<u>Piping</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.C1-19 (A-38)</u>	<u>3.3.1-76</u>	<u>E</u>
<u>Piping</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Selective Leaching</u>	<u>VII.C1-11 (A-51)</u>	<u>3.3.1-85</u>	<u>C</u>
<u>Piping</u>	<u>Pressure boundary</u>	<u>Fiberglass</u>	<u>Air-outdoor (ext)</u>	<u>Change in material properties</u>	<u>External Surfaces Monitoring</u>	--	--	<u>F</u>
<u>Piping</u>	<u>Pressure boundary</u>	<u>Fiberglass</u>	<u>Raw water (int)</u>	<u>Change in material</u>	<u>Periodic Surveillance</u>	--	--	<u>F</u>

Table 3.4.2-5-5-IP2 Wash Water System (WW)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
				<u>properties</u>	<u>and Preventive Maintenance</u>			
Piping	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	--	--	G
Piping	Pressure boundary	Stainless steel	Raw water (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.C1-15 (A-54)	3.3.1-79	E
Pump casing	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	--	--	G
Pump casing	Pressure boundary	Stainless steel	Raw water (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.C1-15 (A-54)	3.3.1-79	E
Pump casing	Pressure boundary	Stainless steel	Raw water (ext)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.C1-15 (A-54)	3.3.1-79	E
Tubing	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	--	--	G
Tubing	Pressure boundary	Stainless steel	Raw water (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.C1-15 (A-54)	3.3.1-79	E
Valve body	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	VII.I-9 (A-78)	3.3.1-58	A
Valve body	Pressure boundary	Carbon steel	Raw water (int)	Loss of Material	Periodic Surveillance	VII.C1-19 (A-38)	3.3.1-76	E

Table 3.4.2-5-5-IP2 Wash Water System (WW)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
					and Preventive Maintenance			
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Air-outdoor (ext)</u>	<u>Loss of Material</u>	<u>External Surfaces Monitoring</u>	<u>VII.I-9 (A-78)</u>	<u>3.3.1-58</u>	<u>A</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.C1-19 (A-38)</u>	<u>3.3.1-76</u>	<u>E</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Selective Leaching</u>	<u>VII.C1-11 (A-51)</u>	<u>3.3.1-85</u>	<u>C</u>
Valve body	Pressure boundary	Stainless steel	Air-outdoor (ext)	Loss of Material	External Surfaces Monitoring	--	--	G
Valve body	Pressure boundary	Stainless steel	Raw water (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.C1-15 (A-54)	3.3.1-79	E

**Table 3.4.2-5-7-IP2
 Instrument Air System
 Components Required to Support AFW Pump Room Fire Event
 Summary of Aging Management Review**

Table 3.4.2-5-7-IP2 Instrument Air System (IA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Bolting	Pressure boundary	Carbon steel	Air-outdoor (ext)	Loss of Material	Bolting Integrity	VII.I-1 (AP-28)	3.3.1-43	A
Bolting	Pressure boundary	Stainless steel	Air-outdoor(ext)	Loss of Material	Bolting Integrity	--	--	G
<u>Filter housing</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Air-indoor (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.D-3 (A-80)</u>	<u>3.3.1-57</u>	<u>A</u>
<u>Filter housing</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Air-indoor (ext)</u>	<u>Loss of Material</u>	<u>External Surfaces Monitoring</u>	<u>V.A-19 (E-29)</u>	<u>3.2.1-32</u>	<u>E</u>
Heat exchanger (tubes)	Pressure boundary	Copper alloy>15% Zn (inhibited)	Condensation (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.G-9 (AP-78)	3.3.1-28	E
Heat exchanger (tubes)	Heat transfer	Copper alloy>15% Zn (inhibited)	Condensation (int)	Fouling	Periodic Surveillance and Preventive Maintenance	--	--	G
Heat exchanger (tubes)	Pressure boundary	Copper alloy>15% Zn (inhibited)	Treated water (ext)	Loss of Material	Water Chemistry Control-Closed Cooling Water	VII.C2-4 (AP-12)	3.3.1-51	D
Heat exchanger (tubes)	Heat transfer	Copper alloy>15% Zn	Treated water (ext)	Fouling	Water Chemistry Control-Closed Cooling Water	VII.C2-2 (AP-80)	3.3.1-52	D

Table 3.4.2-5-7-IP2 Instrument Air System (IA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
		(inhibited)						
Heat exchanger (tubes)	Pressure boundary	Copper alloy >15% Zn	Treated Water (ext)	Loss of material	Selective Leaching	VII.C2-6 (AP-43)	3.3.1-84	C
Heat exchanger (tube sheets)	Pressure boundary	Plastic	Treated water (int)	None	None	--	--	E
Heat exchanger (tube sheets)	Pressure boundary	Plastic	Condensation (ext)	None	None	--	--	E
Heat exchanger (shell)	Pressure boundary	Carbon steel	Treated water (int)	Loss of Material	Water Chemistry Control-Closed Cooling Water	VII.C2-1 (A-63)	3.3.1-48	D
Heat exchanger (shell)	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	C
Piping	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	A
Piping	Pressure boundary	Carbon steel	Air-treated(int)	None	None	VII.J-22 (AP-4)	3.3.1-98	A, 408
Piping	Pressure boundary	Carbon steel	Condensation (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.G-23 (A-23)	3.3.1-71	E
Piping	Pressure boundary	Carbon steel	Condensation (int)	Cracking - fatigue	Metal Fatigue - TLAA	=	=	H
Piping	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Piping	Pressure boundary	Stainless steel	Air-treated(int)	None	None	VII.J-18 (AP-20)	3.3.1-98	A, 408
Tubing	Pressure boundary	Copper alloy	Air-indoor (ext)	None	None	V.F-3 (EP-10)	3.2.1-53	C
Tubing	Pressure boundary	Copper alloy	Air-treated(int)	None	None	VII.J-3 (AP-8)	3.3.1-98	A, 408
Tubing	Pressure	Copper	Condensation	Loss of Material	Periodic	VII.G-9	3.3.1-28	E

Table 3.4.2-5-7-IP2 Instrument Air System (IA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
	<u>boundary</u>	<u>alloy</u>	<u>(int)</u>		<u>Surveillance and Preventive Maintenance</u>	<u>(AP-78)</u>		
Tubing	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-3 (AP-8)	3.3.1-98	A, 408
Tubing	Pressure boundary	Stainless steel	Air-treated(int)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
<u>Tubing</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>One-Time Inspection</u>	<u>VII.D-4 (AP-81)</u>	<u>3.3.1-54</u>	<u>E</u>
Valve body	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Valve body	Pressure boundary	Stainless steel	Air-treated(int)	None	None	VII.J-18 (AP-20)	3.3.1-98	A, 408
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>One-Time Inspection</u>	<u>VII.D-4 (AP-81)</u>	<u>3.3.1-54</u>	<u>E</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Aluminum</u>	<u>Air-indoor (ext)</u>	<u>None</u>	<u>None</u>	<u>VII.D-4 (AP-81)</u>	<u>3.3.1-54</u>	<u>E</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Aluminum</u>	<u>Air-treated(int)</u>	<u>None</u>	<u>None</u>	<u>VII.D-4 (AP-81)</u>	<u>3.3.1-54</u>	<u>E</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Aluminum</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>One-Time Inspection</u>	<u>VII.D-4 (AP-81)</u>	<u>3.3.1-54</u>	<u>E</u>
Valve body	Pressure boundary	Copper alloy	Air-indoor (ext)	None	None	V.F-3 (EP-10)	3.2.1-53	C
Valve body	Pressure boundary	Copper alloy	Air-treated(int)	None	None	VII.J-3 (AP-8)	3.3.1-98	A, 408
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Copper alloy</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.G-9 (AP-78)</u>	<u>3.3.1-28</u>	<u>E</u>

Table 3.4.2-5-7-IP2 Instrument Air System (IA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Valve body	Pressure boundary	Copper alloy>15% Zn	Air-indoor (ext)	None	None	V.F-3 (EP-10)	3.2.1-53	C
Valve body	Pressure boundary	Copper alloy>15% Zn	Air-treated(int)	None	None	VII.J-3 (AP-8)	3.3.1-98	A, 408
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Copper alloy>15% Zn</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.G-9 (AP-78)</u>	<u>3.3.1-28</u>	<u>E</u>
Valve body	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	A
Valve body	Pressure boundary	Carbon steel	Air-treated(int)	None	None	VII.J-22 (AP-4)	3.3.1-98	A, 408
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.G-23 (A-23)</u>	<u>3.3.1-71</u>	<u>E</u>

**Table 3.4.2-5-8-IP2
 Instrument Air Closed Cooling System
 Components Required to Support AFW Pump Room Fire Event
 Summary of Aging Management Review**

Table 3.4.2-5-8-IP2 Instrument Air Closed Cooling System (IACC)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger tubes	Pressure Boundary	Copper > 15% Zn (inhibited)	Raw water (int)	Loss of Material	Service Water Integrity	VII.C1-3 (A-65)	3.3.1-82	C
Heat exchanger tubes	Heat transfer	Copper > 15% Zn (inhibited)	Raw water (int)	Fouling	Service Water Integrity	VII.C1-6 (A-72)	3.3.1-83	C
Heat exchanger tubes	Pressure Boundary	Copper > 15% Zn (inhibited)	Treated water (ext)	Loss of Material	Water Chemistry Control – Closed Cooling Water	VII.C2-4 (AP-12)	3.3.1-51	D
Heat exchanger tubes	Heat transfer	Copper > 15% Zn (inhibited)	Treated water (ext)	Fouling	Water Chemistry Control – Closed Cooling Water	VII.C2-2 (AP-80)	3.3.1-52	D
<u>Heat exchanger (tubesheets)</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Treated water (ext)</u>	<u>Loss of Material</u>	<u>Water Chemistry Control-Closed Cooling Water</u>	<u>VII.C2-4 (AP-12)</u>	<u>3.3.1-51</u>	<u>D</u>
<u>Heat exchanger (tubesheets)</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Treated water (ext)</u>	<u>Loss of Material</u>	<u>Selective Leaching</u>	<u>VII.C2-6 (AP-43)</u>	<u>3.3.1-84</u>	<u>C</u>
<u>Heat exchanger (tubesheets)</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Service Water Integrity</u>	<u>VII.C1-3 (A-65)</u>	<u>3.3.1-82</u>	<u>C</u>
<u>Heat exchanger (tubesheets)</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Selective Leaching</u>	<u>VII.C1-4 (A-66)</u>	<u>3.3.1-84</u>	<u>C</u>

**Table 3.4.2-5-9-IP2
 Service Water System
 Components Required to Support AFW Pump Room Fire Event
 Summary of Aging Management Review**

Table 3.4.2-5-9-IP2 Service Water System (SW)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Bolting	Pressure boundary	Carbon steel	Condensation (ext)	Loss of Material	Bolting Integrity	VII.D-1 (A-103)	3.3.1-44	C
Bolting	Pressure boundary	Stainless steel	Condensation (ext)	Loss of Material	Bolting Integrity	VII.F1-1(A-09)	3.3.1-27	E
Nozzles	Pressure boundary <u>Flow control</u>	Carbon steel <u>Stainless steel</u>	Condensation (ext)	Loss of Material	External Surfaces Monitoring	<u>VII.F1-1(A-09)</u>	<u>3.3.1-27</u>	<u>E</u>
Nozzles	Pressure boundary <u>Flow control</u>	Carbon steel <u>Stainless steel</u>	Raw water (int)	Loss of Material	Service Water Integrity	<u>VII.C1-15 (A-54)</u>	<u>3.3.1-79</u>	<u>A</u>
Piping	Pressure boundary	Carbon steel	Condensation (ext)	Loss of Material	External Surfaces Monitoring	VII.I-11 (A-81)	3.3.1-58	A
Piping	Pressure boundary	Carbon steel	Raw water (int)	Loss of Material	Service Water Integrity	VII.C1-19 (A-38)	3.3.1-76	A
Piping	Pressure boundary	Stainless steel	Condensation (ext)	Loss of Material	External Surfaces Monitoring	VII.F1-1 (A-09)	3.3.1-27	E
Piping	Pressure boundary	Stainless steel	Raw water (int)	Loss of Material	Service Water Integrity	VII.C1-15 (A-54)	3.3.1-79	A
Tubing	Pressure boundary	Copper alloy	Condensation (ext)	Loss of Material	External Surfaces Monitoring	VII.F1-16 (A-46)	3.3.1-25	E

Table 3.4.2-5-9-IP2 Service Water System (SW)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Tubing	Pressure boundary	Copper alloy	Raw water (int)	Loss of Material	Service Water Integrity	VII.C1-9 (A-44)	3.3.1-81	A
Tubing	Pressure boundary	Stainless steel	Condensation (ext)	Loss of Material	External Surfaces Monitoring	VII.F1-1 (A-09)	3.3.1-27	E
Tubing	Pressure boundary	Stainless steel	Raw water (int)	Loss of Material	Service Water Integrity	VII.C1-15 (A-54)	3.3.1-79	A
Valve body	Pressure boundary	Carbon steel	Condensation (ext)	Loss of Material	External Surfaces Monitoring	VII.I-11 (A-81)	3.3.1-58	A
Valve body	Pressure boundary	Carbon steel	Raw water (int)	Loss of Material	Service Water Integrity	VII.C1-19 (A-38)	3.3.1-76	A
Valve body	Pressure boundary	Stainless steel	Condensation (ext)	Loss of Material	External Surfaces Monitoring	VII.F1-1 (A-09)	3.3.1-27	E
Valve body	Pressure boundary	Stainless steel	Raw water (int)	Loss of Material	Service Water Integrity	VII.C1-15 (A-54)	3.3.1-79	A
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Service Water Integrity</u>	<u>VII.C1-19 (A-38)</u>	<u>3.3.1-76</u>	<u>A</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Condensation (ext)</u>	<u>Loss of Material</u>	<u>External Surfaces Monitoring</u>	<u>VII.I-11 (A-81)</u>	<u>3.3.1-58</u>	<u>A</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Selective Leaching</u>	<u>VII.C1-11 (A-51)</u>	<u>3.3.1-85</u>	<u>A</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Copper alloy</u>	<u>Condensation (ext)</u>	<u>Loss of Material</u>	<u>External Surfaces Monitoring</u>	<u>VII.F1-16 (A-46)</u>	<u>3.3.1-25</u>	<u>E</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Copper alloy</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Service Water Integrity</u>	<u>VII.C1-9 (A-44)</u>	<u>3.3.1-81</u>	<u>A</u>

**Table 3.4.2-5-10-IP2
Lube Oil System
Components Required to Support AFW Pump Room Fire Event
Summary of Aging Management Review**

Table 3.4.2-5-10-IP2 Lube Oil System (LO)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger (tubes)	Pressure boundary	Titanium	Lube oil (int)(<u>ext</u>)	Loss of Material	Oil Analysis	--	--	F
Heat exchanger (tubes)	Heat transfer	Titanium	Lube oil (int)(<u>ext</u>)	Fouling	Oil Analysis	--	--	F
Heat exchanger (tubes)	Pressure boundary	Titanium	Raw water (ext)(<u>int</u>)	Loss of Material	Service Water Integrity	--	--	F
Heat exchanger (tubes)	Heat transfer	Titanium	Raw water (ext)(<u>int</u>)	Fouling	Service Water Integrity	--	--	F

**Table 3.4.2-5-13-IP2
 IP1 Station Air System
 Components Required to Support AFW Pump Room Fire Event
 Summary of Aging Management Review**

Table 3.4.2-5-13-IP2 IP1 Station Air System (SA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Bolting	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	Bolting Integrity	VII.I-4 (AP-27)	3.3.1-43	A
Bolting	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	C
<u>Compressor housing</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Air-indoor (ext)</u>	<u>Loss of Material</u>	<u>External Surfaces Monitoring</u>	<u>VII.D-3 (A-80)</u>	<u>3.3.1-57</u>	<u>A</u>
<u>Compressor housing</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.D-2 (A-26)</u>	<u>3.3.1-53</u>	<u>E</u>
<u>Dryer housing</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Air-indoor (ext)</u>	<u>None</u>	<u>None</u>	<u>VII.J-15 (AP-17)</u>	<u>3.3.1-94</u>	<u>A</u>
<u>Dryer housing</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>One-Time Inspection</u>	<u>VII.D-4 (AP-81)</u>	<u>3.3.1-54</u>	<u>E</u>
<u>Filter housing</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Air-indoor (ext)</u>	<u>None</u>	<u>None</u>	<u>VII.J-15 (AP-17)</u>	<u>3.3.1-94</u>	<u>A</u>
<u>Filter housing</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>One-Time Inspection</u>	<u>VII.D-4 (AP-81)</u>	<u>3.3.1-54</u>	<u>E</u>
<u>Filter housing</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Air-indoor (ext)</u>	<u>Loss of Material</u>	<u>External Surfaces Monitoring</u>	<u>VII.D-3 (A-80)</u>	<u>3.3.1-57</u>	<u>A</u>
<u>Filter housing</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.D-2 (A-26)</u>	<u>3.3.1-53</u>	<u>E</u>
<u>Filter housing</u>	<u>Pressure</u>	<u>Carbon steel</u>	<u>Lube oil (int)</u>	<u>Loss of</u>	<u>Oil Analysis</u>	<u>VII.C1-17</u>	<u>3.3.1-14</u>	<u>D, 316</u>

Table 3.4.2-5-13-IP2 IP1 Station Air System (SA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
	<u>boundary</u>			<u>Material</u>		<u>(AP-30)</u>		
<u>Heat exchanger (shell)</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Air - indoor (ext)</u>	<u>Loss of material</u>	<u>External Surfaces Monitoring</u>	<u>VII.I-8 (A-77)</u>	<u>3.3.1-58</u>	<u>A</u>
<u>Heat exchanger (shell)</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Treated water (int)</u>	<u>Loss of material</u>	<u>Water Chemistry Control - Closed cooling Water</u>	<u>VII.C2-1 (A-63)</u>	<u>3.3.1-48</u>	<u>D</u>
<u>Heat exchanger (shell)</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Treated water (int)</u>	<u>Loss of material</u>	<u>Selective Leaching</u>	<u>VII.C2-8 (A-50)</u>	<u>3.3.1-85</u>	<u>C</u>
<u>Heat exchanger (tubes)</u>	<u>Heat transfer</u>	<u>Copper alloy > 15% Zn</u>	<u>Condensation (int)</u>	<u>Fouling</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>--</u>	<u>--</u>	<u>G</u>
<u>Heat exchanger (tubes)</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Condensation (int)</u>	<u>Loss of material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.G-9 (AP-78)</u>	<u>3.3.1-28</u>	<u>E</u>
<u>Heat exchanger (tubes)</u>	<u>Heat transfer</u>	<u>Copper alloy > 15% Zn</u>	<u>Treated water (ext)</u>	<u>Fouling</u>	<u>Water Chemistry Control - Closed Cooling Water</u>	<u>VII.C2-2 (AP-80)</u>	<u>3.3.1-52</u>	<u>D</u>
<u>Heat exchanger (tubes)</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Treated water (ext)</u>	<u>Loss of material</u>	<u>Water Chemistry Control - Closed Cooling Water</u>	<u>VII.E1-2 (AP-34)</u>	<u>3.3.1-51</u>	<u>D</u>
<u>Heat exchanger (tubes)</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Treated water (ext)</u>	<u>Loss of material</u>	<u>Selective Leaching</u>	<u>VII.C2-6 (AP-43)</u>	<u>3.3.1-84</u>	<u>D</u>
<u>Heat exchanger (shell)</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Air - indoor (ext)</u>	<u>Loss of material</u>	<u>External Surfaces Monitoring</u>	<u>VII.I-8 (A-77)</u>	<u>3.3.1-58</u>	<u>A</u>
<u>Heat exchanger</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Lube oil (int)</u>	<u>Loss of material</u>	<u>Oil Analysis</u>	<u>VII.C1-17 (AP-39)</u>	<u>3.3.1-21</u>	<u>D, 316</u>

Table 3.4.2-5-13-IP2 IP1 Station Air System (SA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
(shell)								
Heat exchanger (tubes)	Pressure boundary	Copper alloy > 15% Zn (inhibited)	Lube oil (ext)	Loss of material	Oil Analysis	VII.C1-8 (AP-47)	3.3.1-26	D, 316
Heat exchanger (tubes)	Pressure boundary	Copper alloy > 15% Zn (inhibited)	Lube oil (ext)	Fouling	Oil Analysis	V.A-12 (EP-47)	3.2.1-9	D, 316
Heat exchanger (tubes)	Heat transfer	Copper alloy > 15% Zn (inhibited)	Treated water (int)	Fouling	Water Chemistry Control - Closed Cooling Water	VII.C2-2 (AP-80)	3.3.1-52	D
Heat exchanger (tubes)	Pressure boundary	Copper alloy > 15% Zn (inhibited)	Treated water (int)	Loss of material	Water Chemistry Control - Closed Cooling Water	VII.E1-2 (AP-34)	3.3.1-51	D
Piping	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Piping	Pressure boundary	Stainless steel	Condensation (int)	Loss of Material	One-Time Inspection	VII.D-4 (AP-81)	3.3.1-54	E
Piping	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	A
Piping	Pressure boundary	Carbon steel	Condensation (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.D-2 (A-26)	3.3.1-53	E
Piping	Pressure boundary	Carbon steel	Condensation (int)	Cracking - fatigue	Metal Fatigue - TLAA	-	-	H
Piping	Pressure boundary	Carbon steel	Lube oil (int)	Loss of material	Oil Analysis	VII.C1-17 (AP-30)	3.3.1-14	D, 316
Pump casing	Pressure boundary	Carbon steel	Lube oil (int)	Loss of material	Oil Analysis	VII.C1-17 (AP-30)	3.3.1-14	D, 316
Pump casing	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	A

Table 3.4.2-5-13-IP2 IP1 Station Air System (SA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Strainer	Filtration	Stainless steel	Condensation (int)	Loss of Material	One-Time Inspection	VII.D-4 (AP-81)	3.3.1-54	E
Strainer	Filtration	Stainless steel	Condensation (ext)	Loss of Material	One-Time Inspection	VII.D-4 (AP-81)	3.3.1-54	E
Strainer housing	Pressure boundary	Carbon steel Gray cast iron	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	A
Strainer housing	Pressure boundary	Carbon steel Gray cast iron	Condensation (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.D-2 (A-26)	3.3.1-53	E
<u>Silencer</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Air-indoor (ext)</u>	<u>Loss of Material</u>	<u>External Surfaces Monitoring</u>	<u>VII.D-3 (A-80)</u>	<u>3.3.1-57</u>	<u>A</u>
<u>Silencer</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.D-2 (A-26)</u>	<u>3.3.1-53</u>	<u>E</u>
Tank	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	A
Tank	Pressure boundary	Carbon steel	Condensation (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.D-2 (A-26)	3.3.1-53	E
<u>Tank</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Lube oil (int)</u>	<u>Loss of material</u>	<u>Oil Analysis</u>	<u>VII.C1-17 (AP-30)</u>	<u>3.3.1-14</u>	<u>D, 316</u>
Tubing	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	A
Tubing	Pressure boundary	Carbon steel	Condensation (int)	Loss of Material	Periodic Surveillance and	VII.D-2 (A-26)	3.3.1-53	E

Table 3.4.2-5-13-IP2 IP1 Station Air System (SA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
					Preventive Maintenance			
Tubing	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Tubing	Pressure boundary	Stainless steel	Condensation (int)	Loss of Material	One-Time Inspection	VII.D-4 (AP-81)	3.3.1-54	E
Tubing	Pressure boundary	Copper alloy	Air-indoor (ext)	None	None	V.F-3 (EP-10)	3.2.1-53	C
Tubing	Pressure boundary	Copper alloy	Condensation (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.G-9 (AP-78)	3.3.1-28	E
Trap	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	A
Trap	Pressure boundary	Carbon steel	Condensation (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.D-2 (A-26)	3.3.1-53	E
Valve body	Pressure boundary	Carbon steel	Air-indoor (ext)	Loss of Material	External Surfaces Monitoring	VII.D-3 (A-80)	3.3.1-57	A
Valve body	Pressure boundary	Carbon steel	Condensation (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.D-2 (A-26)	3.3.1-53	E
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Lube oil (int)</u>	<u>Loss of material</u>	<u>Oil Analysis</u>	<u>VII.C1-17 (AP-30)</u>	<u>3.3.1-14</u>	<u>D, 316</u>
Valve body	Pressure boundary	Stainless steel	Air-indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	A
Valve body	Pressure boundary	Stainless steel	Condensation (int)	Loss of Material	One-Time Inspection	VII.D-4 (AP-81)	3.3.1-54	E
<u>Valve body</u>	<u>Pressure</u>	<u>Gray cast</u>	<u>Air-indoor (ext)</u>	<u>Loss of</u>	<u>External</u>	<u>VII.C1-17</u>	<u>3.3.1-14</u>	<u>D, 316</u>

Table 3.4.2-5-13-IP2 IP1 Station Air System (SA)								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
	<u>boundary</u>	<u>iron</u>		<u>Material</u>	<u>Surfaces Monitoring</u>	<u>(AP-30)</u>		
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Gray cast iron</u>	<u>Lube oil (int)</u>	<u>Loss of material</u>	<u>Oil Analysis</u>	<u>VII.C1-17 (AP-30)</u>	<u>3.3.1-14</u>	<u>D, 316</u>
Valve body	Pressure boundary	Copper alloy	Air-indoor (ext)	None	None	V.F-3 (EP-10)	3.2.1-53	C
Valve body	Pressure boundary	Copper alloy	Condensation (int)	Loss of Material	Periodic Surveillance and Preventive Maintenance	VII.G-9 (AP-78)	3.3.1-28	E
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Air-indoor (ext)</u>	<u>None</u>	<u>None</u>	<u>V.F-3 (EP-10)</u>	<u>3.2.1-53</u>	<u>C</u>
<u>Valve body</u>	<u>Pressure boundary</u>	<u>Copper alloy > 15% Zn</u>	<u>Condensation (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.G-9 (AP-78)</u>	<u>3.3.1-28</u>	<u>E</u>

LRA Appendix A and B changes as a result of revisions to tables are provided below. Changes are shown with ~~strikethrough~~ for deletions and underline for additions

A.2.1.26 One-Time Inspection Program

The One-Time Inspection Program is a new program that includes measures to verify effectiveness of an aging management program (AMP) and confirm the absence of an aging effect. For structures and components that rely on an AMP, this program will verify effectiveness of the AMP by confirming that unacceptable degradation is not occurring and the intended function of a component will be maintained during the period of extended operation. One-time inspections may be needed to address concerns for potentially long incubation periods for certain aging effects on structures and components. There are cases where either (a) an aging effect is not expected to occur but there is insufficient data to completely rule it out, or (b) an aging effect is expected to progress very slowly. For these cases, there will be confirmation that either the aging effect is indeed not occurring, or the aging effect is occurring very slowly as not to affect the component or structure intended function. A one-time inspection of the subject component or structure is appropriate for this verification. The inspections will be nondestructive examinations (including visual, ultrasonic, and surface techniques).

The elements of the program include (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation.

A one-time inspection activity is used to verify the effectiveness of the water chemistry control programs by confirming that unacceptable cracking, loss of material, and fouling is not occurring on components within systems covered by water chemistry control programs [Sections A.2.1.38, A.2.1.39 , and A.2.1.40].

A one-time inspection activity is used to verify the effectiveness of the Oil Analysis Program by confirming that unacceptable cracking, loss of material and fouling are not occurring on components within systems covered by the Oil Analysis Program [Section A.2.1.25].

A one-time inspection activity is used to verify the effectiveness of the Diesel Fuel Monitoring Program by confirming that unacceptable loss of material and fouling is not occurring on components within systems covered by the Diesel Fuel Monitoring Program [Section A.2.1.8].

One-time inspection activities on the following confirm that loss of material is not occurring or is so insignificant that an aging management program is not warranted.

- internal surfaces of stainless steel drain piping, piping elements and components containing raw water (drain water)
- internal surfaces of stainless steel piping, piping elements and components in the station air containment penetration exposed to condensation

- internal surfaces of stainless steel dryer housings, filter housings, piping, tubing, strainers and valve bodies in the IP1 station air system exposed to condensation
- internal surfaces of stainless steel EDG starting air tanks, piping, piping elements and components exposed to condensation
- internal surfaces of carbon steel and stainless steel tanks, piping, piping elements and components in the RCP oil collection system exposed to lube oil
- internal surfaces of auxiliary feedwater system stainless steel piping, piping elements and components exposed to treated water from the city water system
- internal surfaces of stainless steel piping, piping elements and components in the containment penetration for gas analyzers exposed to condensation
- internal surfaces of circulating water stainless steel and CASS piping, piping elements and components containing raw water
- internal surfaces of intake structure system stainless steel piping elements and components containing raw water
- internal surfaces of chemical feed system stainless steel tanks, pump casings, piping, piping elements and components containing treated water
- internal surfaces of city water system stainless steel and CASS flex hoses, strainers, strainer housings, tanks, tubing, pump casings, piping, piping elements, valves bodies and components containing treated water (city water)
- internal surfaces of EDG system stainless steel piping, piping elements and components containing condensation or treated water (city water)
- internal surfaces of fresh water cooling system stainless steel piping, piping elements and components containing treated water (city water)
- internal surfaces of integrated liquid waste handling system stainless steel tanks, pump casings, piping, piping elements and components containing raw water
- internal surfaces of lube oil system aluminum tanks piping, piping elements and components containing raw water
- internal surfaces of river water service system stainless steel piping, piping elements and components containing raw water
- internal surfaces of waste disposal system stainless steel and CASS tanks, pump casings, piping, piping elements and components containing raw water
- internal surfaces of water treatment plant system stainless steel piping, piping elements and components containing treated water (city water)
- containment liner affected by the 1973 event behind the insulation to assure liner degradation is not occurring
- sample of potentially affected refueling cavity concrete obtained by core boring the refueling cavity wall in an area susceptible to exposure to borated water leakage. Include an assessment of embedded reinforcing steel
- Internal surfaces of instrument air system stainless steel tubing, ~~and~~ valve bodies and aluminum valve bodies

When evidence of an aging effect is revealed by a one-time inspection, routine evaluation of the inspection results will identify appropriate corrective actions.

B.1.27 ONE-TIME INSPECTION

Program Description

The One-Time Inspection Program is a new program that includes measures to verify effectiveness of an aging management program (AMP) and confirm the absence of an aging effect. For structures and components that rely on an AMP, this program will verify effectiveness of the AMP by confirming that unacceptable degradation is not occurring and the intended function of a component will be maintained during the period of extended operation. One-time inspections may be needed to address concerns for potentially long incubation periods for certain aging effects on structures and components. There are cases where either (a) an aging effect is not expected to occur but there is insufficient data to completely rule it out, or (b) an aging effect is expected to progress very slowly. For these cases, there will be confirmation that either the aging effect is indeed not occurring, or the aging effect is occurring very slowly as not to affect the component or structure intended function. A one-time inspection of the subject component or structure is appropriate for this verification. The inspections will be nondestructive examinations (including visual, ultrasonic, and surface techniques).

The elements of the program include (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation. The program will include activities to confirm the absence of aging effects as described below.

A one-time inspection activity is used to verify the effectiveness of the water chemistry control programs by confirming that unacceptable cracking, loss of material, and fouling is not occurring on components within systems covered by water chemistry control programs.

A one-time inspection activity is used to verify the effectiveness of the Oil Analysis Program by confirming that unacceptable cracking, loss of material, and fouling is not occurring on components within systems covered by the Oil Analysis Program.

A one-time inspection activity is used to verify the effectiveness of the Diesel Fuel Monitoring Program by confirming that unacceptable loss of material and fouling is not occurring on components within systems covered by the Diesel Fuel Monitoring Program.

One-time inspection activities on the following confirm that loss of material is not occurring or is so insignificant that an aging management program is not warranted.

- Internal surfaces of drain system stainless steel piping, tubing, and valve bodies exposed to raw water (drain water) in EDG buildings, primary auxiliary buildings, and electrical tunnels. Also included are drains in the IP3 auxiliary feed pump building
- Internal surfaces of stainless steel valve bodies in the station air containment penetration exposed to condensation

- Internal surfaces of stainless steel dryer housing, filter housings, piping, tubing, strainers, and valve bodies in the IP1 station air system exposed to condensation
- Internal surfaces of stainless steel piping, strainers, strainer housings, tanks, tubing and valve bodies exposed to condensation in the emergency diesel generator (EDG) starting air subsystem
- Internal surfaces of the carbon steel tanks, piping and valve bodies and stainless steel drain pans and flex hoses in the RCP oil collection system
- Internal surfaces of auxiliary feedwater system stainless steel tubing and valve bodies exposed to treated water (city water)
- Internal surfaces of stainless steel piping and valve bodies in the containment penetration for gas analyzers exposed to condensation
- Internal surfaces of circulating water (CW) system stainless steel or CASS piping, piping elements and components containing raw water

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- Internal surfaces of intake structure (DOCK) system stainless steel piping, piping elements and components containing raw water
- Internal surfaces of chemical feed (CF) system stainless steel tanks, pump casings, piping, piping elements and components containing treated water
- Internal surfaces of city water (CYW) system stainless steel and CASS flex hoses, piping, piping elements and components, strainers, strainer housings, tubing and valve bodies containing treated water (city water)
- Internal surfaces of emergency diesel generator (EDG) system stainless steel piping, piping elements and components containing condensation or treated water (city water)
- Internal surfaces of fresh water cooling (FWC) system stainless steel piping, piping elements and components containing treated water (city water)
- Internal surfaces of integrated liquid waste handling (ILWH) system stainless steel tanks, pump casings, piping, piping elements and components containing raw water
- Internal surfaces of the lube oil (LO) system aluminum tanks, piping, piping elements and components containing raw water
- Internal surfaces of the river water service system (RW) stainless steel piping, piping elements and components containing raw water
- Internal surfaces of the waste disposal (WDS) system stainless steel and CASS tanks, pump casings, piping, piping elements and components containing raw water

- Internal surfaces of the water treatment plant (WTP) system stainless steel piping, piping elements and components containing treated water (city water)
- Containment liner affected by the 1973 event behind the insulation to assure liner degradation is not occurring
- Sample of potentially affected refueling cavity concrete obtained by core boring the refueling cavity wall in an area susceptible to exposure to borated water leakage. Include an assessment of embedded reinforcing steel.

A.2.1.28 Periodic Surveillance and Preventive Maintenance Program

The Periodic Surveillance and Preventive Maintenance Program is an existing program that includes periodic inspections and tests that manage aging effects not managed by other aging management programs. In addition to specific activities in the plant's preventive maintenance program and surveillance program, the Periodic Surveillance and Preventive Maintenance Program includes enhancements to add new activities. The preventive maintenance and surveillance testing activities are generally implemented through repetitive tasks or routine monitoring of plant operations.

Surveillance testing and periodic inspections using visual or other non-destructive examination techniques verify that the following components are capable of performing their intended function.

- reactor building cranes (polar and manipulator), crane rails, and girders, and refueling platform
- recirculation pump motor cooling coils and housing
- city water system strainer housings and valve bodies~~components~~
- charging pump casings
- plant drain components and backwater valves
- station air containment penetration piping
- HVAC duct flexible connections
- HVAC stored portable blowers and flexible trunks
- EDG exhaust components
- EDG duct flexible connections
- EDG air intake and aftercooler components
- EDG air start components
- EDG cooling water makeup supply valves
- security generator exhaust components
- security generator radiator tubes
- SBO/Appendix R diesel exhaust components
- SBO/Appendix R diesel turbochargers and aftercoolers
- SBO/Appendix R diesel cooling water heat exchangers
- SBO/Appendix R diesel fuel oil cooler
- diesel fuel oil trailer transfer tank and associated valves
- auxiliary feedwater components
- containment cooling duct flexible connections
- containment cooling fan units internals

- control room HVAC condensers and evaporators
- control room HVAC ducts and drip pans
- control room HVAC duct flexible connections
- circulating water, city water, intake structure system, emergency diesel generator, fresh water cooling, instrument air, integrated liquid waste handling, lube oil, miscellaneous, radiation monitoring, river water, station air, waste disposal, wash water, and water treatment plant system piping, piping components, and piping elements
- pressurizer relief tank
- main steam safety valve tailpipes
- atmospheric dump valve silencers
- feedwater system sight glass housings
- off-site power feeder, 138 kV underground transmission cable
- main condenser tube internal surfaces and condensate system expansion joints
- instrument air aftercooler tube internal surfaces and filters
- fresh water/river water heat exchanger internal and external surfaces
- circulating water system expansion joints, and pump casings
- river water system pump casings
- wash water system pump casings
- station air compressor casings, filter housings, heat exchanger tubes, strainer housings, tanks, and traps

B.1.29 PERIODIC SURVEILLANCE AND PREVENTIVE MAINTENANCE

Program Description

The Periodic Surveillance and Preventive Maintenance Program is an existing program that includes periodic inspections and tests that manage aging effects not managed by other aging management programs. In addition to specific activities in the plant's preventive maintenance program and surveillance program, the Periodic Surveillance and Preventive Maintenance Program includes enhancements to add new activities. The preventive maintenance and surveillance testing activities are generally implemented through repetitive tasks or routine monitoring of plant operations. Credit for program activities has been taken in the aging management review of the following systems and structures. All activities are new unless otherwise noted.

Circulating water system	Use visual or other NDE techniques to inspect a representative sample of the internals of circulating water <u>bolting, expansion joints, pump casings, piping, piping elements and components exposed to raw water</u> to manage loss of material, cracking and change in material properties.
City water system	Use visual or other NDE techniques to inspect a representative sample of the internals of city water piping, <u>strainer housing, valve bodies, piping elements, and components exposed to treated water (city water)</u> to manage loss of material.
Condensate system	Use visual or NDE techniques to inspect a representative sample of the internal surfaces of the main condenser tubes exposed to raw water (<u>internal</u>) and <u>expansion joints exposed to treated water</u> to manage loss of material, and <u>cracking and change in materials properties and fouling</u> .
River water system	Use visual or NDE techniques to inspect a representative sample of the internals of river water <u>pump casings, valve bodies, piping, piping elements and components exposed to raw water</u> to manage loss of material and cracking.
Fresh water cooling system	Use visual or NDE techniques to inspect a representative sample of the internal and external surfaces of the fresh water/river water heat exchanger tubes exposed to raw water to manage loss of material and fouling.
Wash water system	Use visual or NDE techniques to inspect a representative sample of the internal of wash water <u>pump casing, tubing, valve bodies, piping, piping elements and components exposed to raw water</u> to manage loss of material, cracking and change in material properties.

Station air system

Use visual or other NDE techniques to internally inspect a representative sample of carbon steel station air containment penetration piping and the internals and externals of station air piping, piping elements and components to manage loss of material.

Use visual or other NDE techniques to internally inspect a representative sample of the internals of station air compressor casings, filter housings, heat exchanger tubes (internal), strainer housings, tanks, traps, tubing and valve bodies, piping, piping elements and components exposed to raw water condensation to manage loss of material and fouling/racking.

Instrument air system

Use visual or other NDE techniques to internally inspect heat exchanger tubes on the instrument air aftercoolers to manage loss of material and fouling, filters exposed to indoor air, and tubing, piping and valves bodies exposed to condensation.

Parameters Monitored and Inspection Methods for Specific Aging Effects and Mechanisms			
Aging Effect	Aging Mechanism	Parameter Monitored	Inspection Method
Loss of Material	Crevice Corrosion	Surface condition or Wall thickness	Visual (VT-1 or equivalent) or Volumetric (RT or UT)
Loss of Material	Galvanic Corrosion	Surface condition or Wall thickness	Visual (VT-3 or equivalent) or Volumetric (RT or UT)
Loss of Material	General Corrosion	Surface condition or Wall thickness	Visual (VT-3 or equivalent) or Volumetric (RT or UT)
Loss of Material	MIC	Surface condition or Wall thickness	Visual (VT-3 or equivalent) or Volumetric (RT or UT)
Loss of Material	Pitting Corrosion	Surface condition or Wall thickness	Visual (VT-1 or equivalent) or Volumetric (RT or UT)
Loss of Material	Erosion	Surface condition or Wall thickness	Visual (VT-3 or equivalent) or Volumetric (RT or UT)
Cracking	SCC or Cyclic Loading	Cracks	Enhanced Visual (VT-1 or equivalent) or Volumetric (RT or UT)
Cracking (for elastomers)		Cracks	Visual (VT-3 or equivalent)
Change in Material		Hardening and Cracks	Visual (VT-3 or equivalent)

Properties (for elastomers)			
<u>Change in material properties (for fiberglass)</u>		<u>Cracking, blistering and change in color</u>	<u>Visual (VT-3 or equivalent)</u>

6. Acceptance Criteria

Periodic Surveillance and Preventive Maintenance Program acceptance criteria are defined in specific inspection and testing procedures. Acceptance criteria include appropriate temperature, no significant wear, corrosion, cracking, change in material properties (for elastomers), and significant fouling based on applicable intended functions established by plant design basis. Any indications or relevant conditions of degradation are reported and submitted for further evaluation as part of the corrective action program. This evaluation is performed against criteria which ensure that the structure or component intended function(s) are maintained under all current licensing basis design conditions during the period of extended operation. These criteria include no unacceptable wear, corrosion, cracking, change in material properties (for elastomers), or change in material properties (for fiberglass) or significant fouling. Specific quantitative or qualitative criteria for acceptability are contained in manufacturer information or vendor manuals for some individual components. The engineering review process is used in situations where appropriate manufacturer data is unavailable.

During the review of tables submitted by letter NL-09-079 the following table changes were identified. These components are included in scope for 54.4 (a)(2) and not as AFW PRFE components. The following tables identify additions with underline.

**Table 3.3.2-19-43-IP2
 Water Treatment Plant System
 Nonsafety-Related Components Potentially Affecting Safety Functions
 Summary of Aging Management Review**

Table 3.3.3-19-43-IP2: Water Treatment Plant System								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
<u>Bolting</u>	<u>Pressure boundary</u>	<u>Carbon steel</u>	<u>Air – outdoor (ext)</u>	<u>Loss of material</u>	<u>Bolting integrity</u>	<u>VII.I-1 (AP-28)</u>	<u>3.3.1-43</u>	<u>A</u>
<u>Bolting</u>	<u>Pressure boundary</u>	<u>Stainless steel</u>	<u>Air – outdoor (ext)</u>	<u>Loss of material</u>	<u>Bolting integrity</u>	<u>==</u>	<u>==</u>	<u>G</u>

**Table 3.3.2-19-13-IP2
 Fresh Water Cooling System
 Nonsafety-Related Components Potentially Affecting Safety Functions
 Summary of Aging Management Review**

Table 3.3.2-19-13-IP2: Fresh Water Cooling System								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Bolting	Pressure boundary	Carbon steel	Air – indoor (ext)	Loss of material	Bolting Integrity	VII.I-4 (AP-27)	3.3.1-43	A
Bolting	Pressure boundary	Stainless steel	Air – indoor (ext)	None	None	VII.J-15 (AP-17)	3.3.1-94	C
Compressor housing	Pressure boundary	Carbon steel	Air – indoor (ext)	Loss of material	External Surfaces Monitoring	VII.I-8 (A-77)	3.3.1-58	A
Compressor housing	Pressure boundary	Carbon steel	Treated water (int)	Loss of material	Periodic Surveillance and Preventive Maintenance	--	--	G , 305
Heat exchanger (shell)	Pressure boundary	Carbon steel	Air – indoor (ext)	Loss of material	External Surfaces Monitoring	VII.I-8 (A-77)	3.3.1-58	A

Table 3.3.2-19-13-IP2: Fresh Water Cooling System								
Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger (shell)	Pressure boundary	Carbon steel	Treated water (int)	Loss of material	Periodic Surveillance and Preventive Maintenance	--	--	G , 305
<u>Heat exchanger (bonnet)</u>	<u>Pressure boundary</u>	<u>Copper alloy</u>	<u>Raw water (int)</u>	<u>Loss of Material</u>	<u>Periodic Surveillance and Preventive Maintenance</u>	<u>VII.C1-3 (A-65)</u>	<u>3.3.1-82</u>	<u>E</u>
<u>Heat exchanger (bonnet)</u>	<u>Pressure boundary</u>	<u>Copper alloy</u>	<u>Air-indoor (ext)</u>	<u>None</u>	<u>None</u>	<u>V.F-3 (EP-10)</u>	<u>3.2.1-53</u>	<u>C</u>

TABLE 3.3.1
Summary of Aging Management Programs for the Auxiliary System
Evaluated in Chapter VII of NUREG-1801

Table 3.3.1: Auxiliary Systems, NUREG-1801 Vol. 1					
Item Number	Component	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
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 for most components. The Service Water Integrity Program manages loss of material in copper alloy heat exchanger components. <u>For some copper alloy heat exchanger components, the Periodic Surveillance and Preventive Maintenance Program manages loss of material.</u>