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Dominion®

September 25, 2009

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Serial No.: 09-597
LR/MWH R0
Docket No.: 50-305
License No.: DPR-43

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION
SUPPLEMENTAL INFORMATION FOR THE REVIEW OF THE KEWAUNEE POWER STATION LICENSE RENEWAL APPLICATION – CHANGES TO THE WORK CONTROL PROCESS AGING MANAGEMENT PROGRAM

By letter dated August 12, 2008 (reference 1), Dominion Energy Kewaunee, Inc. (DEK) submitted an application to renew the operating license of Kewaunee Power Station (KPS). During a July 28, 2009 public meeting between NRC and DEK related to the review of the KPS license renewal application (LRA) (reference 2), DEK indicated that the LRA would be amended to provide supplemental information related to revising the Work Control Process aging management program.

Attachment 1 includes a description of the revised Work Control Process program. Attachment 2 provides additional supplemental information that clarifies or amends the affected areas of the LRA as a result of the revised Work Control Process program.

Should you have any questions regarding this submittal, please contact Mr. Paul C. Aitken at (804) 273-2818.

Very truly yours,

Leslie N. Hartz
Vice President – Nuclear Support Services

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and State aforesaid, today by Leslie N. Hartz, who is Vice President – Nuclear Support Services of Dominion Energy Kewaunee, Inc. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 25th day of September, 2009.

My Commission Expires: 4/30/13

Ginger L. Alligood
Notary Public

GINGER L. ALLIGOOD
Notary Public
Commonwealth of Virginia
310847
My Commission Expires Apr 30, 2013

Reference:

1. Letter from D. A. Christian (DEK) to NRC, "Kewaunee Power Station Application for Renewed Operating License," dated August 12, 2008. [ADAMS Accession No. ML082341020]
2. Letter from Samuel Hernandez (NRC) to Dominion Energy Kewaunee, "Summary of Public Meeting Related to the Review of the Kewaunee Power station License Renewal Application (TAC No. MD9408)," dated August 10, 2009.

Attachments:

1. Description of the Revised Work Control Process Aging Management Program
2. Changes and Clarifications to the Kewaunee License Renewal Application as a Result of the Revised Work Control Process Aging Management Program

Commitments made in this letter:

1. The revised Work Control Process program will be developed and implemented prior to the period of extended operation.

cc:

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Serial No. 09-597
Docket No. 50-305

ATTACHMENT 1

DESCRIPTION OF THE REVISED WORK CONTROL PROCESS AGING MANAGEMENT PROGRAM

KEWAUNEE POWER STATION LICENSE RENEWAL APPLICATION

KEWAUNEE POWER STATION
DOMINION ENERGY KEWAUNEE, INC.

Introduction

The *Work Control Process* program for Kewaunee, as described in the License Renewal Application (LRA) (Reference 1) Appendix B, Section B2.1.32, has been revised to include the aging management programs (AMPs) identified in NUREG-1801 (Reference 2), Section XI.M32, "One-Time Inspection," and Section XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components." As revised, the *Work Control Process* program will be consistent with the NUREG-1801 programs identified, with one exception to the Section XI.M38 AMP. The *Work Control Process* program will retain the original program name in order to maintain consistency within the LRA aging management results and application of aging management programs to manage aging effects. The *Work Control Process* program, as revised, is a new aging management program that is consistent with NUREG-1801.

Description of Revised Work Control Process Program

The *Work Control Process* program has been revised to encompass two new aging management programs: (1) the *One-Time Inspection* program, consistent with NUREG-1801, Section XI.M32, "One-Time Inspection," and (2) the *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (Internal Surfaces Monitoring)* program, consistent with NUREG-1801, Section XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components."

The *One-Time Inspection* program will include measures to verify the effectiveness of system chemistry-related aging management programs and confirm the insignificance of any aging effects. This program will provide confirmation that (a) an aging effect is not expected to occur but the data is insufficient to rule it out with reasonable confidence; (b) an aging effect is expected to progress very slowly in the specified environment, but the local environment may be more adverse than that generally expected; or (c) the characteristics of the aging effect include a long incubation period.

The *Internal Surfaces Monitoring* program will perform inspections of components fabricated of steel and other materials in air and other environments. This program will include visual inspections to assure that existing environmental conditions are not causing material degradation that could cause loss of component intended functions. The program inspections will be performed during surveillance and maintenance activities when the surfaces are made available for examination. The scope of the *Internal Surfaces Monitoring* program will include aging management for materials of construction, environments, and aging effects that are not included in the scope of the NUREG-1801, Section XI.M38 aging management program. This has been identified as an exception to the recommendations of the NUREG-1801 program.

References

1. Letter from D. A. Christian (DEK) to NRC, "Kewaunee Power Station Application for Renewed Operating License," dated August 12, 2008. [ADAMS Accession No. ML082341020]
2. NUREG-1801, Volume 2, Revision 1, "*Generic Aging Lessons Learned (GALL) Report*," U.S. Nuclear Regulatory Commission, September 2005.

Serial No. 09-597
Docket No.: 50-305

ATTACHMENT 2

CHANGES AND CLARIFICATIONS TO THE KEWAUNEE LICENSE RENEWAL APPLICATION AS A RESULT OF THE REVISED WORK CONTROL PROCESS AGING MANAGEMENT PROGRAM

KEWAUNEE POWER STATION LICENSE RENEWAL APPLICATION

KEWAUNEE POWER STATION
DOMINION ENERGY KEWAUNEE, INC.

This attachment provides the changes and clarifications to the Kewaunee License Renewal Application (LRA) as a result of the revision to the Work Control Process program described in Attachment 1. LRA Sections 3.1, 3.2, 3.3, 3.4, and 3.5, and Appendices A and B are amended by this LRA supplement. LRA changes and clarifications are provided as follows:

Part A: LRA Appendix A and B - Revised aging management program information

Part B: LRA Section 3 - Text and Tables 3.x.1 and 3.x.2-y changes

Part C: LRA Section 3 - Clarification of the *Work Control Process* program application

Part A: LRA Appendix A and B

The following page replaces LRA Appendix A, Section A2.1.32, *Work Control Process,* in its entirety.

A2.1.32 WORK CONTROL PROCESS

Program Description

The *Work Control Process* program is a new program that will correspond to NUREG-1801, Section XI.M32, "One-Time Inspection," and Section XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components."

One-time inspections will manage the aging effects of cracking, loss of material, and reduction of heat transfer to verify the effectiveness of the *Primary Water Chemistry*, *Secondary Water Chemistry*, *Closed-Cycle Cooling Water System*, *Fuel Oil Chemistry*, and *Lubricating Oil Analysis* programs through inspections implemented in accordance with the work management process. The one-time inspections will be performed using NDE techniques that have been determined to be effective for the identification of potential aging effects. The program will use a representative sampling approach to verify degradation is not occurring. The sample size and location for the one-time inspections will be established to ensure that the number and scope of the inspections are sufficient to provide reasonable assurance that the aging effects will not compromise the intended functions during the period of extended operation.

The inspections of internal surfaces in miscellaneous piping and ducting components will manage the aging effects of change in material properties, cracking, hardening and loss of strength, loss of material, loss of sealing, loss of strength, and reduction of heat transfer for the in-scope structures and components through inspections implemented in accordance with the work management process. The program will perform visual inspections of piping, piping components, ducting and other components fabricated of aluminum, copper alloys, stainless steel, and steel to detect loss of material, reduction of heat transfer, and cracking. Visual inspections will also manage the degradation of the paper filter elements in the Compressed Air System. The program will include physical manipulation of elastomeric components as a supplement to the visual inspections. An enhanced VT-1 NDE examination will be performed to detect cracking of stainless steel diesel exhaust flexible connections.

Commitments

- Program Implementation

  The *Work Control Process* program will be established.

  The commitment is identified in Appendix A, Table A6.0-1 License Renewal Commitments, Item 25.

The following pages replace LRA Appendix B, Section B2.1.32, *Work Control Process,* in its entirety.

B2.1.32 WORK CONTROL PROCESS

Program Description

The *Work Control Process* program will encompass two aging management programs: (1) the *One-Time Inspection* program, consistent with NUREG-1801, Section XI.M32, "One-Time Inspection," and (2) the *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (Internal Surfaces Monitoring)* program, consistent (with the exception noted below) with NUREG-1801, Section XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components."

The *One-Time Inspection* program will manage the aging effects of cracking, loss of material, and reduction of heat transfer. The program inspections will, through inspections implemented in accordance with the work management process, provide verification of the effectiveness of the Primary Water Chemistry, Secondary Water Chemistry, Closed-Cycle Cooling Water System, Fuel Oil Chemistry, and Lubricating Oil Analysis programs where (a) an aging effect is not expected to occur but the data is insufficient to rule it out with reasonable confidence; (b) an aging effect is expected to progress very slowly in the specified environment, but the local environment may be more adverse than that generally expected; or (c) the characteristics of the aging effect include a long incubation period.

The one-time inspections will be performed using NDE techniques that have been determined to be effective for the identification of potential aging effects. The program will use a representative sampling approach to verify degradation is not occurring. The sample size and location for the one-time inspections will be established to ensure that the number and scope of the inspections are sufficient to provide reasonable assurance that the aging effects will not compromise the intended functions during the period of extended operation. Sample size and location will be based on an assessment of materials, environments, plausible aging effects, and operating experience.

The personnel performing these one-time inspections will be qualified to perform the applicable inspection in accordance with the station training program.

Unacceptable inspection findings identified by the one-time inspections will be documented in the Corrective Action Program. An engineering review will be performed to evaluate the condition and need for corrective actions. Potential corrective actions may include increasing sample size and locations, and additional monitoring of the system, structure, or component during the period of extended operation. The Corrective Action Program provides for monitoring and trending of inspection results.

The *Internal Surfaces Monitoring* program will manage the aging effects of change in material properties, cracking, hardening and loss of strength, loss of material, loss of sealing, loss of strength, and reduction of heat transfer for the in-scope structures and components through inspections implemented in accordance with the work management process.

The program will perform visual inspections of piping, piping components, ducting and other components fabricated of aluminum, copper alloys, stainless steel, and steel to detect loss of material, reduction of heat transfer, and cracking. Visual inspections will also manage the degradation of the paper filter elements in the Compressed Air

System. The program will include physical manipulation of elastomeric components as a supplement to the visual inspection to aid in detecting cracking, loss of sealing, hardening and loss of strength, and change in material properties. An enhanced VT-1 NDE examination will be performed to detect cracking of stainless steel diesel exhaust flexible connections.

Personnel performing maintenance activities on a component will perform the *Internal Surfaces Monitoring* program inspections of the internal surfaces (and in specific instances, external surfaces) of the component and adjacent surfaces to identify aging. The maintenance process will require documentation of the inspection results, including when no signs of aging degradation are found, in order to perform meaningful trending of aging effects. The personnel performing the inspections will be trained to identify the effects of aging and provide acceptable documentation.

Degradation identified by the *Internal Surfaces Monitoring* program inspections will be documented in the Corrective Action Program. An engineering review will be performed to evaluate the condition and need for corrective actions. Potential corrective actions may include expanding the scope of inspections and additional monitoring of the affected structure or component during the period of extended operation.

The *Internal Surfaces Monitoring* program inspections will provide support for the "Bolting Integrity," "Compressed Air Monitoring," "Fire Protection," and "Open-Cycle Cooling Water System" programs for managing the components and supports within the scope of those programs.

NUREG-1801 Consistency

The *Work Control Process* program is a new program that will be consistent with the recommendations of NUREG-1801, Section XI.M32, "One-Time Inspection," and consistent, with the exception noted below, with NUREG-1801, Section XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components."

Exceptions to NUREG-1801

Exception 1: XI.M38 - Additional Materials, Environments, and Aging Effects

The *Internal Surfaces Monitoring* program will manage additional materials, environments, and aging effects not included in the NUREG-1801, Section XI.M38 program.

Justification

The aging management reviews performed for Kewaunee identified additional materials, environments, and aging effects requiring aging management that were not addressed in the NUREG-1801, Section XI.M38, program. The *Internal Surfaces Monitoring* inspections will adequately manage the additional materials, environments, and aging effects combinations as discussed in Program Elements Affected below.

Program Elements Affected

- **Element 1: Scope of Program**

The NUREG-1801, Section XI.M38, program indicates that the scope of the program consists of steel piping, piping elements, ducting, and components in an internal environment (such as indoor uncontrolled air, condensation, and steam) for loss of material. The *Internal Surfaces Monitoring* program will also manage material, environment, and aging effect combinations that are not included in the NUREG-1801, Section XI.M38 program.

These additional materials, environments, and aging effects are listed in the table below, "Internal Surfaces Monitoring - Material, Environments, and Aging Effects." Where indicated by Notes 1, 2, or 3 in the table, the additional material, environment, and aging effect combinations have been previously reviewed and accepted by the NRC for other nuclear plant license renewal applicants as an exception to the NUREG-1801, Section XI.M38 program.

Internal Surfaces Monitoring - Material, Environments, and Aging Effects			
MATERIAL	ENVIRONMENT	AGING EFFECT	NOTES
Aluminum	Air-moist	Loss of material	1, 2
		Reduction of heat transfer	1
	Air-outdoor	Loss of material	4
Copper Alloys	Air-indoor uncontrolled	Loss of material	2
		Reduction of heat transfer	2
	Air-moist	Loss of material	2
		Reduction of heat transfer	2
	Air-outdoor	Loss of material	2
	Raw water	Loss of material	2, 3
		Reduction of heat transfer	2, 3
	Treated water-closed cycle cooling	Loss of material	4
Elastomers	Air-indoor controlled	Hardening and loss of strength	2
	Air-indoor uncontrolled	Change in material properties	2
		Cracking	2
		Loss of material	2
		Loss of sealing	2
	Air-moist	Hardening and loss of strength	5
	Air-outdoor	Loss of sealing	5
	Raw water	Hardening and loss of strength	5
		Loss of material	5

Internal Surfaces Monitoring - Material, Environments, and Aging Effects			
MATERIAL	ENVIRONMENT	AGING EFFECT	NOTES
Non-Metallic (paper filter)	Air-dried	Loss of strength	6
Stainless Steel	Air-indoor uncontrolled	Loss of material	2
	Air-moist	Loss of material	1, 2
	Air-outdoor	Loss of material	2
	Diesel exhaust	Cracking	3
		Loss of material	1, 2, 3
	Raw water	Loss of material	1, 2
	Treated water-closed cycle cooling	Loss of material	4
Steel	Air-indoor uncontrolled	Loss of material	4
	Air-moist	Loss of material	1, 2, 3
	Diesel exhaust	Loss of material	1, 2, 3
	Raw water	Loss of material	1, 2, 3
	Treated water-closed cycle cooling	Loss of material	4

NOTES:

1. This Material, Environment, Aging Effect combination has been previously accepted ("Safety Evaluation Report Related to the License Renewal of Beaver Valley Power Station, Units 1 and 2," June 8, 2009, United States Nuclear Regulatory Commission.).
2. This Material, Environment, Aging Effect combination has been previously accepted ("Safety Evaluation Report Related to the License Renewal of Three Mile Island Nuclear Station Unit 1," June 30, 2009, United States Nuclear Regulatory Commission.).
3. This Material, Environment, Aging Effect combination has been previously accepted ("Safety Evaluation Report with Open Items Related to the License Renewal of Prairie Island Nuclear Generating Plant Units 1 and 2," June 4, 2009, United States Nuclear Regulatory Commission.).
4. For metallic materials, visual inspection of component surfaces has been determined to be an acceptable method for managing loss of material in aluminum, copper alloys, stainless steel, and steel exposed to various environments (see Notes 1, 2, and 3). Loss of material in aluminum, copper alloys, stainless steel, and steel components exhibit similar indications (i.e., localized discoloration and surface irregularities) regardless of the environment. The visual inspection techniques implemented through the Internal Surfaces Monitoring program are capable of detecting loss of material in these metals. Therefore, this material, environment, and aging effect combination will be effectively managed with the Internal Surfaces Monitoring program in a manner consistent with NUREG-1801, Section XI.M38.
5. For elastomeric materials, visual inspection of component surfaces, enhanced by physical manipulation where applicable, has been determined to be an acceptable method for managing hardening and loss of strength and loss of material in elastomers in indoor air environments (see Note 2). Elastomer-related aging effects of hardening and loss of strength, loss of material, and loss of sealing in outdoor air, moist air, and raw water environments exhibit similar indications, and can be identified through visual inspections, enhanced by physical manipulation where applicable, through the Internal Surfaces Monitoring program. Therefore, this material, environment, and aging effect combination will be effectively managed with the Internal Surfaces Monitoring program in a manner consistent with NUREG-1801, Section XI.M38.
6. For paper filter elements, visual inspections implemented through the Internal Surfaces Monitoring program are capable of detecting loss of strength (e.g., tears, discoloration, loss of form, etc.). Therefore, this material, environment, aging effect combination will be effectively managed with the Internal Surfaces Monitoring program in a manner consistent with NUREG-1801, Section XI.M38.

- **Element 3: Parameters Monitored/Inspected**

The NUREG-1801, Section XI.M38, program states that the parameters monitored or inspected include visible evidence of corrosion to indicate possible loss of materials. As identified in the table "Internal Surfaces Monitoring - Material, Environments, and Aging Effects," the program manages the aging effects of change in material properties, cracking, hardening and loss of strength, loss of sealing, reduction of heat transfer, and loss of strength, in addition to the aging effect of loss of material.

The program monitors parameters directly related to degradation of plant components. The parameters monitored for each aging effect / material include:

Internal Surfaces Monitoring – Parameters Monitored	
AGING EFFECT / MATERIAL	PARAMETER MONITORED
Loss of Material • Aluminum • Copper Alloy • Stainless steel • Steel	Localized discoloration Surface irregularities • Rust • Scale • Deposits • Surface pitting • Discontinuities • Coating degradation
Reduction of Heat Transfer • Aluminum • Copper Alloys	Fouling Deposits Scale on tubes
Cracking • Stainless steel (Diesel exhaust flexible connection)	Cracks Discoloration Localized form of corrosion Surface irregularities
Cracking, Change in Material Properties, Hardening and Loss of Strength and Loss of Sealing and Loss of Material • Elastomers	Cracking and Crazing Discoloration Distortion Swelling Tackiness Resiliency Indentation Recovery Tears, Unusual Wear Leaks

Internal Surfaces Monitoring – Parameters Monitored	
AGING EFFECT / MATERIAL	PARAMETER MONITORED
Loss of Strength • Non-Metallic (Paper)	Tears Material Degradation Discoloration Unusual Wear Loss of Form

• Element 4: Detection of Aging Effects

The NUREG-1801, Section XI.M38, program detects aging due to loss of material in steel components. As identified in the table "Internal Surfaces Monitoring - Material, Environments, and Aging Effects," the *Internal Surfaces Monitoring* program manages the aging effects of change in material properties, cracking, hardening and loss of strength, loss of sealing, reduction of heat transfer, and loss of strength, in addition to loss of material.

The program will perform inspections of various component types and structural elements during surveillance and maintenance activities to provide for the detection of aging effects prior to the loss of intended function. The inspections are implemented in accordance with the work management process. Personnel performing maintenance activities on a component will perform visual inspections of the internal surfaces of the component and adjacent components and piping to identify aging. The external surfaces of selected elastomeric components will be inspected to identify aging. The maintenance process will require that the extent of the inspection and inspection results be documented even when no signs of aging degradation are found in order to allow meaningful trending of aging effects.

The visual inspection techniques are established and capable of detecting loss of material due to corrosion and reduction of heat transfer due to fouling. The presence of corrosion or fouling can be detected by the localized discoloration and surface irregularities such as rust, scale, deposits, surface pitting, surface discontinuities, and coating degradation. The metallic components including aluminum, copper alloys, and stainless steel would exhibit indications of loss of material similar to steel. Though no credit is taken for coatings in the prevention of the aging effects, visual inspections will detect degradation of paint or coatings as a possible indication of degradation of the underlying material.

Loss of strength of non-metallic paper filter elements can be detected by observing tears, material degradation, loss of form, and discoloration.

For elastomers, physical manipulation (i.e., scratch, sniff, and stretch) is capable of detecting cracking, change in material properties, hardening, loss of strength, loss of sealing, and loss of material. These aging effects can be detected by the presence of cracking and crazing, discoloration, distortion, swelling, tackiness, or limited resiliency and indentation recovery. Inspection and detection methods that will be used for elastomeric components are identified in the table "Internal Surfaces Monitoring – Application of Physical Manipulation."

Internal Surfaces Monitoring – Application of Physical Manipulation		
COMPONENTS	PHYSICAL MANIPULATION	NOTES
Flexible connections	Yes	1
Hoses	Yes	1
Flow element liner	No	2
Gaskets for electrical boxes	No	3
Spent Fuel Pool gate seals and hoses	Yes	4
Reactor cavity seal ring	Yes	4

NOTES:

1. Accessible internal surfaces of the flexible connections and hoses will be visually inspected. The physical manipulation will be performed on the external surface.
2. Due to the physical layout of the component, only a visual inspection is possible.
3. Visual inspections will be performed to evaluate the condition of the gasket and to observe evidence of panel moisture intrusion. No physical manipulation will be performed.
4. Spent fuel pool gate seals and hoses and reactor cavity seal ring will be inspected prior to each installation. The physical manipulation will be performed on the external surface.

NDE examinations (enhanced VT-1 or equivalent) will be performed to manage cracking due to stress corrosion cracking of the stainless steel diesel generator exhaust. As indicated in NUREG-1801, Section XI.M32, "One-Time Inspection," the enhanced VT-1 examination is an acceptable method of detection for SCC cracking.

The *Internal Surfaces Monitoring* program inspections will provide equivalent aging management for the additional material/aging effect combinations as the NUREG-1801, Section XI.M38, program does for the steel/loss of material combination.

- **Element 6: Acceptance Criteria**

The NUREG-1801, Section XI.M38, program identifies acceptance criteria for corrosion mechanisms resulting in loss of material. As identified in the table "Internal Surfaces Monitoring -- Material, Environments, and Aging Effects," the *Internal Surfaces Monitoring* program manages the aging effects of change in material properties, cracking, hardening and loss of strength, loss of sealing, reduction of heat transfer, and loss of strength, in addition to loss of material.

Indications or relevant conditions of degradation not meeting acceptance criteria (i.e., no unacceptable wear, corrosion, cracking, change in material properties for elastomers, or fouling) are reported and submitted for further evaluation as a part of the Corrective Action Program and these evaluations are performed against acceptance criteria which ensure that the structure or component intended function(s) will be maintained under current licensing basis design conditions during the period of extended operation. The quantitative or qualitative acceptance criteria are contained in design standards, design codes, and manufacturer information or vendor manuals for some individual components. In the event that

acceptance criteria information is not available in these sources, an engineering review process is used to establish specific acceptance criteria.

The *Internal Surfaces Monitoring* program will provide acceptance criteria for the additional material/aging effect combinations equivalent to the acceptance criteria provided by the NUREG-1801, Section XI.M38, program for the steel/loss of material combination.

Enhancements

The *Work Control Process* program is a new program that will be consistent with the recommendations of NUREG-1801, Section XI.M32, "One-Time Inspection," and NUREG-1801, Section XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components."

This commitment is identified in Appendix A, Table A6.0-1 License Renewal Commitments, Item 25.

Operating Experience

The *Work Control Process* program is a new program. Therefore, no programmatic experience is available. As operating experience is obtained, lessons learned will be used to adjust this program as needed.

However, inspections have been performed and documented during the performance of applicable surveillance and preventive maintenance procedures. These inspections represent operating experience, which is applicable to the *Internal Surfaces Monitoring* program. The following representative examples of this operating experience are based on a review of Corrective Action items identified during the implementation of these procedures:

- In April 2002, Maintenance personnel were replacing the fire protection jockey pump discharge relief valve and identified the adjacent piping was approximately 90% blocked with rust-like debris. Additionally, it was identified that a nearby pipe nipple was corroded and required replacement. The work order instructions were revised, the piping was cleaned, and the welded nipple was replaced.
- In April 2008, a detailed inspection of a service water valve revealed that the disc guides in the valve body were eroded. The inspection was performed in response to a work order written in 2006 when poor valve seat contact was visually noted during service water pipe replacement. It was noted in 2006 that the seat conditions would probably cause the valve to weep. Visual inspection of the valve at that time indicated the valve would continue to perform its isolation function. As a result of the 2008 inspection, it was determined that the guides could not be repaired and the valve was replaced.
- In April 2008, during an overhaul of the 'B' Component Cooling Water pump, the lower pump casing was found to have an area of material loss on the outboard wear ring casing groove land. It was determined that the condition appeared to have developed over a long period of time, most likely since the pump was installed in October 2001. A review of operating experience did not identify any horizontal pumps with similar conditions. As part of the extent of condition review, the historical operating performance of the 'A' and 'B' Component Cooling Water

pumps was reviewed. The results indicated that these pumps were operating at or near the reference vibration levels and hydraulic performance values that were established when the pumps were initially installed. Periodic performance testing (vibrations and hydraulic performance) of the 'B' Component Cooling Water pump is being performed to validate the continued operability of the pump.

The Operating Experience Program ensures that additional operating experience is factored into the aging management programs to ensure program effectiveness.

Conclusion

The *Work Control Process* program ensures that the effects of aging associated with the in-scope components will be adequately managed so that there is reasonable assurance that their intended functions will be maintained consistent with the current licensing basis throughout the period of extended operation.

The following provides the changes to LRA commitments related to the *Work Control Process* program in LRA Appendix A, Table A6.0-1, License Renewal Commitments.

Item	Commitment	Source	Schedule
25	The *Work Control Process* program will be *established. The program will perform one-time inspections as a verification of the effectiveness of chemistry control programs. The program will also perform visual inspections of component internal surfaces, and external surfaces of selected components, to manage the effects of aging when the surfaces are made available for examination through surveillance and maintenance activities.* ~~enhanced to provide additional guidance for documenting the "As Found" equipment conditions with sufficient detail to support monitoring and trending of aging effects.~~	Work Control Process	Prior to the Period of Extended Operation
26	*Deleted.* ~~The *Work Control Process* program will be enhanced to perform visual inspections to assess the aging of the items that require supplemental inspections.~~	~~Work Control Process~~	~~Prior to the Period of Extended Operation~~
27	*Deleted.* ~~The *Work Control Process* program will be enhanced to provide additional focused training for the personnel performing the program inspections. The training will address the program requirements; the need to document "As Found" equipment conditions with sufficient detail to support monitoring and trending the aging effects; and the aging effects monitored by the program and how to identify them.~~	~~Work Control Process~~	~~Prior to the Period of Extended Operation~~

Part B: LRA Section 3 changes

The following tables provide a summary listing and revision of the aging management review results that initially credited the Work Control Process program in lieu of the NUREG-1801 recommended aging management programs for the selected NUREG-1801, Volume 2 Reference Item.

The revisions to the LRA Section 3 Tables 3.x-1 (Table 1) and Tables 3.x.2-y (Table 2) (see LRA Section 3.0 for *Table Usage* terminology and description) are submitted as a result of eliminating the association to a NUREG-1801, Volume 2 Reference Item in Table 2. The affected rows in Table 2 have been determined to be more appropriately identified as plant-specific material and environment aging as indicated by the application of the Industry Standard Footnote "H" in the Notes column of the revised table rows. See LRA Section 3.0, Aging Management Review Results, under the heading Table 2 for additional information related to plant-specific material and environment aging determinations.

As a result of the Table 2 changes, the associated Table 1 Item discussions also required revision to address these changes.

Changes to LRA Tables 3.x-1 (Table 1)

Item Number	Component	Aging Effect / Mechanism	Aging Management Program	Further Evaluation Required	Discussion
Table 3.2.1 Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of NUREG-1801					
3.2.1-37	Stainless steel piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting, crevice, and microbiologically-influenced corrosion	Open-Cycle Cooling Water System	No	~~Loss of material due to pitting, crevice, and microbiologically influenced corrosion for the stainless steel piping from the Reactor Containment Vessel sump to the safety injection pumps that is exposed to raw water is managed by the Work Control Process program, which is a plant-specific program.~~ ***NUREG-1801 item is not applicable.***
3.2.1-39	Stainless steel heat exchanger components exposed to raw water	Loss of material due to pitting, crevice, and microbiologically-influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	~~Loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling for stainless steel heat exchangers exposed to raw water is managed by the Work Control Process program, which is a plant-specific program.~~ ***NUREG-1801 item is not applicable.***
Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of NUREG-1801					
3.3.1-47	Steel piping, piping components, piping elements, tanks, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to general, pitting, and crevice corrosion	Closed-Cycle Cooling Water System	No	Loss of material due to general, pitting, and crevice corrosion of steel piping, piping components, piping elements, and tanks exposed to closed cycle cooling water is managed by the Closed-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP, and the Work Control Process program~~, which is a plant-specific program~~. Loss of material due to general, pitting, and crevice corrosion of steel components in the TSC diesel generator cooling water subsystem is managed by the Work Control Process program~~, which is a plant-specific program~~.
3.3.1-50	Stainless steel piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to pitting and crevice corrosion	Closed-Cycle Cooling Water System	No	Loss of material due to pitting and crevice corrosion of stainless steel piping, piping components, and piping elements exposed to cycle cooling water is managed by the Closed-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP, and the Work Control Process program~~, which is a plant-specific program~~. Loss of material due to pitting and crevice corrosion of stainless steel components in the TSC diesel generator cooling water subsystem is managed by the Work Control Process program~~, which is a plant-specific program~~.

Changes to LRA Tables 3.x-1 (Table 1)

Item Number	Component	Aging Effect / Mechanism	Aging Management Program	Further Evaluation Required	Discussion
3.3.1-51	Copper alloy piping, piping components, piping elements, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	Loss of material due to pitting, crevice, and galvanic corrosion of copper alloy piping, piping components, piping elements, and heat exchanger components exposed to closed cycle cooling water is managed by the Closed-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP, and the Work Control Process program~~, which is a plant-specific program~~. Loss of material due to pitting, crevice, and galvanic corrosion of copper alloy components in the TSC diesel generator cooling water subsystem is managed by the Work Control Process program~~, which is a plant-specific program~~.
3.3.1-53	Steel compressed air system piping, piping components, and piping elements exposed to condensation (internal)	Loss of material due to general and pitting corrosion	Compressed Air Monitoring	No	Loss of material due to general and pitting corrosion of steel compressed air system piping, piping components, and piping elements exposed to condensation is managed by the Compressed Air Monitoring program, which takes exception to the NUREG-1801 AMP. ~~Loss of material due to general and pitting corrosion of steel traps in the Station and Instrument Air System is managed by the Work Control Process program, which is a plant-specific program.~~
3.3.1-54	Stainless steel compressed air system piping, piping components, and piping elements exposed to internal condensation	Loss of material due to pitting and crevice corrosion	Compressed Air Monitoring	No	Loss of material due to pitting and crevice corrosion of stainless steel piping, piping components, and piping elements is managed by the Compressed Air Monitoring program, which takes exception to the NUREG-1801 AMP. ~~Loss of material due to pitting and crevice corrosion of stainless steel piping, piping components, and piping elements exposed to internal condensation in systems not within the scope of the Compressed Air Monitoring program is managed by the Work Control Process program, which is a plant-specific program.~~

Changes to LRA Tables 3.x-1 (Table 1)

Item Number	Component	Aging Effect / Mechanism	Aging Management Program	Further Evaluation Required	Discussion
3.3.1-58	Steel external surfaces exposed to air – indoor uncontrolled (external), air - outdoor (external), and condensation (external)	Loss of material due to general corrosion	External Surfaces Monitoring	No	Loss of material due to general corrosion of steel external surfaces exposed to air - indoor uncontrolled, air - outdoor, and condensation is managed by the External Surfaces Monitoring program. ~~Loss of material due to general corrosion of the TSC air conditioning compressor and the potable water nozzles that are exposed to air-indoor uncontrolled are managed by the Work Control Process program, which is a plant-specific program.~~
3.3.1-68	Steel piping, piping components, and piping elements exposed to raw water	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Fire Water System	No	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, and fouling of steel piping, piping components, and piping elements in the Fire Protection System exposed to raw water is managed by the Fire Protection program. The Fire Protection program encompasses the recommendations of NUREG-1801, Section XI.M2, "Fire Protection", with exceptions, and NUREG-1801, Section XI.M27, "Fire Water System". Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, and fouling of ~~steel piping, piping components, and piping elements~~ ***pumps*** exposed to raw water in systems other than the Fire Protection System is managed by the ~~Work Control Process program, which is a plant-specific program, or the~~ External Surfaces Monitoring program.
3.3.1-75	Elastomer seals and components exposed to raw water	Hardening and loss of strength due to elastomer degradation; loss of material due to erosion	Open-Cycle Cooling Water System	No	~~Hardening and loss of strength due to elastomer degradation; loss of material due to erosion of elastomer seals and components exposed to raw water are managed by the Work Control Process program, which is a plant-specific program.~~ ***NUREG-1801 item is not applicable.***

Changes to LRA Tables 3.x-1 (Table 1)

Item Number	Component	Aging Effect / Mechanism	Aging Management Program	Further Evaluation Required	Discussion
3.3.1-76	Steel piping, piping components, and piping elements (without lining/coating or with degraded lining/coating) exposed to raw water	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining/coating degradation	Open-Cycle Cooling Water System	No	Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion and fouling of safety-related steel piping, piping components, and piping elements exposed to raw water is managed by the Open-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP. Loss of material due to general, pitting, crevice, and microbiologically influenced corrosion and fouling of non-safety-related steel ***traps*** ~~piping, piping components, and piping elements~~ exposed to raw water is managed by ~~the Work Control Process program, which is a plant-specific program, and~~ the Compressed Air Monitoring program.
3.3.1-77	Steel heat exchanger components exposed to raw water	Loss of material due to general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Loss of material due to general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling of safety-related steel heat exchanger components exposed to raw water is managed by the Open-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP. ~~Loss of material due to general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling of non-safety-related steel heat exchanger components exposed to raw water is managed by the Work Control Process program, which is a plant-specific program.~~
3.3.1-78	Stainless steel, nickel alloy, and copper alloy piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting and crevice corrosion	Open-Cycle Cooling Water System	No	Loss of material due to pitting and crevice corrosion of safety-related stainless steel piping, piping components, and piping elements exposed to raw water is managed by the Open-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP. ~~Loss of material due to pitting and crevice corrosion of non-safety-related stainless steel piping, piping components, and piping elements exposed to raw water is managed by the Work Control Process program, which is a plant-specific program.~~

Changes to LRA Tables 3.x-1 (Table 1)

Item Number	Component	Aging Effect / Mechanism	Aging Management Program	Further Evaluation Required	Discussion
3.3.1-79	Stainless steel piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting and crevice corrosion, and fouling	Open-Cycle Cooling Water System	No	Loss of material due to pitting and crevice corrosion, and fouling of safety-related stainless steel piping, piping components, and piping elements exposed to raw water is managed by the Open-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP. ~~Loss of material due to pitting and crevice corrosion, and fouling of non-safety-related stainless steel piping, piping components, and piping elements exposed to raw water is managed by the Work Control Process program, which is a plant-specific program.~~
3.3.1-80	Stainless steel and copper alloy piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion	Open-Cycle Cooling Water System	No	Loss of material due to pitting, crevice, and microbiologically influenced corrosion of stainless steel ~~piping, piping~~ components~~, and piping elements~~ exposed to raw water is managed by ~~the Work Control Process program, which is a plant-specific program, or~~ the Structures Monitoring Program.
3.3.1-81	Copper alloy piping, piping components, and piping elements, exposed to raw water	Loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	Loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling of safety-related copper alloy piping, piping components, and piping elements, exposed to raw water is managed by the Open-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP. ~~Loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling of non-safety-related copper alloy piping, piping components, and piping elements, exposed to raw water is managed by the Work Control Process program, which is a plant-specific program.~~

Changes to LRA Tables 3.x-1 (Table 1)

Item Number	Component	Aging Effect / Mechanism	Aging Management Program	Further Evaluation Required	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	Loss of material due to pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling of safety-related copper alloy heat exchanger components exposed to raw water is managed by the Open-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP. ~~Loss of material due to pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling of non-safety-related copper alloy heat exchanger components exposed to raw water is managed by the Work Control Process program, which is a plant-specific program.~~
3.3.1-83	Stainless steel and copper alloy heat exchanger tubes exposed to raw water	Reduction of heat transfer due to fouling	Open-Cycle Cooling Water System	No	Reduction of heat transfer due to fouling of safety-related copper alloy heat exchanger tubes exposed to raw water is managed by the Open-Cycle Cooling Water System program, which takes exception to the NUREG-1801 AMP. ~~Reduction of heat transfer due to fouling of non-safety-related copper alloy heat exchanger tubes exposed to raw water is managed by the Work Control Process program, which is a plant-specific program.~~
Table 3.4.1 Summary of Aging Management Programs for Steam and Power Conversion System Evaluated in Chapter VIII of NUREG-1801					
3.4.1-24	Steel heat exchanger components exposed to closed cycle cooling water	Loss of material due to general, pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	~~Loss of material due to general, pitting, crevice, and galvanic corrosion for applicable components exposed to a closed-cycle cooling water environment is managed by the Work Control Process program, which is a plant-specific program.~~ ***NUREG-1801 item is not applicable.***
3.4.1-25	Stainless steel piping, piping components, piping elements, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to pitting and crevice corrosion	Closed-Cycle Cooling Water System	No	~~Loss of material due to pitting and crevice corrosion for applicable components exposed to a closed-cycle cooling water environment is managed by the Work Control Process program, which is a plant-specific program.~~ ***NUREG-1801 item is not applicable.***

Changes to LRA Tables 3.x-1 (Table 1)

Item Number	Component	Aging Effect / Mechanism	Aging Management Program	Further Evaluation Required	Discussion
3.4.1-26	Copper alloy piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	~~Loss of material due to pitting, crevice, and galvanic corrosion for applicable components exposed to a closed-cycle cooling water environment is managed by the Work Control Process program, which is a plant-specific program.~~ ***NUREG-1801 item is not applicable.***
3.4.1-31	Steel heat exchanger components exposed to raw water	Loss of material due to general, pitting, crevice, galvanic, and microbiologically-influenced corrosion, and fouling	Open-Cycle Cooling Water System	No	~~Loss of material due to general, pitting, crevice, galvanic, microbiologically- influenced corrosion, and fouling is managed by the Work Control Process program, which is a plant-specific program.~~ ***NUREG-1801 item is not applicable.***
3.4.1-32	Stainless steel and copper alloy piping, piping components, and piping elements exposed to raw water	Loss of material due to pitting, crevice, and microbiologically-influenced corrosion	Open-Cycle Cooling Water System	No	~~Loss of material due to pitting, crevice, and microbiologically-influenced corrosion is managed by the Work Control Process program, which is a plant-specific program.~~ ***NUREG-1801 item is not applicable.***
Table 3.5.1 Summary of Aging Management Programs for Structures and Component Supports Evaluated in Chapters II and III of NUREG-1801					
3.5.1-44	Group 6 elastomer seals, gaskets, and moisture barriers	Loss of sealing due to deterioration of seals, gaskets, and moisture barriers (caulking, flashing, and other sealants)	Structures Monitoring Program	No	Loss of sealing of elastomer seals and gaskets due to deterioration is managed by ~~the Work Control Process program, which is a plant-specific program,~~ the Structures Monitoring Program, and Fire Protection programs. The Fire Protection program takes exception to the NUREG-1801 AMP.

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Table 3.2.2-2: Engineering Safety Features – Safety Injection – Aging Management Evaluation								
Pipe	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~V.D1-25~~	~~3.2.1-37~~	***H*** ~~E~~;2	3-192
Table 3.3.2-3: Auxiliary Systems - Spent Fuel Pool Cooling - Aging Management Evaluation								
Spent Fuel Pool Heat Exchanger Shell	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-064~~	~~3.3.1-77~~	***H*** ~~E~~	3-324
Spent Fuel Pool Heat Exchanger Tubes	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~E-020~~	~~3.2.1-39~~	***H*** ~~E~~	3-324
Spent Fuel Pool Heat Exchanger Tubesheet	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~E-020~~	~~3.2.1-39~~	***H*** ~~E~~	3-325
Table 3.3.2-6: Auxiliary Systems - Service Water - Aging Management Evaluation								
Filter Housings SW to chlorination pumps	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion, and fouling	Work Control Process	~~VII.C1-15~~	~~3.3.1-79~~	***H*** ~~E~~	3-331
Flexible Hoses	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion, and fouling	Work Control Process	~~VII.C1-15~~	~~3.3.1-79~~	***H*** ~~E~~	3-332
Flow Switches	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~VII.C1-09~~	~~3.3.1-81~~	***H*** ~~E~~;4	3-333
Orifices	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion, and fouling	Work Control Process	~~VII.C1-15~~	~~3.3.1-79~~	***H*** ~~E~~;4	3-333
Pipe	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~VII.C1-09~~	~~3.3.1-81~~	***H*** ~~E~~;3;4	3-334
Sight Flow Indicators	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~VII.C1-09~~	~~3.3.1-81~~	***H*** ~~E~~;4	3-337
Standpipes	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C1-19~~	~~3.3.1-76~~	***H*** ~~E~~;4;5	3-338
Strainer Housings	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~VII.C1-09~~	~~3.3.1-81~~	***H*** ~~E~~;4	3-339

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Strainer Housings	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C1-19~~	~~3.3.1-76~~	***H*** ~~E~~;4;5	3-339
Tubing	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~VII.C1-09~~	~~3.3.1-81~~	***H*** ~~E~~;4	3-340
Tubing	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion, and fouling	Work Control Process	~~VII.C1-15~~	~~3.3.1-79~~	***H*** ~~E~~;4	3-340
Tubing	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C1-19~~	~~3.3.1-76~~	***H*** ~~E~~;4;5	3-341
Valves	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~VII.C1-09~~	~~3.3.1-81~~	***H*** ~~E~~;4	3-341
Valves	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion, and fouling	Work Control Process	~~VII.C1-15~~	~~3.3.1-79~~	***H*** ~~E~~;4	3-342
Valves	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C1-19~~	~~3.3.1-76~~	***H*** ~~E~~;4;5	3-342
Table 3.3.2-8: Auxiliary Systems - Station and Instrument Air - Aging Management Evaluation								
Aftercoolers Shell	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-064~~	~~3.3.1-77~~	***H*** ~~E~~	3-356
Aftercoolers Tubes	Copper Alloys	Raw water	Loss of material/pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-065~~	~~3.3.1-82~~	***H*** ~~E~~	3-357
Aftercoolers Tubes	Copper Alloys	Raw water	Reduction of heat transfer/fouling	Work Control Process	~~A-072~~	~~3.3.1-83~~	***H*** ~~E~~	3-357
Aftercoolers Tubesheets	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-064~~	~~3.3.1-77~~	***H*** ~~E~~	3-357
Compressors Housing	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~A-038~~	~~3.3.1-76~~	***H*** ~~E~~;3	3-358
Traps	Steel	Air-moist	Loss of material/general and pitting corrosion	Work Control Process	~~VII.D-02~~	~~3.3.1-53~~	***H*** ~~E~~	3-366

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Traps	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~A-038~~	~~3.3.1-76~~	***H*** ~~E~~;3	3-366
Table ~~3.3~~.2-9: Auxiliary Systems - Chemical and Volume Control - Aging Management Evaluation								
Boric Acid Evaporator Distillate Sample Cooler Shell	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-064~~	~~3.3.1-77~~	***H*** ~~E~~	3-371
Boric Acid Evaporator Distillate Sample Cooler Tubing	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~E-020~~	~~3.2.1-39~~	***H*** ~~E~~	3-372
Table 3.3.2-13: Auxiliary Systems – Auxiliary Building Ventilation - Aging Management Evaluation								
Fan Coil Units Drip Pans	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	***H*** ~~E~~	3-429
Table 3.3.2-14: Auxiliary Systems - Reactor Building Ventilation - Aging Management Evaluation								
Containment Fan Coil Units Drip Pan	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion	Work Control Process	~~A-053~~	~~3.3.1-78~~	***H*** ~~E~~	3-435
Drip Pans Shroud Cooling Coils	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	***H*** ~~E~~	3-435
Pipe	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion	Work Control Process	~~A-053~~	~~3.3.1-78~~	***H*** ~~E~~;3	3-438
Table 3.3.2-15: Auxiliary Systems - Turbine Building and Screenhouse Ventilation - Aging Management Evaluation								
Fan Coil Units Cooling Coils/Fins	Copper Alloys	Raw water	Loss of material/pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-065~~	~~3.3.1-82~~	***H*** ~~E~~;4	3-443
Fan Coil Units Cooling Coils/Fins	Copper Alloys	Raw water	Reduction of heat transfer/fouling	Work Control Process	~~A-072~~	~~3.3.1-83~~	***H*** ~~E~~;4	3-443
Fan Coil Units Drip Pans	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	***H*** ~~E~~	3-444
Table 3.3.2-17: Auxiliary Systems - Technical Support Center Ventilation - Aging Management Evaluation								
Air Conditioning Units Compressor	Steel	Air-indoor uncontrolled	Loss of material/general corrosion	Work Control Process	~~VII.I-08~~	~~3.3.1-58~~	***H*** ~~E~~	3-451

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Air Conditioning Units Condenser Drip Pan	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H E~~	3-451
Air Handling Units Battery Room Coil Drip Pan	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H E~~	3-452
Table 3.3.2-18: Auxiliary Systems - Fire Protection - Aging Management Evaluation								
Flexible Hoses	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H E~~	3-460
Tubing	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H E~~	3-466
Valves	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H E~~	3-469
Table 3.3.2-19: Auxiliary Systems - Diesel Generator - Aging Management Evaluation								
Flexible Connections includes braided hoses	Stainless Steel	Treated water-closed cycle cooling	Loss of material/pitting and crevice corrosion	Work Control Process	~~A-052~~	~~3.3.1-50~~	~~H E~~;1;3	3-479
Pipe	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.H2-22~~	~~3.3.1-76~~	~~H E~~;2;4;8	3-485
Pumps Jacket water cooling	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, and crevice corrosion	Work Control Process	~~VII.H2-23~~	~~3.3.1-47~~	~~H E~~;1;3;5	3-486
Radiator Tubes	Copper Alloys	Treated water-closed cycle cooling	Loss of material/pitting, crevice, and galvanic corrosion	Work Control Process	~~VII.H2-08~~	~~3.3.1-51~~	~~H E~~;1;3	3-487
Sight Glass	Stainless Steel	Treated water-closed cycle cooling	Loss of material/pitting and crevice corrosion	Work Control Process	~~A-052~~	~~3.3.1-50~~	~~H E~~;1;3	3-488
Table 3.3.2-20: Auxiliary Systems - Circulating Water - Aging Management Evaluation								
Chlorine Monitoring Water Pump	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C3-10~~	~~3.3.1-76~~	~~H E~~;5	3-499
Circulating Water Pumps	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C3-10~~	~~3.3.1-76~~	~~H E~~;5	3-499

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Condensers Waterboxes	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C3-10~~	~~3.3.1-76~~	~~H~~ E;5	3-500
Flow Elements	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion	Work Control Process	~~VII.C3-07~~	~~3.3.1-78~~	~~H~~ E	3-500
Flow Indicators	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-044~~	~~3.3.1-81~~	~~H~~ E	3-501
Flow Indicators	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion	Work Control Process	~~VII.C3-07~~	~~3.3.1-78~~	~~H~~ E	3-501
Pipe	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion	Work Control Process	~~VII.C3-07~~	~~3.3.1-78~~	~~H~~ E	3-502
Pipe	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C3-10~~	~~3.3.1-76~~	~~H~~ E;4;5	3-503
Recirculating Water Pump	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C3-10~~	~~3.3.1-76~~	~~H~~ E;5	3-503
Tubing	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-044~~	~~3.3.1-81~~	~~H~~ E	3-504
Tubing	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion	Work Control Process	~~VII.C3-07~~	~~3.3.1-78~~	~~H~~ E	3-504
Tubing	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C3-10~~	~~3.3.1-76~~	~~H~~ E;5	3-504
Valves	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-044~~	~~3.3.1-81~~	~~H~~ E	3-504
Valves	Stainless Steel	Raw water	Loss of material/pitting and crevice corrosion	Work Control Process	~~VII.C3-07~~	~~3.3.1-78~~	~~H~~ E;4	3-505
Valves	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining-coating degradation	Work Control Process	~~VII.C3-10~~	~~3.3.1-76~~	~~H~~ E;5	3-505
Table 3.3.2-21: Auxiliary Systems - Gaseous Waste Processing and Discharge - Aging Management Evaluation								
Filter Housings	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~ E	3-507

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Heat Exchangers Shell	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-508
Heat Exchangers Tubes	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-044~~	~~3.3.1-81~~	~~H~~ E	3-509
Heat Exchangers Tubesheet	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-509
Moisture Separators	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-510
Orifices	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~ E	3-510
Orifices	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-510
Pipe	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~ E	3-511
Pipe	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-511
Strainer Housings	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-512
Tubing	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~ E	3-512
Valves	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-044~~	~~3.3.1-81~~	~~H~~ E	3-513
Valves	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~ E	3-513
Valves	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-513
Waste Gas Compressors	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-514
Table 3.3.2-22: Auxiliary Systems - Liquid Waste Processing and Discharge - Aging Management Evaluation								
Deaerated Drains Tank	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-516

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Deaerated Drains Tank Pump	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-516
Distillate Cooler Shell Only	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H E~~;2	3-517
Evaporator Condenser Shell Only	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H E~~;2	3-517
Filter Housings	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-517
Flexible Hoses	Elastomers	Raw water	Hardening and loss of strength/elastomer degradation	Work Control Process	~~AP-075~~	~~3.3.1-75~~	~~H E~~	3-518
Flexible Hoses	Elastomers	Raw water	Loss of material/erosion	Work Control Process	~~AP-076~~	~~3.3.1-75~~	~~H E~~	3-518
Flow Elements	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-518
Flow Orifices	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-518
Flow Transmitters	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-519
Laundry and Hot Shower Tanks	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-519
Laundry Pump	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-520
Level Switches	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H E~~	3-520
Level Switches	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-520
Pipe	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H E~~	3-521
Pipe	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-521

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Pipe	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-521
Sludge Interceptor Pump	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-523
Sludge Interceptor Tank	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-523
Standpipes	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-523
Strainer Housings	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-524
Sump Tank Pumps	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-524
Sump Tanks	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-524
Tubing	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~ E	3-525
Tubing	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-525
Valves	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-526
Valves	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-526
Waste Condensate Pumps	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-527
Waste Condensate Tanks	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-527
Waste Evaporator Concentrates Sample Cooler Shell Only	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~ E;2	3-527

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Waste Evaporator Feed Pump	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~	3-528
Waste Holdup Tank	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~	3-528
Table 3.3.2-23: Auxiliary Systems - Radiation Monitoring - Aging Management Evaluation								
Radiation Detectors	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~	3-530
Radiation Detectors	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~	3-530
Tubing	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~	3-531
Valves	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~	3-531
Table 3.3.2-25: Auxiliary Systems - Service Water Pretreatment - Aging Management Evaluation								
Filter Housings	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~	3-537
Flow Elements	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~	3-537
Mixers Static	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~	3-537
Pipe	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~	3-538
Pipe	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~	3-538
Tubing	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-044~~	~~3.3.1-81~~	~~H~~	3-539
Tubing	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~	3-539
Tubing	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~	3-539

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Valves	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-044~~	~~3.3.1-81~~	~~H~~ E	3-540
Valves	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-540
Table 3.3.2-26: Auxiliary Systems - Miscellaneous Drains and Sumps - Aging Management Evaluation								
Annulus Sump Pumps	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-542
Deaerated Drains Tank Emergency Pumps	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-543
Flow Elements	Elastomers	Raw water	Hardening and loss of strength/elastomer degradation	Work Control Process	~~AP-075~~	~~3.3.1-75~~	~~H~~ E;1	3-543
Flow Elements	Elastomers	Raw water	Loss of material/erosion	Work Control Process	~~AP-076~~	~~3.3.1-75~~	~~H~~ E;1	3-543
Reactor Containment Vessel Sump Pumps Includes 1A , 1B, and Rx Cavity C	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-543
Orifices	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-544
Pipe	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H~~ E	3-545
Pipe	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-545
Pipe	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-545
RHR Pump Pit Sump Pumps	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H~~ E	3-546
Safeguards Alley Sump Pumps	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~ E	3-546

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Screen House Sump Pumps	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H E~~	3-546
Valves	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H E~~	3-547
Valves	Stainless Steel	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~AP-055~~	~~3.3.1-80~~	~~H E~~	3-547
Valves	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H E~~	3-547
Table 3.3.2-27: Auxiliary Systems - Miscellaneous Gas - Aging Management Evaluation								
Hoses	Stainless Steel	Air-moist	Loss of material/pitting and crevice corrosion	Work Control Process	~~AP-081~~	~~3.3.1-54~~	~~H E~~;1	3-551
Table 3.3.2-28: Auxiliary Systems - Potable Water - Aging Management Evaluation								
Nozzles	Steel	Air-indoor uncontrolled	Loss of material/general corrosion	Work Control Process	~~VII.I-08~~	~~3.3.1-58~~	~~H E~~;1	3-557
Pipe	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-044~~	~~3.3.1-81~~	~~H E~~	3-558
Pipe	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H E~~	3-558
Valves	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-044~~	~~3.3.1-81~~	~~H E~~	3-559
Valves	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H E~~	3-559
Table 3.4.2-1: Steam and Power Conversion System - Turbine - Aging Management Evaluation								
Electro Hydraulic Control System Oil Coolers Bonnets	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~S-024~~	~~3.4.1-31~~	~~H E~~;1	3-611
Turbine Oil Coolers Channel heads	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~S-024~~	~~3.4.1-31~~	~~H E~~;1	3-615

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Table 3.4.2-4: Steam and Power Conversion System - Feedwater - Aging Management Evaluation								
Feedwater Pumps Oil Coolers Channel Heads	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~S-024~~	~~3.4.1-31~~	~~H~~	3-633
Table 3.4.2-9: Steam and Power Conversion System - Heater and Moisture Separator Drains - Aging Management Evaluation								
Heater Drain Pumps	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~S-024~~	~~3.4.1-31~~	~~H~~;1	3-675
Table 3.4.2-10: Steam and Power Conversion System - Heating Steam - Aging Management Evaluation								
Boric Acid Evaporator Cond Return Unit Heat Exchanger Bonnet	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~S-024~~	~~3.4.1-31~~	~~H~~	3-683
Control Room A/C HW Pump	Steel	Raw water	Loss of material/general, pitting, crevice, and microbiologically influenced corrosion, and fouling	Work Control Process	~~A-033~~	~~3.3.1-68~~	~~H~~	3-685
Heating Coils	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~SP-031~~	~~3.4.1-32~~	~~H~~;2	3-686
Table 3.4.2-11: Steam and Power Conversion System - Main Generator (Mechanical) and Auxiliaries - Aging Management Evaluation								
Air Side Seal Oil Cooler Channel Heads	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~S-024~~	~~3.4.1-31~~	~~H~~	3-694
Generator Hydrogen Coolers Coils	Copper Alloys	Raw water	Loss of material/pitting, crevice, and microbiologically influenced corrosion	Work Control Process	~~SP-031~~	~~3.4.1-32~~	~~H~~	3-696
Hydrogen Side Seal Oil Cooler Channel Heads	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~S-024~~	~~3.4.1-31~~	~~H~~	3-696
Table 3.4.2-12: Steam and Power Conversion System - Secondary Sampling - Aging Management Evaluation								
Cooler Units Channel head of first stage cooler units	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~S-024~~	~~3.4.1-31~~	~~H~~	3-702

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Cooler Units Shell of first stage cooler units	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, crevice, and galvanic corrosion	Work Control Process	~~S-023~~	~~3.4.1-24~~	~~H E~~	3-702
Coolers Shell of sample coolers	Stainless Steel	Treated water-closed cycle cooling	Loss of material/pitting and crevice corrosion	Work Control Process	~~S-025~~	~~3.4.1-25~~	~~H E~~;1	3-703
Coolers Shell of sample coolers	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, crevice, and galvanic corrosion	Work Control Process	~~S-023~~	~~3.4.1-24~~	~~H E~~;1	3-703
FW Sample Line Chiller Evaporator tank	Stainless Steel	Treated water-closed cycle cooling	Loss of material/pitting and crevice corrosion	Work Control Process	~~SP-039~~	~~3.4.1-25~~	~~H E~~	3-704
FW Sample Line Chiller Recirculating pump	Stainless Steel	Treated water-closed cycle cooling	Loss of material/pitting and crevice corrosion	Work Control Process	~~SP-039~~	~~3.4.1-25~~	~~H E~~	3-704
Pipe	Stainless Steel	Treated water-closed cycle cooling	Loss of material/pitting and crevice corrosion	Work Control Process	~~SP-039~~	~~3.4.1-25~~	~~H E~~	3-705
Pipe	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, crevice, and galvanic corrosion	Work Control Process	~~S-023~~	~~3.4.1-24~~	~~H E~~	3-706
Recirculation Pumps	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, crevice, and galvanic corrosion	Work Control Process	~~S-023~~	~~3.4.1-24~~	~~H E~~	3-706
Refrigeration Unit Chiller Condenser Channel head	Steel	Raw water	Loss of material/general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and fouling	Work Control Process	~~S-024~~	~~3.4.1-31~~	~~H E~~	3-707
Refrigeration Unit Chiller Condenser Shell	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, crevice, and galvanic corrosion	Work Control Process	~~S-023~~	~~3.4.1-24~~	~~H E~~	3-707
Refrigeration Unit Chiller Evaporator Shell	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, crevice, and galvanic corrosion	Work Control Process	~~S-023~~	~~3.4.1-24~~	~~H E~~	3-707
Storage Tank	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, crevice, and galvanic corrosion	Work Control Process	~~S-023~~	~~3.4.1-24~~	~~H E~~	3-708

Changes to LRA Table 3.x.2-y (Table 2)

Component Type	Material	Environment	Aging Effect / Mechanism	Aging Management Program	NUREG-1801 Vol. 2 Reference	Table 1 Item	Notes	LRA Page Number
Tubing	Copper Alloys	Treated water-closed cycle cooling	Loss of material/pitting, crevice, and galvanic corrosion	Work Control Process	~~SP-008~~	~~3.4.1-26~~	~~H E~~	3-709
Tubing	Stainless Steel	Treated water-closed cycle cooling	Loss of material/pitting and crevice corrosion	Work Control Process	~~SP-039~~	~~3.4.1-25~~	~~H E~~	3-709
Tubing	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, crevice, and galvanic corrosion	Work Control Process	~~S-023~~	~~3.4.1-24~~	~~H E~~	3-710
Valves	Copper Alloys	Treated water-closed cycle cooling	Loss of material/pitting, crevice, and galvanic corrosion	Work Control Process	~~SP-008~~	~~3.4.1-26~~	~~H E~~	3-711
Valves	Stainless Steel	Treated water-closed cycle cooling	Loss of material/pitting and crevice corrosion	Work Control Process	~~SP-039~~	~~3.4.1-25~~	~~H E~~	3-711
Valves	Steel	Treated water-closed cycle cooling	Loss of material/general, pitting, crevice, and galvanic corrosion	Work Control Process	~~S-023~~	~~3.4.1-24~~	~~H E~~	3-712
Table 3.5.2-1: Structures and Component Supports - Reactor Containment Vessel - Aging Management Evaluation								
Reactor cavity seal ring	Elastomers	Air-indoor uncontrolled	Loss of sealing/deterioration of seals, gaskets, and moisture barriers (caulking, flashing, and other sealants)	Work Control Process	~~TP-007~~	~~3.5.1-44~~	~~H E~~;4	3-793
Table 3.5.2-4: Structures and Component Supports - Auxiliary Building - Aging Management Evaluation								
Spent fuel pool gate seal	Elastomers	Air-indoor uncontrolled	Loss of sealing/deterioration of seals, gaskets, and moisture barriers (caulking, flashing, and other sealants)	Work Control Process	~~TP-007~~	~~3.5.1-44~~	~~H E~~;10	3-819
Table 3.5.2-14: Structures and Component Supports - Miscellaneous Structural Commodities - Aging Management Evaluation								
Gaskets/seals in junction, terminal, and pull boxes	Elastomers	Air-outdoor	Loss of sealing/deterioration of seals, gaskets, and moisture barriers (caulking, flashing, and other sealants)	Work Control Process	~~TP-007~~	~~3.5.1-44~~	~~H E~~	3-872

Additionally, the *Work Control Process* program is identified in the LRA Section 3 Table 3.x-1 (Table 1's) tables as a plant-specific program. Since the program has been revised to be consistent with NUREG-1801, Sections XI.M32 and XI.M38 AMPs, it is no longer considered a plant-specific program.

In the discussions in LRA Sections 3.x.2.2, *Further Evaluation of Aging Management as Recommended by NUREG-1801*, related to the confirmation of the effectiveness of chemistry control programs, the *Work Control Process* program is credited in lieu of the recommended one-time inspection. However, the *Work Control Process* program has been revised to include the *One-Time Inspection* program. Therefore, the discussion in these sections is amended as follows:

> ... ~~In lieu of a one-time inspection,~~ The *Work Control Process* program is used to provide confirmation of the effectiveness of the {chemistry control} program. The *Work Control Process* program provides the opportunity to visually inspect the internal surfaces of components constructed of typical system materials and exposed to typical system environments, including stagnant locations, *through the One-Time Inspection program* ~~during preventive and corrective maintenance activities on an ongoing basis~~. ...

The affected LRA sections are:

3.2.2.2.3.4	3.2.2.2.4.1	3.2.2.2.4.2	3.2.2.2.8.3
3.3.2.2.7.1	3.3.2.2.9.1	3.3.2.2.9.2	3.3.2.2.10.4
3.3.2.2.12.1	3.3.2.2.12.2	3.4.2.2.2.1	3.4.2.2.2.2
3.4.2.2.4.1	3.4.2.2.4.2	3.4.2.2.5.2	3.4.2.2.6
3.4.2.2.7.1	3.4.2.2.7.3	3.4.2.2.8	

Similarly, the discussion in LRA Section 3.1.2.2.7.1 is amended as follows:

> ...The *Work Control Process* program is used to provide confirmation of the effectiveness of the *Primary Water Chemistry* program. The *Work Control Process* program provides the opportunity to visually inspect the internal surfaces of components constructed of typical system materials and exposed to typical system environments, including stagnant locations, *through the One-Time Inspection program* ~~during preventive and corrective maintenance activities on an ongoing basis~~. ...

Part C: Guide to application of Work Control Process program in LRA Section 3

The *Work Control Process* program has been revised to consist of the *One-Time Inspection* program and the Inspection of *Internal Surfaces in Miscellaneous Piping and Ducting Components (Internal Surfaces Monitoring)* program, which are consistent with the NUREG-1801, Section XI.M32, "One-Time Inspection," and Section XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components," AMPs, respectively. The following guidance can be used to determine the application of the two programs when only *Work Control Process* is indicated in the LRA.

The LRA Section 3 Table 3.x.2-y (Table 2's) tables list the *Work Control Process* program as the AMP for applicable aging management review results line items. In order to determine whether the *One-Time Inspection* or the *Internal Surfaces Monitoring* program is credited, the following rule should be applied:

> If the *Work Control Process* program is listed along with a chemistry control program[1] as the AMP for a single line item (defined as a common Component Type, Intended Function, Material, Environment, and Aging Effect/Mechanism), the *One-Time Inspection* program is the intended AMP and is used to confirm the effectiveness of the listed chemistry control program. If the *Work Control Process* program is listed as the AMP without a chemistry control program listed for that line item, then the *Internal Surfaces Monitoring* program is the intended AMP and is used to manage the identified aging effect as a stand-alone program.

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[1] Chemistry control programs are the *Primary Water Chemistry, Secondary Water Chemistry, Closed-Cycle Cooling Water System, Fuel Oil Chemistry*, and *Lubricating Oil Analysis* programs.