10 CFR 54.17

CP&L
A Progress Energy Company

John W Moyer
Vice President
Robinson Nuclear Plant

Serial: RNP-RA/02-0159
OCT 2 3 2002

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

SUPPLEMENT TO APPLICATION FOR RENEWAL OF OPERATING LICENSE

Ladies and Gentlemen:

By letter dated June 14, 2002, Carolina Power & Light (CP&L) Company submitted an application for the renewal of the Operating License for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, also referred to as RNP.

Subsequent conversations with the NRC staff indicated the need to submit information concerning the Interim Staff Guidance (ISG) regarding fire protection system aging management, station blackout, aging management of concrete components, and 10 CFR 54.4(a)(2). This information is provided in the attachments to this letter.

Attachment I provides an Affidavit in accordance with 10 CFR 50.30(b).

Pursuant to 10 CFR 54.17(a), 10 CFR 50.4(b), and 10 CFR 51.55(a), CP&L hereby submits an original signed and 37 additional copies of this supplement to the RNP License Renewal Application.

If you have any questions concerning this matter, please contact Mr. C. T. Baucom.

Sincerely,

Christopher L. Burton for
J. W. Moyer

JSK/jsk

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Hartsville, SC 29550

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Attachments:

I. Affidavit
II. Aging Management of Concrete Components
III. Station Blackout
IV. Fire Protection System Aging Management
V. Discussion of 10 CFR 54.4(a)(2)

c: Mr. H. J. Porter, Director, Division of Radioactive Waste Management (SC)
Mr. L. A. Reyes, NRC, Region II
Mr. S. K. Mitra, NRC, NRR
Mr. R. Subbaratnam, NRC, NRR
NRC Resident Inspectors, HBRSEP
Attorney General (SC)
Mr. R. M. Gandy, Division of Radioactive Waste Management (SC)

AFFIDAVIT

State of South Carolina
County of Darlington

Mr. C. L. Burton, having been first duly sworn, did depose and say that the information contained in letter RNP-RA/02-0159 is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.

Christopher L. Burton

Sworn to and subscribed before me

this 23rd day of October 2002

Jan S. Kozyra
Notary Public for South Carolina

My commission expires: Sept. 7, 2009

JAN S. KOZYRA ★ NOTARY PUBLIC ★ STATE OF SOUTH CAROLINA

AGING MANAGEMENT OF CONCRETE COMPONENTS

References:

1. Letter from Christopher I. Grimes (NRC) to Mr. Alan Nelson (NEI) and Mr. David Lochbaum (Union of Concerned Scientists), "Proposed Revision of Chapters II and III of Generic Aging Lessons Learned (GALL) Report on Aging Management of Concrete Elements," dated November 23, 2001
2. Letter from Christopher I. Grimes (NRC) to Mr. Alan Nelson (NEI) and Mr. David Lochbaum (Union of Concerned Scientists), "Proposed Revision of Chapters II and III of Generic Aging Lessons Learned (GALL) Report on Aging Management of Concrete Elements," dated April 5, 2002

As a result of the performance of aging management reviews for in-scope concrete components, the Robinson Nuclear Plant (RNP) has concluded that many of these components do not require aging management for the period of extended operation. This conclusion is based on a review of the material of construction, the environment, and industry and plant-specific operating experience for these components.

However, for accessible concrete portions of the containment, RNP has implemented the examination requirements and inspection intervals of the American Society of Mechanical Engineers (ASME) Code, Section XI, Subsection IWL Program as an aging management program for the period of extended operation. Other structures subject to an aging management review will receive similar inspections as part of the Structures Monitoring Program or the Dam Inspection Program. Below grade (inaccessible) concrete for in-scope structures, when excavated, will be inspected as part of the ASME Code, Section XI, Subsection IWL and the Structures Monitoring Programs.

The preceding will require revision to the Dam Inspection Program as described in the Updated Final Safety Analysis Report Supplement and Aging Management Programs, Appendix A and B, respectively, and to the ASME Code, Section XI, Subsection IWL Program and Structures Monitoring Program, as described in the Aging Management Programs, Appendix B. The revisions will be accomplished as part of the annual update.

STATION BLACKOUT

Reference:

1. Letter from David B. Matthews (NRC) to Alan Nelson (NEI) and David Lochbaum (Union of Concerned Scientists), "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 54.4(a)(3)," dated April 1, 2002

NRC guidance on this issue is as follows: "Consistent with the requirements specified in 10 CFR 54.4(a)(3) and 10 CFR 50.63 (a)(1), the plant system portion of the offsite power system should be included within the scope of license renewal." Further clarification was provided which stated that, "the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. This path typically includes the switchyard circuit breakers that connect to the offsite power system transformers (i. e., startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer, and transformer and onsite electrical distribution system, and the associated control circuits and structures."

Updated Final Safety Analysis Report (UFSAR) Section 1.8 states that the Robinson Nuclear Plant (RNP) complies with the intent of NRC Regulatory Guide 1.155, "Station Blackout." The systems and components required for SBO were identified in the SBO Coping Analysis Report and were included in the scope of license renewal. Structures supporting and housing these systems and components were also included in scope of license renewal.

As stated above, NRC license renewal regulatory guidance also mandates the inclusion of selected offsite power structures, systems, and components (SSCs) used for SBO recovery beyond those identified in the original regulatory commitments made to satisfy 10 CFR 50.63. Therefore, in addition to the systems and structures that provide a function for SBO coping, those systems and structures that provide a function for recovery of offsite power from an SBO are considered within the scope of license renewal in accordance with the current license renewal regulatory guidance. Consistent with this guidance, the following describes the additional components required for recovery from an SBO event (the Emergency Diesel Generators (EDGs) can be considered recovery equipment, but are not included in the NRC guidance):

> The first source of offsite power when recovering from an SBO event is the Startup Transformer (SUT). The SUT is fed from the Unit 1 115 kV Switchyard. The SUT East Bus 115 kV Oil Circuit Breaker (OCB) and the West Bus 115 kV OCB represent the first isolation devices upstream of the SUT and demarcate the 115 kV Switchyard from the Carolina Power & Light Company (CP&L) Transmission and Distribution System.

The second source of offsite power when recovering from an SBO event is obtained by backfeeding through the Unit Auxiliary Transformer (UAT) and the Main Transformers. It should be noted that prior to backfeeding the Main Transformers, the Main Generator connecting straps must be disconnected. The 230 kV South Bus OCB (52-8) and the 230 kV North Bus OCB (52-9) represent the first isolation devices upstream of the UAT and demarcate the RNP 230 kV Switchyard from the CP&L Transmission and Distribution System.

Refer to the UFSAR Figure 8.1.2-1, "230 and 115 kV Switchyard Development Diagram," for an illustration.

Based on the above description of electrical equipment, portions of the following systems provide for SBO recovery of offsite power:

4 kV AC Distribution System (4 kV)
480 V AC Distribution System (480 VAC)
Generator Isolated Phase Bus System
Switchyard and Transformer System

Supporting structures for SBO recovery include:

Building 175: Switchyard Relay Building
Isolated Phase Bus Duct Yard Support Structures
Switchyard and Transformer Structures
4 kV Non-Segregated Bus Duct Yard Support

The following table identifies the Component Commodity Groups Requiring Aging Management Review for SBO recovery and their intended function. The Component Commodity Groupings for SBO recovery are included in License Renewal Application Table 2.4-12, "Yard Structures and Foundations."

Component/Commodity	Intended Function
Passive Electrical Switchyard Commodities - includes isolated phase bus duct, non-segregated 4 kV bus duct, non-segregated 480V bus duct, high-voltage insulators, switchyard bus, and transmission conductors	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current or signals. To insulate and support an electrical conductor.
Anchorage/Embedments (Embedded/Encased in Concrete)	Provide structural support and/or shelter to components required for Fire Protection, Anticipated Transient Without Scram (ATWS) and/or SBO.
Anchorage/Embedments Exposed Surfaces	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Battery Rack	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Cable Tray and Conduit	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Doors	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Electrical Bus Duct (Enclosure)	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Electrical & Instrument Panels and Enclosures	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Electrical Component Supports	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Electrical Manhole	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Expansion Anchors	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Miscellaneous Steel (Stairs & Ladders, Platforms & Connectors, Grating & Checker Plate)	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Pilings	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Protective Enclosure (Structures sheltering or enclosing plant equipment)	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.

Reinforced Concrete (Beams, Walls, Floors, Columns, etc.)	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Siding	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Structural Steel (Beams, Plates, Connectors, Column)	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.
Threaded Fasteners	Provide structural support and/or shelter to components required for Fire Protection, ATWS and/or SBO.

The preceding results in the scoping of SBO components being consistent with the position identified in the interim guidance in the referenced NRC letter. These additional components are considered to be in the scope of license renewal and do not represent a change in commitment with regard to 10 CFR 50.63.

FIRE PROTECTION SYSTEM AGING MANAGEMENT

Reference:

1. Letter from Christopher I. Grimes (NRC) to Mr. Alan Nelson (NEI) and David Lochbaum (Union of Concerned Scientists), "Proposed Staff Guidance on Aging Management of Fire Protection Systems for License Renewal," dated January 28, 2002

The proposed NRC guidance encompasses two different aspects of fire water system wall thinning due to internal corrosion: fire protection sprinkler systems, and fire protection suppression piping, which includes distribution, hose station, and sprinkler system piping. The following addresses each aspect individually, and also provides the Robinson Nuclear Plant (RNP) position regarding valve line-up inspections of halon/carbon dioxide fire suppression systems and field service testing of sprinkler heads.

Fire Protection Sprinkler Systems

Prior to the period of extended operation, RNP intends to perform flow testing of fire protection wet pipe sprinkler systems through the system cross mains, which are not routinely subject to flow, at the greatest flow and pressure allowed by the design of the systems. Alternatively, RNP may conduct internal inspections or ultrasonic (UT) examination on a representative sampling of these systems.

Results from initial tests and inspections, reflecting 40 years of service, will be used to determine the scope and subsequent test/inspection intervals. The intervals are not expected to exceed 10 years.

Fire Protection Suppression Piping

Prior to the period of extended operation, ultrasonic inspection on a representative sampling of the above-ground fire protection piping normally containing water will be performed. Each sampling will include different sections of piping. Alternatively, RNP may conduct internal inspections on a representative sampling of these piping systems.

Results from initial tests and inspections, reflecting 40 years of service, will be used to determine the scope and subsequent test/inspection intervals, which are not expected to exceed 10 years.

Valve Line-up Inspections of Halon/Carbon Dioxide Fire Suppression Systems

RNP intends to implement the proposed staff guidance with respect to halon/carbon dioxide fire suppression systems.

National Fire Protection Association (NFPA) 25 Field Service Testing Of Sprinkler Heads

NFPA 25 requires a program of field service testing be implemented for those sprinkler heads in service for 50 years. The RNP Fire Water System Aging Management Program will include requirements for nozzle replacement, or implementation of a program of sampling/field service testing in accordance with the NFPA 25 requirements based on the in-service date of the affected systems.

Conclusion

The preceding will require revision to the Fire Water System Program as described in the Updated Final Safety Analysis Report (UFSAR) Supplement and Aging Management Programs, Appendix A and Appendix B, respectively, of the License Renewal Application. The revision will be accomplished as part of the annual update.

DISCUSSION OF 10 CFR 54.4(a)(2)

References:

1. Letter from Christopher Grimes (NRC) to Alan Nelson (NEI) and David Lochbaum (Union of Concerned Scientists), "License Renewal Issue: Scoping of Seismic II/I Piping Systems," dated December 2, 2001

2. Letter from Christopher Grimes (NRC) to Alan Nelson (NEI) and David Lochbaum, "License Renewal Issue: Guidance on the Identification and Treatment of Structures, Systems and Components Which Meet 10 CFR 54.4(a)(2)," dated March 15, 2002

Non-safety (NS) related piping that is attached to safety related (SR) piping, and that is seismically supported up to the first equivalent anchor point beyond the SR/NS, boundary is included within the scope of license renewal. Although these NS related piping segments are not uniquely identified during the screening process or highlighted on license renewal (LR) drawings, applicable aging effects on these piping segments are managed along with the adjoining SR piping. The supports for the NS related piping segments are also included within the scope of license renewal. Refer to Section 2.4 of the License Renewal Application (LRA) for discussions regarding pipe supports.

The methodology implemented by RNP for scoping of systems, structures, and components (SSCs) meeting the 10 CFR 54.4(a)(2) criterion is described in the LRA, Section 2.1.1.2, "Non-Safety Related Criterion Pursuant to 10 CFR 54.4(a)(2)." As identified in the LRA, the scoping for 10 CFR 54.4(a)(2) did not include NS related mechanical components, such as piping, tanks, and valves, that are considered Seismic II/I, since the failure of these components during a seismic event is not postulated in the current licensing basis. Based on NRC Interim Staff Guidance (ISG), the scope of 10 CFR 54.4(a)(2) is not limited to Seismic II/I supports. The ISG states: "Section 54.4(a)(2) of the Rule states that all non-safety related SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified in Section 54.4(a)(1) should be included with the scope of the Rule." RNP has modified the scope of license renewal to include the NS related, fluid containing piping systems that are in plant structures and spaces, which contain SR SSCs. NS related piping system components have been included within the scope of license renewal primarily using the preventive option described in the ISG. Components that have been considered for inclusion within the scope of license renewal in response to this ISG include fluid containing piping components, such as piping, valves, tanks and pump casings.

The structures and spaces containing these NS related and SR SSCs are:

Turbine Building, including Pipe Restraint Tower and Motor-Driven Auxiliary Feedwater Pump (AFW) Room
Control Room
Reactor Auxiliary Building, including Residual Heat Removal (RHR) Pump Room
Unit 2 Intake Structure
North Service Water (SW) Header Enclosure
Reactor Containment Building
Fuel Handling Building
Miscellaneous Yard Structures

These structures are described in the LRA, Section 2.4.

After the structures and spaces were identified, plant documents were reviewed to determine the mechanical systems containing NS related components within these structures and spaces. From this list of systems, a determination could be made whether an assumed failure of the NS related components within these systems could impact the performance of an intended function for any SSC in-scope for 10 CFR 54.4(a)(1). Failure modes considered for these systems were pipe whip, jet impingement, fluid spray, fluid leakage and component displacement/falling. The spatial interactions evaluated involve loss of system pressure boundary or loss of structural integrity resulting in pipe whip, jet impingement, fluid spray, fluid leakage, flooding or displacement/falling. Therefore, the mechanical component intended functions considered include only equipment failures resulting in these physical interactions and are collectively identified and defined as "Provide pressure-retaining boundary to prevent spatial interactions with safety related equipment."

Industry and site operating experience reviews have been conducted to identify potential concerns with aging of non-fluid containing components. No failures due to aging were identified in these reviews. This operating experience is consistent with the results of aging management reviews performed for in-scope components of the same material exposed to the same environments. Based on this operating experience review, it was concluded that there are no credible aging effects that would result in loss of the limited structural integrity function for non-fluid containing components. Additionally, non-fluid containing components cannot affect SR SSCs due to fluid leakage or spray. Therefore, since these non-fluid containing components cannot affect the function of SR SSCs, they were not included within the scope of license renewal for this review. NS related components, whose failure could not impact intended functions based on their location relative to SR SSCs, were also not included within the scope of license renewal for this review. The mechanical systems that include components within the scope of license renewal based on this approach are provided in the following table.

System	Evaluation Results			
	Expanded Scope Due to Criterion 2	Added to Scope Due to Criterion 2	All Components Screened Out	AMR Required Due to Criterion 2
Auxiliary Boiler/Steam System		X		X
Auxiliary Feedwater	X		X	
Chemical and Volume Control System	X			X
Circulating Water System	X		X	
Component Cooling Water System	X		X	
Condensate Polishing Demineralizer System		X	X	
Condensate System	X			X
Condenser Ball Cleaning System		X	X	
Diesel Generator System	X		X	
Electro-Hydraulic Control System	X		X	
Exhaust Hood Spray System		X	X	
Extraction Steam System	X			X
Feedwater System	X			X
Fuel Oil System	X		X	
Gland Seal System		X	X	
Generator Gas System		X	X	
Heater Vents, Drains, and Level Control		X		X
Hydrogen Seal Oil System		X	X	
Isolation Valve Seal Water System	X			X
Liquid Waste System	X		X	

System	Evaluation Results			
	Expanded Scope Due to Criterion 2	Added to Scope Due to Criterion 2	All Components Screened Out	AMR Required Due to Criterion 2
Main Steam System	X			X
Post Accident Sampling System	X		X	
Potable Water System		X		X
Primary and Demineralized Water Makeup System	X			X
Primary Sampling System	X		X	
Process/Area Radiation Monitoring System	X		X	
Reactor Coolant System	X		X	
Residual Heat Removal System	X		X	
Safety Injection System	X			X
Service Water System	X			X
Site Fire Protection System	X			X
Spent Fuel Cask Handling System		X	X	
Spent Fuel Pool Cooling System	X			X
Steam Cycle Sampling System	X			X
Steam Generator Blowdown System	X			X
Steam Generator Chemical Addition System	X		X	
Turbine System	X		X	
Turbine Generator Lube Oil System	X		X	

An aging management review was performed for the NS related mechanical components that were determined to provide a pressure-retaining boundary to prevent spatial interactions with SR equipment. This review consisted of an evaluation of the effects of aging and identification of activities credited for managing the applicable aging effects based on the results of aging management reviews performed for components of the same material and exposed to the same internal and external environments. This evaluation determined that the aging effects of loss of material and/or cracking require management, and that there are no additional material and environment combinations beyond those currently considered in the application. This does not include "Cracking Due to Thermal Fatigue," which is evaluated as a Time Limited Aging Analysis (TLAA).

The following aging management programs are credited to manage aging effects of in-scope components added as a result of this review:

Water Chemistry Program
Systems Monitoring Program
Flow Accelerated Corrosion (FAC) Program
Boric Acid Corrosion Program
Closed Cycle Cooling Water Program
Fire Water System Program
Selective Leaching of Materials Program
Open Cycle Cooling Water Program
Preventive Maintenance Program

The aging management activities credited with managing these aging effects are currently described in Appendix B of the LRA. These aging management activities are adequate to manage the effects of aging for components within the expanded scope of license renewal for Criterion 2. The preceding requires no changes to the Updated Final Safety Analysis Report (UFSAR) Supplement or Aging Management Programs, Appendix A and Appendix B, respectively, of the LRA.

A summary of the results of the aging management evaluation for the systems within the scope of license renewal as a result of the expansion of scope for Criterion 2 is provided in the following table.

Systems	Material Groups	Environment (1)	Aging Effect/ Mechanism	Aging Management Program
Auxiliary Boiler/Steam System Condensate System Extraction Steam System Feedwater System Heater Vents, Drains, and Level Control Main Steam System Steam Generator Blowdown System	Carbon Steel	Treated Water (Including Steam)	Cumulative Fatigue Damage	TLAA
Auxiliary Boiler/Steam System Chemical and Volume Control System Condensate System Extraction Steam System Feedwater System Heater Vents, Drains, and Level Control Main Steam System Steam Cycle Sampling System Steam Generator Blowdown System	Stainless Steel	Treated Water (Including Steam)	Cumulative Fatigue Damage	TLAA
Auxiliary Boiler/Steam System Chemical and Volume Control System Condensate System Extraction Steam System Feedwater System Heater Vents, Drains, and Level Control Isolation Valve Seal Water System Main Steam System Primary and Demineralized Water Makeup System Safety Injection System Spent Fuel Pool Cooling System Steam Cycle Sampling System Steam Generator Blowdown System	Stainless Steel	Treated Water (Including Steam)	Loss of Material from Crevice Corrosion	Water Chemistry Program
			Loss of Material from Pitting Corrosion	Water Chemistry Program

Systems	Material Groups	Environment (1)	Aging Effect/ Mechanism	Aging Management Program
Auxiliary Boiler/Steam System Chemical and Volume Control System Condensate System Extraction Steam System Feedwater System Heater Vents, Drains, and Level Control Main Steam System Steam Cycle Sampling System Steam Generator Blowdown System	Stainless Steel	Treated Water (Including Steam)	Stress Corrosion Cracking	Water Chemistry Program
Auxiliary Boiler/Steam System Condensate System Extraction Steam System Feedwater System Heater Vents, Drains, and Level Control Main Steam System Primary and Demineralized Water Makeup System Steam Generator Blowdown System	Carbon Steel	Treated Water (Including Steam)	Loss of Material from Crevice Corrosion	Water Chemistry Program
			Loss of Material from General Corrosion	Water Chemistry Program
			Loss of Material from Pitting Corrosion	Water Chemistry Program
			Loss of Material from Galvanic Corrosion	Water Chemistry Program
Auxiliary Boiler/Steam System Condensate System Extraction Steam System Feedwater System Heater Vents, Drains, and Level Control Main Steam System Steam Generator Blowdown System	Carbon Steel	Treated Water (Including Steam)	Loss of Material from Erosion and Flow Accelerated Corrosion	Flow Accelerated Corrosion Program
Auxiliary Boiler/Steam System Condensate System Extraction Steam System Feedwater System Main Steam System Steam Generator Blowdown System	Carbon Steel	Outdoor	Loss of Material from General Corrosion	Systems Monitoring Program

Systems	Material Groups	Environment (1)	Aging Effect/ Mechanism	Aging Management Program
Auxiliary Boiler/Steam System Chemical and Volume Control System Isolation Valve Seal Water System Primary and Demineralized Water Makeup System Safety Injection System Service Water System Site Fire Protection System Spent Fuel Pool Cooling System Steam Generator Blowdown System	Carbon Steel	Indoor- Not Air Conditioned, Borated Water Leaks	Loss of Material due to Boric Acid Corrosion	Boric Acid Corrosion Program
Chemical and Volume Control System	Stainless Steel	Treated Water (Including Steam)	Stress Corrosion Cracking	Closed Cycle Cooling Water Program
Chemical and Volume Control System	Stainless Steel	Treated Water (Including Steam)	Loss of Material from Crevice Corrosion	Closed Cycle Cooling Water Program
			Loss of Material from Pitting Corrosion	Closed Cycle Cooling Water Program
Potable Water System	Carbon Steel	Treated Water (Including Steam)	Loss of Material from Crevice Corrosion	Preventative Maintenance Program
			Loss of Material from General Corrosion	Preventative Maintenance Program
			Loss of Material from Pitting Corrosion	Preventative Maintenance Program
			Loss of Material from Galvanic Corrosion	Preventative Maintenance Program
Potable Water System	Copper Alloy	Treated Water (Including Steam)	Loss of Material from Selective Leaching	Selective Leaching of Materials Program
Service Water System	Carbon Steel	Raw Water	Loss of Material from Crevice Corrosion	Open Cycle Cooling Water Program
			Loss of Material from General Corrosion	Open Cycle Cooling Water Program
			Loss of Material from Pitting Corrosion	Open Cycle Cooling Water Program
			Loss of Material from Galvanic Corrosion	Open Cycle Cooling Water Program
			Loss of Material from Microbiologically Induced Corrosion (MIC)	Open Cycle Cooling Water Program

Systems	Material Groups	Environment (1)	Aging Effect/ Mechanism	Aging Management Program
Service Water System	Stainless Steel	Raw Water	Loss of Material from Crevice Corrosion	Open Cycle Cooling Water Program
			Loss of Material from Pitting Corrosion	Open Cycle Cooling Water Program
			Loss of Material from MIC	Open Cycle Cooling Water Program
Site Fire Protection System	Carbon Steel	Raw Water	Loss of Material from Crevice Corrosion	Fire Water System Program
			Loss of Material from General Corrosion	Fire Water System Program
			Loss of Material from Pitting Corrosion	Fire Water System Program
			Loss of Material from Galvanic Corrosion	Fire Water System Program
			Loss of Material from MIC	Fire Water System Program
Site Fire Protection System	Copper Alloy	Raw Water	Loss of Material from Crevice Corrosion	Fire Water System Program
			Loss of Material from Pitting Corrosion	Fire Water System Program
			Loss of Material from Galvanic Corrosion	Fire Water System Program
			Loss of Material from MIC	Fire Water System Program
Site Fire Protection System	Copper Alloy	Raw Water	Loss of Material from Selective Leaching	Selective Leaching of Materials Program
Site Fire Protection System	Carbon Steel	Raw Water	Loss of Material from Selective Leaching	Selective Leaching of Materials Program

Notes: 1. Environments used in the aging management review are listed on LRA Tables 3.0-1 and 3.0-2.