3.0 AGING MANAGEMENT REVIEW RESULTS

This section provides the results of the aging management review for those structures and components identified in Section 2.0 as being subject to aging management review (AMR).

3.0.1 Explanation and Interpretations of 10 CFR Part 54

10 CFR Part 54.21(a)(3) (Reference 1) contains the following requirements for the Integrated Plant Assessment AMR:

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

Aging effects that require management are those that could lead to degraded conditions during the period of extended operations. The Statement of Considerations (SOC) for the final License Renewal Rule clarifies this point:

> The Commission believes that regardless of the specific aging mechanisms, only aging degradation that leads to degraded performance or condition (i.e., detrimental effects) during the period of extended operation is of concern for license renewal. Because the detrimental effects of aging are manifested in degraded performance or condition, an appropriate license renewal review would ensure that licensee programs adequately monitor performance or condition in a manner that allows for the timely identification and correction of degraded conditions.
>
> …The straightforward approach to detecting and mitigating the effects of aging begins with a process that verifies that the intended design functions of systems, structures and components have not been compromised or degraded. Once functional degradation is identified through performance or condition monitoring, corrective actions can be applied.
>
> (Federal Register Vol. 60, No. 88, 22469)

AMRs should focus on maintaining the ability of the components to perform their intended function. The SOC clarifies this point in section III.f (1):

> The rule will simplify the IPA process consistent with (1) the Commission's determination that the aging management review should focus on ensuring that structures and components perform their intended function(s)….
>
> (Fed Register Vol. 60, No. 88, 22476)

> The Commission also concludes that an aging management review of the passive functions of structures and components is warranted to provide the reasonable assurance that their intended functions are adequately maintained during the period of extended operation.
>
> (Fed Register Vol. 60, No. 88, 22476)

NEI 95-10 (Reference 2) provides additional guidance on determining the aging effects that require aging management.

To determine the aging effects requiring management (AERM), it is necessary to consider the materials, environment, and stressors that are associated with each structure, component or commodity grouping under review. In many instances, the proper selection of materials for the operating environment results in few, if any, AERM. For example, erosion/corrosion has very little or no aging effects on stainless steel piping. Conversely, carbon steel is subject to erosion/corrosion in a raw water environment. However, there should be various programs and activities available to manage the effects of erosion/corrosion on carbon steel piping.

In addition to the consideration of materials, environment, and stressors, the plant-specific CLB, plant and industry operating experience, and existing engineering evaluations must be addressed in order to identify the aging effects requiring management for the structure or component subject to an aging management review. The aging effects requiring management are those that have been identified using the considerations described above and that adversely affect the structure and component such that the intended function(s) may not be maintained consistent with the CLB for the period of extended operation.

3.0.2 The Aging Management Review Process

For each structure and component (SC) that is within scope, long-lived, and passive, an AMR was performed to show that the intended function of the SC will be maintained consistent with the current licensing basis (CLB) under all design conditions during the period of extended operation. Information pertinent to aging includes the material of construction, the normal operating environment, stressors that are associated with the SC, and industry and plant operating experience (OE). Using this information, the evaluation identified all aging effects that can potentially affect the ability of the SC to fulfill its intended function.

3.0.3 Aging Effects Analysis

The aging mechanisms and effects that apply to a structure or component are determined by the material(s) of construction and operating environment (including temperature and stress) to which the material is exposed. Structures or components constructed of the same

material and exposed to the same environment are susceptible to the same aging mechanisms and effects. As a result, on a system basis, structures and components were grouped together according to material/environment combinations. This facilitated the aging management review process, in that a single aging management review could be performed for a system specific group of structures or components. Analysis tools provided by the Electric Power Research Institute (Reference 6, Reference 7, and Reference 8) were used as guidance.

3.0.4 Management of Aging Effects

If aging effects can potentially affect the SC, then it is necessary to identify the aging management programs that will prevent, mitigate, or detect the aging effect, to assure the reliability of the intended function. If the aging management program is one that detects the effects of aging, it must do so before loss of intended function. If the aging management program is one that prevents or mitigates the effects of aging, it is necessary to demonstrate that the program is effective.

A review of plant and industry OE, inspections and activities previously performed, and in the absence of these, future inspections and activities, are used to demonstrate program effectiveness. In some cases, it may be possible to credit inspections performed at other plants where the material, operating conditions, and aging effects are the same. In addition, a one-time inspection (conducted just prior to the period of extended operation) may be sufficient.

The determination of the aging management programs credited for managing aging for the period of extended operation includes a detailed review of potential programs. The first choice is to credit programs currently in place at the MNGP that manage the effects of aging. If existing programs are deficient in some way, modification or enhancement is often possible to adequately manage the effects of aging. If necessary, development of new programs is undertaken where none currently exist. All programs that are credited for aging management are reviewed to assure they satisfy the ten attributes of successful programs described in NUREG-1801 and NEI 95-10.

3.0.5 Use of NUREG-1800 and NUREG-1801

The SRP-LR (NUREG-1800) (Reference 3) and the GALL Report (NUREG-1801) (Reference 4) provide guidance on aging management programs that the NRC has found to be generically acceptable for license renewal.

The format of an LRA described in the SRP-LR focuses on aging management based on combinations of material, environment and aging effects. This format differs from the traditional approach in that it does not perform the AMRs on a system basis, but on material

and environment for a group of similar and related systems. If an applicant's LRA can confirm that the results of the AMR are consistent with the conclusions in the SRP- LR and the GALL Report, the applicant can simply state in the LRA that the application is consistent with the GALL Report. This entails the review of plant programs and procedures to confirm that they have the same attributes as described in the GALL Report.

There is the option to credit aging management programs that are different from those listed in the GALL Report. The GALL Report contains a compilation of aging management programs that the NRC has found to be generically acceptable to manage aging during the renewal term, based on the results of the early LRAs. It is not an all-inclusive list of aging management programs for license renewal.

Before issuance of the GALL Report, all LRAs contained descriptions of aging management programs and the rationale as to why these programs adequately managed aging for the period of extended operation. This approach is still valid in an LRA using the SRP-LR format. It may have been determined that an aging management program currently in place in the plant adequately manages aging, but is not the same as the aging management program described in GALL Report.

Aging management programs not listed in the GALL Report are also appropriate when a combination of material, environment and aging effects exists in the plant that is not contained in the GALL Report. In this case, the LRA must contain a description of the specific aging management program and how the program satisfies the ten attributes of a successful program.

In the case where the GALL Report does not list the combination of material, environment, and aging effect for the system and components in question, but the combination is listed for a different system or component, it is still useful. The aging management programs listed in GALL can be applied to the same combination of material, environment, and aging effect in a different system or component.

For some combinations of material, environment, and aging effect, there may be more than one aging management program found generically acceptable by the NRC. Any of the GALL programs applicable to the MNGP may be used. Crediting more than one of the programs is unnecessary if the one credited in the LRA adequately manages the aging effect. If a GALL program does not apply to MNGP, the LRA cannot credit the program. The LRA does not need to explain the reason for not crediting the program.

3.0.6 **Operating Experience**

OE is an important resource in identifying aging effects and evaluating the effectiveness of aging management programs.

The Corrective Action Program and interviews with site personnel are the primary sources of plant specific operating experience for the AMRs.

The materials used for structures and components at MNGP are common to most nuclear power plants and to many non-nuclear power plants that have long operating histories. Screening of a large body of operating data yielded much useful data relating to aging of plant structures and components. In addition to MNGP plant-specific data, this industry-wide operating data can:

- Provide a basis for determining which aging effects require management.
- Demonstrate that existing programs are adequately managing the effects of aging.

The effects and mechanisms of age related degradation for SSCs at MNGP were developed from several sources. They include plant specific and industry OE, interviews with site personnel, the EPRI Generic Communications Database (Reference 5), EPRI documents, and the GALL Report. Known aging effects and mechanisms for a given environment and material have been incorporated into the GALL Report, up to the time of its publication in July, 2001.

With respect to aging management programs, existing programs/activities must demonstrate, with objective evidence, that they are effective in managing the effects of aging if credited. OE related to the program/activity, including past corrective actions resulting in program enhancements, provides objective evidence the program adequately manages the effects of aging.

3.0.6.1 Collection of Plant Specific and Industry OE from Corrective Action Program

The Corrective Action Program is the first source of information for identifying plant specific age related degradation issues applicable to MNGP. It is also one of many sources for the identification of industry operating experience. The MNGP Corrective Action Program requires the initiation of an Action Request (AR) to document plant specific and industry OE. In addition to plant specific OE and industry OE, the Corrective Action Program also documents findings from Self-Assessments, Licensee Event Reports, NRC Violations, INPO Reports; as well as equipment and program failures.

The MNGP Corrective Action Program database was searched to identify ARs that have age related issues and the corresponding aging effects and mechanisms.

3.0.6.2 Collection of Industry OE from other Sources

EPRI conducted a study (1997) of the NRC Generic Communications and developed a Generic Communications database (Reference 5). This study evaluated the operating experience found in the NRC Generic Communications for aging related degradation issues. EPRI updated the study in 2001 and again in July, 2002. The Generic Communications database contains the results of the reviews and references for all NRC Bulletins, Generic Letters, Circulars, Information Notices, Administrative Letters, NRC Regulatory Information Notices, and Outstanding Generic Safety Issues issued before July, 2002. This information became part of the LR database if applicable to MNGP SSCs.

3.0.6.3 Engineer Interviews

Site personnel responsible for SSCs (i.e., System Engineers) and existing program owners are an important source of OE information. These individuals were interviewed whenever possible and the information they provided was very beneficial.

The interviews included discussions of both plant and industry OE that relates to the MNGP and the systems or programs for which the engineer is responsible. Any new information that may indicate age related degradation for a SSC became part of the LR OE database and subject to further evaluation.

3.0.6.4 Categorization of Applicable OE for the AMR

LR engineers, assigned to in-scope systems, reviewed the identified OE to verify that it is applicable to aging effects for SSCs within the scope of License Renewal at the MNGP. The review used conservative judgment when determining the applicability of OE. The OE item review often required additional research before it could be determined that an age related degradation issue applied. If it was determined that an OE item did not involve aging effects applicable to SSCs within the scope of license renewal at MNGP, disposition of the item was documented.

LR Project procedures provided guidance on how to identify and collect OE describing aging effects applicable to structures and components within the scope of license renewal at MNGP or support demonstration of aging management program effectiveness.

3.0.7 Review of NUREG-0933

NUREG-0933 (Reference 9), contains listings of industry experience in the form of NRC Unreviewed Safety Issues (USIs) and Generic Safety Issues (GSIs) along with their current

status. NUREG-0933 (through Supplement 28) was reviewed in accordance with the guidance provided in Appendix A.3 of NUREG-1800 (Reference 3) to identify those USIs and GSIs related to both aging effects of structures and components and TLAAs within the scope of License Renewal. These results were used to confirm applicable aging effects and TLAAs had been appropriately identified and evaluated.

Consistent with the guidance of Appendix A.3.2.1.1 of NUREG-1800, to identify TLAAs and applicable aging effects of structures and component subject to an AMR, each USI and GSI listed in NUREG-0933 was reviewed. The following was noted:

- Some were dropped by the NRC and further review was not required,
- Some were only applicable to PWRs,
- Some resulted in design, analysis, or process impacts not relevant to aging effects or TLAAs, and finally,
- A number of GSIs resulted in further NRC generic communications, such as the issuance of Generic Letters or Bulletins. NRC generic communications were evaluated as part of AMR OE reviews, TLAA reviews, and AMP reviews. For example, GSI-29 on bolting is addressed in the Bolting Integrity Program, GSI-190 on environmentally assisted fatigue is addressed as a TLAA (Section 4.5, Effects of Reactor Coolant Environment), and GSI-168 on environmental qualification of electric equipment is addressed in TLAA support activities (Section 4.7, Environmental Qualification of Electrical Equipment (EQ).

Using the guidance of NUREG-1800, Appendix A.3, no additional TLAAs or aging effects subject to an aging management review were identified.

Consistent with the guidance of NUREG-1800, Appendix A.3.2.1.4, a review of a number of similar plant LRAs was performed. No additional TLAAs or aging effects subject to aging management review were identified.

In accordance with the guidance of Appendix A.3.2.1.2 of NUREG-1800, Appendix B of the latest issued supplement to NUREG-0933 will be reviewed for new GSIs designated as USI-, HIGH-, or MEDIUM- priority. Any identified that involve TLAAs or aging effects for structures and components subject to an aging management review will be included in the annual update of the LRA.

3.0.8 Aging Management Review Results - Summary Tables

Preparation of tables summarizing the key results of the aging management reviews followed the guidance in NEI 95-10. Two types of tables work together to present all of the needed information to summarize aging management reviews in a consistent format. The tables become a part of Section 3.0 of the LRA.

As explained in NEI 95-10, the source of the following information, the so-called 3.x.1 and 3.x.2 tables summarize each AMR as follows:

Table 3.x.1 - where '3' indicates the LRA section number, 'x' indicates the subsection number from NUREG-1801, Volume 1, and '1' indicates that this is the first table type in Section 3.0. For example, in the Reactor Coolant System subsection, this table would be number 3.1.1, in the Engineered Safety Features subsection, this table would be 3.2.1, and so on. For ease of discussion, this table is referred to in this Section as “Table 1."

Table 3.x.2-y - where '3' indicates the LRA section number, 'x' indicates the subsection number from NUREG-1801, Volume 1, and '2' indicates that this is the second table type in Section 3.0; and 'y' indicates the system table number. For example, for the Reactor Pressure Vessel, within the Reactor Coolant System subsection, this table would be 3.1.2-2, and for the Reactor Pressure Vessel Internals, it would be table 3.1.2-3. For the Core Spray System, within the Engineered Safety Features subsection, this table would be 3.2.2-3. For the next system (arranged alphabetically) within the ESF subsection, it would be table 3.2.2-4. For ease of discussion, this table is referred to in this section as “Table 2."

NUREG-1801 is the NRC Staff's generic evaluation of existing plant programs. The evaluation results documented in the report indicate that many of the existing programs are adequate to manage the aging effects for particular structures or components, within the scope of license renewal, without change. The report also contains recommendations on specific areas for augmentation of existing programs for license renewal. In order to take full advantage of NUREG-1801, a comparison is made between the AMR results and the tables of NUREG-1801. The results of this comparison are provided in the two tables.

3.0.8.1 **Table 1 (**Figure 3.0-1**)**

The purpose of Table 1 is to provide a summary comparison of how the facility aligns with the corresponding tables of NUREG-1801, Volume 1. The table is essentially the same as Tables 1 through 6 provided in NUREG-1801, Volume 1, except that the “Type” column has been replaced by an “Item Number” column and the “Item Number in GALL” column has been replaced by a “Discussion” column.

The “Item Number” column provides the reviewer with a means to cross-reference from Table 2 to Table 1.

The "Discussion" column provides clarifying/amplifying information. The following are examples of information that might be contained within this column:

1) “Further Evaluation Recommended” information or reference to where that information is located (including a hyperlink if possible).

2) The name of a plant specific program being used (and a hyperlink to the program if possible).

3) Exceptions to the NUREG-1801 assumptions.

4) A discussion of how the line is consistent with the corresponding line item in NUREG-1801, Volume 1, when that may not be intuitively obvious.

5) A discussion of how the item is different from the corresponding line item in NUREG-1801, Volume 1, when it may appear to be consistent (e.g., when there is exception taken to an aging management program that is listed in NUREG-1801, Volume 1).

3.0.8.2 **Table 2 (**Figure 3.0-2**)**

Table 2 provides the detailed results of the aging management reviews for those components identified in LRA Section 2.0 as being subject to aging management review. There will be a Table 2 for each of the in-scope systems within a “system” grouping. For example, for the MNGP, the Engineered Safety Features System Group contains tables for Automatic Pressure Relief and Core Spray.

Table 2 consists of the following nine columns:

1) Component Type

2) Intended Function

3) Material

4) Environment

5) Aging Effect Requiring Management

6) Aging Management Programs

7) NUREG-1801 Volume 2 Item

8) Table 1 Item

9) Notes

These columns are normally used to provide the following information:

1) Component Type

The first column identifies all of the component types from Section 2.0 of the LRA that are subject to aging management review. They are listed in alphabetical order.

Not all component types listed in Table 2 are identified in the applicable chapters of NUREG-1801, Volume 2. This includes accumulators, flow elements, gauges (flow, level, sight), instrumentation, manifolds, restricting orifices, filters/strainers, and thermowells. As a result, these specific component types were evaluated under the same NUREG-1801 Volume 2 line item as piping due to the direct correlation between piping, which includes piping, fittings, flanges, etc. and these components. This is appropriate since Chapter V (Engineered Safety Features) of NUREG-1801, Volume 2, line item V.A.1-a for piping component types, also addresses flow orifices/elements and temperature elements/indicators within this same piping line item.

2) Intended Function

The second column contains the license renewal intended functions (including abbreviations where applicable) for the listed component types. Definitions of intended functions are listed in Table 2.1-1.

3) Material

The third column lists the particular materials of construction for the component type. Materials of construction were identified for all systems, structures and components subject to aging management review. Sources of information used to identify materials of construction included original General Electric and Bechtel equipment and material specifications, vendor technical manuals and drawings, fabrication drawings, piping and instrument drawings, and piping line specifications. Field walkdowns were also used to identify/verify materials of construction for some components.

4) Environment

The fourth column lists the environment to which the component types are exposed. Internal and external service environments are indicated. Table 3.0-1 lists the service environments for internal and external surfaces used in the evaluation of mechanical and civil components and structures. Table 3.0-2 lists the service environments used for the evaluation of electrical components.

5) Aging Effect Requiring Management

As part of the aging management review process, the applicant determines any aging effects requiring management for the material and environment combination in order to maintain the intended function of the component type. These aging effects requiring management are listed in column five.

6) Aging Management Programs

The aging management programs used to manage the aging effects requiring management are listed in column six.

7) NUREG-1801 Vol. 2 Item

Each combination of component type, material, environment, aging effect requiring management, and aging management program that is listed in Table 2, is compared to NUREG-1801, Volume 2 with consideration given to the standard notes, to identify consistencies. When they are identified, they are documented by noting the appropriate NUREG-1801, Volume 2 item number in column seven of Table 2. If there is no corresponding item number in NUREG-1801, Volume 2, this row in column seven is blank. That way, a reviewer can readily identify where there is correspondence between the plant specific tables and the NUREG-1801, Volume 2 tables.

8) Table 1 Item

Each combination of component, material, environment, aging effect requiring management, and aging management program that has an identified NUREG-1801 Volume 2 item number must also have a Table 3.x.1 line item reference number. Column eight of Table 2 lists the corresponding line item from Table 1. If there is no corresponding item in NUREG-1801, Volume 1, this row in column eight is blank. This allows the information from the two tables to be correlated.

9) Notes

In order to realize the full benefit of NUREG-1801, each applicant needs to identify how the information in Table 2 aligns with the information in NUREG-1801, Volume 2. A series of notes accomplishes this. All note references with letters are standard notes that are typically the same from application to application throughout the industry. Numbers identify plant specific notes, which are in addition to the standard notes.

The reviewer may evaluate each row in Table 1 by moving from left to right across the table. Since the Component, Aging Effect/Mechanism, Aging Management

Programs, and Further Evaluation Recommended information comes directly from NUREG-1801, Volume 1, no further analysis of those columns is required. The information intended to help the reviewer the most in this table is contained within the Discussion column. Here the reviewer receives information necessary to determine, in summary, how the applicant's evaluations and programs align with NUREG-1801, Volume 1. This may be in the form of descriptive information within the Discussion column or the reviewer referred to other locations within the LRA for further information (including hyperlinks where possible/practical).

Table 2 contains all of the Aging Management Review information for the plant, whether or not it aligns with NUREG-1801. For a given row within the table, the reviewer is able to see the intended function, material, environment, aging effect requiring management and aging management program combination for a particular component type within a system. In addition, if there is a correlation between the combination in Table 2 and a combination in NUREG-1801, Volume 2, the referenced item number in column seven, NUREG-1801, Volume 2 Item, establishes the link. The reviewer can refer to the item number in NUREG-1801, Volume 2, if desired, to verify the correlation. If the column is blank, the applicant was unable to locate an appropriately corresponding combination in NUREG-1801, Volume 2. As the reviewer continues across the table from left to right, within a given row, the next column is "Table 1 Item." If there is a reference number in this column, the reviewer is able to use that reference number to locate the corresponding row in Table 1 and see how the aging management program for this particular combination aligns with NUREG-1801, Volume 1. There may be a hyperlink directly to the corresponding row in Table 1 as well.

Table 2 provides the reviewer with a means to navigate from the components subject to an AMR in LRA Section 2.0 all the way through the evaluation of the programs that will be used to manage the effects of aging of those components.

Table 3.0-1 Mechanical and Civil Service Environments

Component Environments	AMR Group Environment	Description
Air/Gas Ambient Temperature Air Dry Air Gas - Compressed Air Gas - Halon Gas - Instrument Air Gas - Hydrogen Gas - Nitrogen Gas - Refrigerant Inside Intake Structure Plant Indoor Air Primary Containment Air Wet Air/Gas	Air/Gas	The air/gas environment includes Primary Containment (drywell and pressure suppression chamber) air, plant indoor air; dry, filtered instrument air; nitrogen; hydrogen; halon; freon; and other vendor-supplied gases that may be used for analysis or calibration. Air conditions may include humidity, condensation, and contaminants.
Atmosphere/Weather Exposed to Weather Outside Air Outside Air Protected From Weather	Atmosphere/Weather	The atmosphere/weather conditions that may affect aging of SSCs include temperature, precipitation, and ultraviolet radiation. The extreme ambient air temperatures for the MNGP site range from -38^{o}F to 107^{o}F. Periodic wetting and ultraviolet radiation must be evaluated for SSCs exposed to atmosphere/weather. The atmosphere/weather environment includes atmospheric air including outside covered structures, and includes moist laden air, precipitation, and wind.
Concrete Embedded in Concrete	Concrete	Self explanatory.
Fuel Oil Lubricating Oil	Oil	The oil environment includes fuel oil and lubricating oil (without water pooling).

Table 3.0-1 Mechanical and Civil Service Environments

Component Environments	AMR Group Environment	Description
Below Grade Buried in Ground Raw Water	Raw Water	Raw water is defined as water that enters the plant from a river, lake, pond, or rain/ground water source that has not been demineralized or chemically treated to any significant extent. In general, the water is rough-filtered to remove large particles. Biocides may be added to control microorganisms or macroorganisms. Another designation of raw water is water that leaks from any system. For the structural evaluations, the AMR group environment for carbon steel components in soil is raw water. For other structural components in soil, the AMR group environment is below grade.

Table 3.0-1 Mechanical and Civil Service Environments

Component Environments	AMR Group Environment	Description
Glycol Corrosion-Inhibited Treated Water High Purity Water Reactor Coolant Water Reactor Coolant Water or Steam Steam Treated Water Treated Water or Steam	Treated Water and/or Steam	Treated water is demineralized water or chemically purified water and is the base water for all clean systems. Depending on the system, treated water may require further processing. Treated water can be de-aerated, can include corrosion inhibitors, biocides, or sodium pentaborate, or can include a combination of treatments. Steam generated from treated water is included in this category. Treated water with sodium pentaborate is also included in this environment.

Table 3.0-2 Electrical Service Environments

Component & AMR Group Environments
Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen
Adverse localized environment caused by moisture and voltage
Adverse localized environment caused by thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation.
Air-Indoor
Air-Outdoor
Corrosion, Chemical Contamination, Oxidation
Electrical Transients
Heat or radiation
Mechanical Stresses
Thermal Cycling (power applications only)
Vibration (non-bolted clip fuse holders only)

Figure 3.0-1 Table 3.x.1 - Summary of Aging Management Evaluations in Chapter _____ of NUREG-1801 for _____

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.x.1-01					
3.x.1-02					
3.x.1-03					
3.x.1-04					
3.x.1-05					
3.x.1-06					

Figure 3.0-2 Table 3.x.2-y, Plant Specific System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes

Section 3.0 References

1. 10 CFR Part 54, “Requirements For Renewal Of Operating Licenses For Nuclear Power Plants”
2. NEI 95-10, “Industry Guidance for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule” Nuclear Energy Institute, Revision 3
3. NUREG-1800, “Standard Review Plan for Review of LRAs for Nuclear Power Plants,” U.S. Nuclear Regulatory Commission, July 2001
4. NUREG-1801, “Generic Aging Lessons Learned (GALL) Report,” U.S. Nuclear Regulatory Commission, July 2001
5. EPRI 1003659, September 2002, “Generic Communications Database Users Manual, Version 3.0,” Revision 5.0
6. EPRI 1003056, November 2001, “Non-Class 1 Mechanical Implementation Guideline and Mechanical Tools”
7. EPRI 1003057, December 2001, “License Renewal Electrical Handbook”
8. EPRI 1002950, August 2003, “Aging Effects for Structures and Structural Components (Structural Tools),” Revision 1
9. NUREG-0933, “A Prioritization of Generic Safety Issues,” U.S. Nuclear Regulatory Commission (see NRC Website for current update)

3.1 Aging Management of Reactor Coolant System

3.1.1 Introduction

This section provides the results of the aging management review for those components identified in Section 2.3.1, Reactor Vessel, Internals, and Reactor Coolant System, as being subject to aging management review. The systems, or portions of systems, which are addressed in this section, are described in the indicated sections.

- Reactor Head Vent System (Section 2.3.1.1)
- Reactor Pressure Vessel (Section 2.3.1.2)
- Reactor Pressure Vessel Internals (Section 2.3.1.3)
- Reactor Recirculation System (Section 2.3.1.4)
- Reactor Vessel Instrumentation (Section 2.3.1.5)

Table 3.1.1, Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System, provides the summary of the programs evaluated in NUREG-1801 for the Reactor Coolant System component groups that are relied on for license renewal.

This table uses the format described in Section 3.0. Note that this table only includes those component groups that are applicable to a BWR.

3.1.2 Results

The following tables summarize the results of the aging management review for systems in the Reactor Vessel, Internals, and Reactor Coolant System group:

Table 3.1.2-1, Reactor Coolant System - Reactor Head Vent System - Summary of Aging Management Evaluation

Table 3.1.2-2, Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Table 3.1.2-3, Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Table 3.1.2-4, Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Table 3.1.2-5, Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

The materials that specific components are fabricated from, the environments to which components are exposed, the potential aging effects requiring management, and the aging management programs used to manage these aging effects are provided for each of the

above systems in the following subsections of Section 3.1.2.1, Materials, Environment, Aging Effects Requiring Management and Aging Management Programs:

Section 3.1.2.1.1, Reactor Head Vent System

Section 3.1.2.1.2, Reactor Pressure Vessel

Section 3.1.2.1.3, Reactor Pressure Vessel Internals

Section 3.1.2.1.4, Reactor Recirculation System

Section 3.1.2.1.5, Reactor Vessel Instrumentation

3.1.2.1 Materials, Environment, Aging Effects Requiring Management and Aging Management Programs

3.1.2.1.1 Reactor Head Vent System

Materials

The materials of construction for the Reactor Head Vent System are:

- Carbon Steel
- Stainless Steel

Environment

The Reactor Head Vent System components are exposed to the following environments:

- Primary Containment Air (Ext)
- Steam (Int)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Reactor Head Vent System, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - FAC
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Reactor Head Vent System components:

- ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD
- Bolting Integrity
- Flow-Accelerated Corrosion
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.1.2.1.2 **Reactor Pressure Vessel**

Materials

The materials of construction for the Reactor Pressure Vessel are:

- 308/309 Stainless Steel
- A508 Cl 2, 308/309 Clad
- A533-65 GrB Cl 1, 308/309 Clad
- Carbon Steel
- SA182 Gr 304
- SA182 Gr F304
- SA336 F8
- SA 350 LF2
- SA 508 Class I
- SA508 Cl 2, 308/309 Clad
- SA508 Cl 2, 308/309 or 308L Clad
- SA-516 Grade 70
- SA540 Gr B23/24
- SB-166
- SB-167
- Type 316NG

Environment

The Reactor Pressure Vessel components are exposed to the following environments:

- Air, Leaking Reactor Coolant Water and/or Steam at 288ºC (550ºF)
- Ambient Temperature Air
- Primary Containment Air (Ext)
- Up to 225ºC (437ºF) Reactor Coolant Water
- Up to 288ºC (550ºF) Reactor Coolant Water
- Up to 288ºC (550ºF) Reactor Coolant Water or Steam
- Up to 288ºC (550ºF) Reactor Coolant Water, Steam
- 288ºC (550ºF) Reactor Coolant Water, $5x10^{8}$-$5x10^{9}$ n/cm^{2}
- 288ºC (550ºF) Reactor Coolant Water, Max $5x10^{9}$ n/cm^{2}
- 288ºC (550ºF) Steam

Aging Effects Requiring Management

The following aging effects, associated with the Reactor Pressure Vessel, require management:

- Crack Initiation and Growth/Cyclic Loading
- Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking
- Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Cyclic Loading
- Cumulative Fatigue Damage/Fatigue
- Loss of Fracture Toughness/Neutron Irradiation Embrittlement

Aging Management Programs

The following aging management programs manage the aging effects for the Reactor Pressure Vessel components:

- ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD
- BWR Control Rod Drive Return Line Nozzle
- BWR Feedwater Nozzle
- BWR Penetrations
- BWR Stress Corrosion Cracking

- BWR Vessel ID Attachment Welds
- Plant Chemistry Program
- Reactor Head Closure Studs
- Reactor Vessel Surveillance

3.1.2.1.3 Reactor Pressure Vessel Internals

Materials

The materials of construction for the Reactor Pressure Vessel Internals are:

- Alloy 600, Alloy 182 welds
- Alloy X-750
- Cast Austenitic Stainless Steel
- Stainless Steel

Environment

The Reactor Pressure Vessel Internals components are exposed to the following environments:

- 288ºC (550ºF) High Purity Water
- Up to 288ºC, (550ºF) reactor coolant water

Aging Effects Requiring Management

The following aging effects, associated with the Reactor Pressure Vessel Internals, require management:

- Crack initiation and Growth/Cyclic Loading
- Crack initiation and Growth/Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking
- Crack initiation and Growth/Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking
- Cumulative Fatigue Damage/Fatigue
- Loss of Fracture Toughness/ Thermal Aging and Neutron Irradiation Embrittlement

Aging Management Programs

The following aging management programs manage the aging effects for the Reactor Pressure Vessel Internals components:

- ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD
- BWR Vessel Internals
- Plant Chemistry Program
- Thermal Aging & Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)

3.1.2.1.4 Reactor Recirculation System

Materials

The materials of construction for the Reactor Recirculation System are:

- Carbon Steel
- Stainless Steel

Environment

The Reactor Recirculation System is exposed to the following environments:

- Lubricating Oil (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Treated Water (Ext)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Reactor Recirculation System, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - FAC
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Reactor Recirculation System:

- ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD
- Bolting Integrity
- BWR Stress Corrosion Cracking
- Closed-Cycle Cooling Water
- Flow-Accelerated Corrosion
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.1.2.1.5 Reactor Vessel Instrumentation

Materials

The materials of construction for the Reactor Vessel Instrumentation are:

- Carbon Steel
- Stainless Steel

Environment

The Reactor Vessel Instrumentation components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Reactor Pressure Vessel Instrumentation, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion

- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Reactor Vessel Instrumentation components:

- ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD
- Bolting Integrity
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.1.2.2 Further Evaluation of Aging Management as Recommended by NUREG-1801

NUREG-1801 Volume 1 Tables provide the basis for identifying those programs that warrant further evaluation by the reviewer in the license renewal application. For the Reactor Vessel, Internals, and Reactor Coolant System, those programs are addressed in the following sections.

3.1.2.2.1 Cumulative Fatigue Damage

Fatigue is a Time-Limited Aging Analysis (TLAA) as defined in 10 CFR 54.3. TLAAs are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluation of this TLAA is addressed separately in Section 4.3.

3.1.2.2.2.1 Loss of Material due to Pitting and Crevice Corrosion (Item 1)

Applicable to PWR Only

3.1.2.2.2.2 Loss of Material due to Pitting and Crevice Corrosion (Item 2)

This subsection discusses loss of material due to pitting and crevice corrosion in BWR isolation condenser components. Loss of material for a BWR isolation condenser is not applicable, since MNGP does not have an isolation condenser.

3.1.2.2.3.1 Loss of Fracture Toughness due to Neutron Irradiation Embrittlement (Item 1)

Loss of fracture toughness due to neutron irradiation embrittlement is a TLAA as defined in 10 CFR 54.3. TLAAs are required to be evaluated in

accordance with 10 CFR 54.21(c)(1). The evaluation of this TLAA is addressed separately in Section 4.2.

3.1.2.2.3.2 Loss of Fracture Toughness due to Neutron Irradiation Embrittlement (Item 2)

This subsection discusses reactor vessel loss of fracture toughness due to neutron irradiation embrittlement and the reactor vessel materials surveillance program.

Loss of fracture toughness due to neutron irradiation embrittlement will be managed using the Reactor Vessel Surveillance Program (refer to Appendix B, Section B2.1.29).

The Reactor Vessel Surveillance Program is part of the Boiling Water Reactor's Vessel Internals Project (BWRVIP) Integrated Surveillance Program (ISP) that uses data from BWR member surveillance programs to select the “best” representative material to monitor radiation embrittlement for a particular plant. The BWRVIP ISP monitors capsule test results from various member plants. This is consistent with the methodology allowed by NUREG-1801.

The MNGP Reactor Vessel Surveillance Program is required by 10 CFR 50, Appendix H. The scope of the Reactor Vessel Surveillance Program is described by the BWRVIP ISP guidance. The ISP's capsule removal schedule is included in BWRVIP-86-A and its technical basis is described in BWRVIP-78. The ISP was approved by the NRC in a Safety Evaluation (SE) to the BWRVIP, dated February 1, 2002. This Safety Evaluation concluded that the ISP, if implemented in accordance with the conditions in the SE, is an acceptable alternative to all existing BWR plant-specific RPV surveillance programs for the purpose of maintaining compliance with the requirements of Appendix H to 10 CFR Part 50 through the end of current facility 40 year operating licenses.

The following commitment has been established in Appendix B, Section B2.1.29: MNGP intends to use the Integrated Surveillance Program during the period of extended operation by implementing the requirements of BWRVIP-116, which is currently being reviewed by the NRC.

Implementation of the Reactor Vessel Surveillance Program to manage the aging effect/mechanism provides added assurance that the effect/mechanism is not occurring; or that the aging effect is progressing

very slowly such that the component's intended function will be maintained during the period of extended operation.

3.1.2.2.3.3 **Loss of Fracture Toughness due to Neutron Irradiation Embrittlement (Item 3)**

Applicable to PWR Only

3.1.2.2.4.1 **Crack Initiation and Growth due to Thermal and Mechanical Loading or Stress Corrosion Cracking (Item 1)**

This subsection discusses crack initiation and growth due to thermal and mechanical loading or SCC (including intergranular stress corrosion cracking [IGSCC]) in small-bore reactor coolant system and connected system piping less than nominal pipe size (NPS) 4-inch.

Aging effect is managed by the ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD Program, together with the Plant Chemistry Program and the One-Time Inspection Program.

The One-Time Inspection Program has been assigned as an AMP to be implemented in conjunction with the Plant Chemistry Program and the ASME Section XI, In-Service Inspection, Subsection IWB, IWC, and IWD Program for aging management of crack initiation and growth of reactor coolant systems small bore piping. Exceptions apply to the NUREG-1801 recommendations for ASME Section XI, In-Service Inspection, Subsection IWB, IWC, and IWD Program implementation (refer to Appendix B, Section B2.1.2). Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).

ASME Section XI does not require the volumetric examination of pipes less than 4-inch nominal pipe size. The scope of the One-Time Inspection Program includes activities to validate the effectiveness of existing aging management programs (AMPs) by verifying that unacceptable degradation is not occurring in various components and systems. The aging effect that is monitored/inspected by the MNGP One-Time Inspection Program includes crack initiation and growth. This program includes one-time inspections to monitor a component's degradation using a variety of non-destructive examination (NDE) methods. The One-Time Inspection Program is a new AMP (refer to Appendix B, Section B2.1.23).

For the subject small-bore piping, Section XI.M32 of NUREG-1801 recommends either a plant-specific destructive examination of piping

replaced by plant modifications, or NDE examinations of the inside piping surface to ensure that cracking has not occurred. Locations will be based on physical accessibility, dose rate considerations, and NDE techniques. As previously stated, MNGP will perform NDE examinations of the subject piping and will also have the option of destructive examination of replaced piping.

Implementation of the One-Time Inspection Program, in conjunction with the Plant Chemistry Program and ASME Section XI, In-Service Inspection, Subsection IWB, IWC, and IWD Program, provides added assurance that the aging effects/mechanisms are not occurring; or that the aging effects are progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.1.2.2.4.2 Crack Initiation and Growth due to Thermal and Mechanical Loading or Stress Corrosion Cracking (Item 2)

This subsection discusses crack initiation and growth due to thermal and mechanical loading or SCC (including IGSCC) in BWR reactor vessel flange leak detection lines and BWR jet pump sensing lines.

The Jet Pump Sensing Lines internal to the Reactor Vessel are not in the scope of license renewal at MNGP. See Table 3.1-1, item 3.1.1-07 and Section 3.1.2.2.4.1 regarding management of aging effects/mechanisms for the Reactor Vessel Flange Leak Detection Line and other small-bore reactor coolant system and connected system piping.

3.1.2.2.4.3 Crack Initiation and Growth due to Thermal and Mechanical Loading or Stress Corrosion Cracking (Item 3)

This subsection discusses crack initiation and growth due to thermal and mechanical loading or SCC (including IGSCC) of BWR isolation condenser components. Crack initiation and growth due to stress corrosion cracking (SCC) or cyclic loading for a BWR isolation condenser is not applicable since MNGP does not have an isolation condenser.

3.1.2.2.5 Crack Growth due to Cyclic Loading

Applicable to PWR Only

3.1.2.2.6 Changes in Dimension due to Void Swelling

Applicable to PWR Only

3.1.2.2.7.1 **Crack Initiation and Growth due to Stress Corrosion Cracking or Primary Water Stress Corrosion Cracking (Item 1)**

Applicable to PWR Only

3.1.2.2.7.2 **Crack Initiation and Growth due to Stress Corrosion Cracking or Primary Water Stress Corrosion Cracking (Item 2)**

Applicable to PWR Only

3.1.2.2.7.3 **Crack Initiation and Growth due to Stress Corrosion Cracking or Primary Water Stress Corrosion Cracking (Item 3)**

Applicable to PWR Only

3.1.2.2.8 **Crack Initiation and Growth due to Stress Corrosion Cracking or Irradiation-Assisted Stress Corrosion Cracking**

Applicable to PWR Only

3.1.2.2.9 **Loss of Preload due to Stress Relaxation**

Applicable to PWR Only

3.1.2.2.10 **Loss of Section Thickness due to Erosion**

Applicable to PWR Only

3.1.2.2.11 **Crack Initiation and Growth due to PWSCC, ODSCC, or Intergranular Attack or Loss of Material due to Wastage and Pitting Corrosion or Loss of Section Thickness due to Fretting and Wear or Denting due to Corrosion of Carbon Steel Tube Support Plate**

Applicable to PWR Only

3.1.2.2.12 **Loss of Section Thickness due to Flow-accelerated Corrosion**

Applicable to PWR Only

3.1.2.2.13 **Ligament Cracking due to Corrosion**

Applicable to PWR Only

3.1.2.2.14 **Loss of Material due to Flow-accelerated Corrosion**

Applicable to PWR Only

3.1.2.3 Time-Limited Aging Analysis

The time-limited aging analyses (TLAA) identified below are associated with the Reactor Vessel, Internals, and Reactor Coolant System components:

- Section 4.2, Neutron Embrittlement of the Reactor Pressure Vessel and Internals
- Section 4.3, Metal Fatigue of the RPV and Internals, and Reactor Coolant Pressure Boundary Piping and Components
- Section 4.4, Irradiation Assisted Stress Corrosion Cracking (IASCC)
- Section 4.5, Effects of Reactor Coolant Environment
- Section 4.8, Stress Relaxation of Rim Holddown Bolts

3.1.3 Conclusion

The Reactor Vessel, Internals, and Reactor Coolant System piping, fittings, and components that are subject to aging management review have been identified in accordance with the requirements of 10 CFR 54.4. The aging management programs selected to manage aging effects for the Reactor Vessel, Internals, and Reactor Coolant System components are identified in the summaries in Section 3.1.2.1 above.

A description of these aging management programs is provided in Appendix B, along with the demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the conclusions provided in Appendix B, the effects of aging associated with the Reactor Vessel, Internals, and Reactor Coolant System components will be adequately managed so that there is reasonable assurance that the intended function(s) will be maintained consistent with the current licensing basis during the period of extended operation.

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-01	Reactor coolant pressure boundary components	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA (see [SRP] subsection 3.1.2.2.1)	Further evaluation documented in Section 3.1.2.2.1.
3.1.1-02	PWR only				
3.1.1-03	Isolation condenser	Loss of material due to general, pitting, and crevice corrosion	In-service inspection; water chemistry	Yes, plant specific (see [SRP] subsection 3.1.2.2.2.2)	Not applicable; MNGP does not use an isolation condenser. Further evaluation documented in Section 3.1.2.2.2.2.
3.1.1-04	Pressure vessel ferritic materials that have a neutron fluence greater than 10^{17} n/cm^2 (E>1 MeV)	Loss of fracture toughness due to neutron irradiation embrittlement	TLAA, evaluated in accordance with Appendix G of 10 CFR 50 and RG 1.99	Yes, TLAA (see [SRP] subsection 3.1.2.2.3.1)	Further evaluation documented in Section 3.1.2.2.3.1.
3.1.1-05	Reactor vessel beltline shell and welds	Loss of fracture toughness due to neutron irradiation embrittlement	Reactor vessel surveillance	Yes, plant specific (see [SRP] subsection 3.1.2.2.3.2)	Aging effects managed by the Reactor Vessel Surveillance Program. Further evaluation documented in Section 3.1.2.2.3.2.
3.1.1-06	PWR only				

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-07	Small-bore reactor coolant system and connected systems piping	Crack initiation and growth due to SCC, intergranular SCC, and thermal and mechanical loading	In-service inspection; water chemistry; one-time inspection	Yes, parameters monitored/ inspected and detection of aging effects are to be further evaluated (see [SRP] subsection 3.1.2.2.4.1)	Aging effect is managed by the ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD Program, together with the Plant Chemistry Program and the One-Time Inspection Program. Further evaluation documented in Section 3.1.2.2.4.1. Exceptions apply to the NUREG-1801 recommendations for ASME Section XI Inservice Inspection, Subsection IWB, IWC, and IWD Program implementation (refer to Appendix B, Section B2.1.2). Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).
3.1.1-08	Jet pump sensing line, and reactor vessel flange leak detection line	Crack initiation and growth due to SCC, intergranular stress corrosion cracking (IGSCC), or cyclic loading	Plant specific	Yes, plant specific (See [SRP] subsection 3.1.2.2.4.2)	This line item is not used at MNGP. The Jet Pump Sensing Lines are not in the scope of license renewal at MNGP. See item 3.1.1-07 for the Reactor Vessel Flange Leak Detection Line. Further evaluation documented in Section 3.1.2.2.4.2.
3.1.1-09	Isolation condenser	Crack initiation and growth due to stress corrosion cracking (SCC) or cyclic loading	In-service inspection; water chemistry	Yes, plant specific (See [SRP] subsection 3.1.2.2.4.3)	Not applicable; MNGP does not use an isolation condenser. Further evaluation documented in Section 3.1.2.2.4.3.
3.1.1-10	PWR Only				
3.1.1-11	PWR Only				
3.1.1-12	PWR Only				
3.1.1-13	PWR Only				
3.1.1-14	PWR Only				

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-15	PWR Only				
3.1.1-16	PWR Only				
3.1.1-17	PWR Only				
3.1.1-18	PWR Only				
3.1.1-19	PWR Only				
3.1.1-20	PWR Only				
3.1.1-21	PWR only				
3.1.1-22	Reactor vessel closure studs and stud assembly	Crack initiation and growth due to SCC and/or IGSCC	Reactor head closure studs	No	The Reactor Head Closure Studs Program is used to manage potential aging effects of the closure stud assemblies.
3.1.1-23	CASS pump casing and valve body	Loss of fracture toughness due to thermal aging embrittlement	In-service inspection	No	This line item is not used at MNGP. The reactor coolant systems components of CASS material are portions of the Jet Pump, Fuel Support, and CRD assemblies. See items 3.1.1-31 and 3.1.1-33 for these components. In addition, CASS valve bodies in the ESF system are discussed in item 3.2.1-11 of Table 3.2.1.
3.1.1-24	CASS piping	Loss of fracture toughness due to thermal aging embrittlement	Thermal aging embrittlement of CASS	No	Not applicable; MNGP does not have piping in the reactor coolant systems of CASS material.
3.1.1-25	BWR piping and fittings; steam generator components	Wall thinning due to flow-accelerated corrosion	Flow-accelerated corrosion	No	The Flow-Accelerated Corrosion Program is used to manage potential aging effects of the piping, fittings and valves. Flow-accelerated corrosion for additional systems that are part of the reactor coolant pressure boundary is addressed in Table 3.4.1.

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-26	Reactor coolant pressure boundary (RCPB) valve closure bolting, manway and holding bolting, and closure bolting in high pressure and high temperature systems	Loss of material due to wear; loss of preload due to stress relaxation; crack initiation and growth due to cyclic loading and/or SCC	Bolting integrity	No	This line item is not used at MNGP. The aging mechanism of general corrosion is managed by the Bolting Integrity Program. There are no bolts with a specified minimum yield strength greater than 150 ksi in the reactor coolant systems at MNGP with the exception of the reactor head closure studs (see item 3.1.1-22). Therefore, crack initiation and growth due to SCC is not an applicable aging effect. Reactor Vessel Internal (RIT) core plate bolts are subject to crack initiation and growth due to SCC, IGSCC, and/or IASCC, however these bolts are not closure bolts. See item 3.1.1-31 for discussion on core plate bolts crack initiation and growth. Closure bolting preload is effectively addressed in the design (material selection, bolt and nut sizes), installation (torque, lubricant, bolting pattern), and maintenance requirements (retorquing, final checks). Operating temperatures in MNGP systems are below the threshold temperature where thermal creep of the bolting material could occur. MNGP plant operating experience shows no bolted closure failures due to loss of preload. While not specifically identified as an aging effect in the respective system Table 2, Summary of Aging Management Evaluation, loss of preload is managed for carbon steel and stainless steel closure bolting used in pressure retaining joints by the Bolting Integrity Program. The Bolting Integrity Program manages loss of preload associated with closure bolting through periodic inspection, material selection, thread lubricant control, assembly and torque requirements, and repair and replacement

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-26 continued					requirements. These activities are based on the applicable requirements of ASME Section XI and plant operating experience and includes consideration of the guidance contained in NUREG-1339, Resolution of Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants, EPRI NP-5769, Degradation and Failure of Bolting in Nuclear Power Plants, EPRI TR-104213, Bolted Joint Maintenance & Application Guide, and EPRI NP-5067 Volumes 1 and 2, Good Bolting Practices.
3.1.1-27	Feedwater and control rod drive (CRD) return line nozzles	Crack initiation and growth due to cyclic loading	Feedwater nozzle; CRD return line nozzle	No	Aging effect for the feedwater return line nozzles managed by the BWR Feedwater Nozzle Program. Aging effect for the CRD return line nozzles managed by the BWR Control Rod Drive Return Line Nozzle Program. Exceptions apply to the NUREG-1801 recommendations for BWR Control Rod Drive Return Line Nozzle Program implementation (refer to Appendix B, Section B2.1.7). Note, the control rod drive return line nozzles have been cut and capped, thus the augmented inspections listed for this program are not required.

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-28	Vessel shell attachment welds	Crack initiation and growth due to SCC, IGSCC	BWR vessel ID attachment welds; water chemistry	No	Aging effect is managed by the BWR Vessel ID Attachment Welds Program and Plant Chemistry Program. Exceptions apply to the NUREG-1801 recommendations for BWR Vessel ID Attachment Welds Program implementation (refer to Appendix B, Section B2.1.11). Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-29	Nozzle safe ends, recirculation pump casing, connected systems piping and fittings, body and bonnet of valves	Crack initiation and growth due to SCC, IGSCC	BWR stress corrosion cracking; water chemistry	No	Aging effect is managed by the Plant Chemistry Program and the BWR Stress Corrosion Cracking Program; or the Plant Chemistry Program and the ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD Program for reactor coolant pressure boundary components not in the scope of the BWR Stress Corrosion Cracking Program. The ASME Section XI Inservice Inspection, Subsection IWB, IWC, and IWD Program provides an equivalent inspection level to that of the BWR Stress Corrosion Cracking Program. For components that do not fall within the scope of the BWR Stress Corrosion Cracking Program or are not subject to a volumetric examination per ASME Section XI, the Plant Chemistry Program and One-Time Inspection Program manage the aging effect for these components. The scope of the One-Time Inspection Program includes activities to validate the effectiveness of existing aging management programs (AMPs) by verifying that unacceptable degradation is not occurring in various components and systems. The aging effects that are monitored/inspected by the MNGP One-Time Inspection Program include crack initiation and growth. This program includes one-time inspections to monitor a component's degradation using a variety of non-destructive examination (NDE) methods. The One-Time Inspection Program is a new AMP (refer to Appendix B, Section B2.1.23). Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B,

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-29 continued					Section B2.1.25). Exceptions apply to the NUREG-1801 recommendations for BWR Stress Corrosion Cracking Program implementation (refer to Appendix B, Section B2.1.10). Exceptions apply to the NUREG-1801 recommendations for ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD Program (refer to Appendix B, Section B2.1.2).
3.1.1-30	Penetrations	Crack initiation and growth due to SCC, IGSCC, cyclic loading	BWR penetrations; water chemistry	No	Aging effect is managed by the BWR Penetrations Program and Plant Chemistry Program. Exceptions apply to the NUREG-1801 recommendations for BWR Penetrations Program implementation (refer to Appendix B, Section B2.1.9). Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (Refer to Appendix B, Section B2.1.25).
3.1.1-31	Core shroud and core plate, support structure, top guide, core spray lines and spargers, jet pump assemblies, control rod drive housing, nuclear instrumentation guide tubes	Crack initiation and growth due to SCC, IGSCC, IASCC	BWR vessel internals; water chemistry	No	Aging effect is managed by the BWR Vessel Internals Program and Plant Chemistry Program. Exceptions apply to the NUREG-1801 recommendations for BWR Vessel Internals Program implementation (refer to Appendix B, Section B2.1.12). Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-32	Core shroud and core plate access hole cover (welded and mechanical covers)	Crack initiation and growth due to SCC, IGSCC, IASCC	ASME Section XI in-service inspection; water chemistry	No	Aging effect is managed by the ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD Program and Plant Chemistry Program. Exceptions apply to the NUREG-1801 recommendations for ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD Program implementation (refer to Appendix B, Section B2.1.2). Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25). Note: Mechanical Access Hole Covers do not exist at MNGP.
3.1.1-33	Jet pump assembly castings; orificed fuel support	Loss of fracture toughness due to thermal aging and neutron embrittlement	Thermal aging and neutron irradiation embrittlement	No	Aging effect is managed by the Thermal Aging & Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program.
3.1.1-34	Unclad top head and nozzles	Loss of material due to general, pitting, and crevice corrosion	In-service inspection; water chemistry	No	Not applicable; the top head enclosure is clad at MNGP, and therefore is not subject to the loss of material aging effect.
3.1.1-35	PWR Only				
3.1.1-36	PWR Only				
3.1.1-37	PWR Only				
3.1.1-38	PWR Only				
3.1.1-39	PWR Only				
3.1.1-40	PWR Only				
3.1.1-41	PWR Only				
3.1.1-42	PWR Only				

Table 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Coolant System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-43	PWR Only				
3.1.1-44	PWR Only				
3.1.1-45	PWR Only				
3.1.1-46	PWR Only				
3.1.1-47	PWR Only				
3.1.1-48	PWR Only				

Table 3.1.2-1 Reactor Coolant System - Reactor Head Vent System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 112, 126
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 126
		Stainless Steel	Primary Containment Air (Ext)	None	None			J, 101, 106, 127
Piping and Fittings	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 126
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 126
				Loss of Material - FAC	Flow-Accelerated Corrosion	IV.C1.1-a	3.1.1-25	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 112, 126
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 126
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 126
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 126

Table 3.1.2-1 Reactor Coolant System - Reactor Head Vent System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
		Stainless Steel	Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD	IV.C1.1-i	3.1.1-07	B
					One-Time Inspection	IV.C1.1-i	3.1.1-07	A
					Plant Chemistry Program	IV.C1.1-i	3.1.1-07	B

Table 3.1.2-1 Reactor Coolant System - Reactor Head Vent System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
Valve Bodies	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 126
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 126
				Loss of Material - FAC	Flow-Accelerated Corrosion	IV.C1.3-a	3.1.1-25	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 112, 126
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 126
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 126

Table 3.1.2-1 Reactor Coolant System - Reactor Head Vent System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Steam (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 126
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 126
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B, 126
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B, 126

Table 3.1.2-2 Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Bottom Head Components - • Bottom Head Dollar Plate • Bottom Head Torus	Pressure Boundary	A533-65 GrB Cl 1, 308/309 Clad	Up to 288ºC (550ºF) Reactor Coolant Water	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.6-a	3.1.1-01	
Nozzle Safe Ends - • Control rod drive return line cap	Pressure Boundary	Type 316NG	Up to 288ºC (550ºF) Reactor Coolant Water	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Stress Corrosion Cracking	IV.A1.4-a	3.1.1-29	B, 130
					Plant Chemistry Program	IV.A1.4-a	3.1.1-29	B
				Cumulative Fatigue Damage/Fatigue	Not Applicable	IV.A1.4-b	3.1.1-01	I, 130
Nozzle Safe Ends - • Core spray	Pressure Boundary	SA 350 LF2	Up to 288ºC (550ºF) Reactor Coolant Water or Steam	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.C1.1-h	3.1.1-01	
Nozzle Safe Ends - • FW nozzle	Pressure Boundary	SA 350 LF2	Up to 225ºC (437ºF) Reactor Coolant Water	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.C1.1-d	3.1.1-01	
Nozzle Safe Ends - • Instrument & SBLC	Pressure Boundary	Type 316NG	Up to 288ºC (550ºF) Reactor Coolant Water, Steam (nozzle flange)	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD	IV.A1.4-a	3.1.1-29	E, 131, 133
					Plant Chemistry Program	IV.A1.4-a	3.1.1-29	D, 131

Table 3.1.2-2 Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Nozzle Safe Ends - • Jet Pump Instrument	Pressure Boundary	Type 316NG	Up to 288ºC (550ºF) Reactor Coolant Water, Steam (nozzle flange)	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Stress Corrosion Cracking	IV.A1.4-a	3.1.1-29	D, 131, 133
					Plant Chemistry Program	IV.A1.4-a	3.1.1-29	D, 131
Nozzle Safe Ends - • Main steam	Pressure Boundary	SA-516 Grade 70	288ºC (550ºF) Steam	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.C1.1-b	3.1.1-01	
Nozzle Safe Ends - • Recirculating water	Pressure Boundary	Type 316NG (Recirc)	Up to 288ºC (550ºF) Reactor Coolant Water	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Stress Corrosion Cracking	IV.A1.4-a	3.1.1-29	B, 132
					Plant Chemistry Program	IV.A1.4-a	3.1.1-29	B
Nozzle Safe Ends and Flanges - • Instrument	Pressure Boundary	SA336 F8	Up to 288ºC (550ºF) Reactor Coolant Water, Steam (nozzle flange)	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD	IV.A1.4-a	3.1.1-29	E
					Plant Chemistry Program	IV.A1.4-a	3.1.1-29	D
Nozzles - • Control rod drive return line	Pressure Boundary	SA508 Cl 2, 308/309 Clad	Up to 288ºC (550ºF) Reactor Coolant Water	Crack Initiation and Growth/Cyclic Loading	BWR Control Rod Drive Return Line Nozzle	IV.A1.3-c	3.1.1-27	B, 130
Nozzles - • Feedwater	Pressure Boundary	SA508 Cl 2, 308/309 Clad	Up to 288ºC (550ºF) Reactor Coolant Water	Crack Initiation and Growth/Cyclic Loading	BWR Feedwater Nozzle	IV.A1.3-b	3.1.1-27	A, 129

Table 3.1.2-2 Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Nozzles - • Feedwater • Control rod drive return line	Pressure Boundary	SA508 Cl 2, 308/309 Clad	Up to 288ºC (550ºF) Reactor Coolant Water	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.3-d	3.1.1-01	
Nozzles - • Main steam	Pressure Boundary	SA508 Cl 2, 308/309 or 308L Clad	288ºC (550ºF) Steam	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.3-a	3.1.1-01	
Nozzles - • Recirculation Inlet	Pressure Boundary	SA508 Cl 2, 308/309 Clad	Up to 288ºC (550ºF) Reactor Coolant Water	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.3-d	3.1.1-01	
			288ºC (550ºF) Reactor Coolant Water $5x10^8$-$5x10^9$ n/cm^2	Loss of Fracture Toughness/Neutron Irradiation Embrittlement	Reactor Vessel Surveillance	IV.A1.2-d	3.1.1-05	C, 134
					TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.2-c	3.1.1-04	
Nozzles - • Recirculation Outlet • Core Spray • Jet Pump Instrument • Instrument & SBLC	Pressure Boundary	SA508 Cl 2, 308/309 Clad	Up to 288ºC (550ºF) Reactor Coolant Water	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.3-d	3.1.1-01	
Penetration - • Bottom head drain line	Pressure Boundary	SA 508 Class I	Up to 288ºC (550ºF) Reactor Coolant Water	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.3-d	3.1.1-01	

Table 3.1.2-2 Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Penetration - • Control rod drive stub tubes	Pressure Boundary	SB-167	Up to 288ºC (550ºF) Reactor Coolant Water	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Cyclic Loading	BWR Penetrations	IV.A1.5-a	3.1.1-30	B
					Plant Chemistry Program	IV.A1.5-a	3.1.1-30	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.5-b	3.1.1-01	
Penetration - • Flux monitor	Pressure Boundary	SB-166	Up to 288ºC (550ºF) Reactor Coolant Water	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Cyclic Loading	BWR Penetrations	IV.A1.5-a	3.1.1-30	B
					Plant Chemistry Program	IV.A1.5-a	3.1.1-30	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.5-b	3.1.1-01	

Table 3.1.2-2 Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Penetration - • Instrument	Pressure Boundary	SB-166	Up to 288ºC (550ºF) Reactor Coolant Water	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Cyclic Loading	BWR Penetrations	IV.A1.5-a	3.1.1-30	B
					Plant Chemistry Program	IV.A1.5-a	3.1.1-30	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.5-b	3.1.1-01	
Reactor Pressure Vessel External Surface	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	None	None			J, 127
Support Skirt and Attachment Welds	Structural Support	A533-65 GrB Cl 1, 308/309 Clad	Ambient Temperature Air	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.7-a	3.1.1-01	
Top Head Enclosure - • Closure Studs & Nuts	Pressure Boundary	SA540 Gr B23/24	Air, Leaking Reactor Coolant Water and/or Steam at 288ºC (550ºF)	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	Reactor Head Closure Studs	IV.A1.1-c	3.1.1-22	A

Table 3.1.2-2 Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Top Head Enclosure - • Head Spray Cap	Pressure Boundary	SA182 Gr 304	288ºC (550ºF) Steam	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Stress Corrosion Cracking	IV.A1.4-a	3.1.1-29	D, 135
					Plant Chemistry Program	IV.A1.4-a	3.1.1-29	D, 135
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.1-b	3.1.1-01	
Top Head Enclosure - • Instrument Nozzle (Head Spare)	Pressure Boundary	A508 Cl 2, 308/309 Clad	288ºC (550ºF) Steam	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Stress Corrosion Cracking	IV.A1.4-a	3.1.1-29	D
					Plant Chemistry Program	IV.A1.4-a	3.1.1-29	D
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.1-b	3.1.1-01	
Top Head Enclosure - • Instrument Nozzle Flange (Head Spare)	Pressure Boundary	SA182 Gr F304	288ºC (550ºF) Steam	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Stress Corrosion Cracking	IV.A1.4-a	3.1.1-29	D
					Plant Chemistry Program	IV.A1.4-a	3.1.1-29	D
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.1-b	3.1.1-01	

Table 3.1.2-2 Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Top Head Enclosure - • Top Head Dollar Plate	Pressure Boundary	A533-65 GrB Cl 1, 308/309 Clad	288ºC (550ºF) Steam	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD			H
					Plant Chemistry Program			H
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.1-b	3.1.1-01	
Top Head Enclosure - • Top Head Flange	Pressure Boundary	A508 Cl 2, 308/309 Clad	288ºC (550ºF) Steam	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD			H
					Plant Chemistry Program			H
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.1-b	3.1.1-01	
Top Head Enclosure - • Top Head Torus	Pressure Boundary	A533-65 GrB Cl 1, 308/309 Clad	288ºC (550ºF) Steam	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD			H
					Plant Chemistry Program			H
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.1-b	3.1.1-01	

Table 3.1.2-2 Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Top Head Enclosure - • Vent Nozzle	Pressure Boundary	A508 Cl 2, 308/309 Clad	288ºC (550ºF) Steam	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Stress Corrosion Cracking	IV.A1.4-a	3.1.1-29	D
					Plant Chemistry Program	IV.A1.4-a	3.1.1-29	D
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.1-b	3.1.1-01	
Vessel Shell Attachment Welds	Structural Support	308/309 Stainless Steel	288ºC (550ºF) Reactor Coolant Water	Crack Initiation and Growth, Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Vessel ID Attachment Welds	IV.A1.2-e	3.1.1-28	B
					Plant Chemistry Program	IV.A1.2-e	3.1.1-28	B
Vessel Shell - • Lower intermediate Shell • Lower Shell • Beltline Welds	Pressure Boundary	A533-65 GrB Cl 1, 308/309 Clad	288ºC (550ºF) Reactor Coolant Water $5x10^8$-$5x10^9$ n/cm^2	Loss of Fracture Toughness/Neutron Irradiation Embrittlement	Reactor Vessel Surveillance	IV.A1.2-d	3.1.1-05	A
					TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.2-c	3.1.1-04	
Vessel Shell - • Upper intermediate shell • Lower Intermediate shell • Lower Shell • Beltline Welds	Pressure Boundary	A533-65 GrB Cl 1, 308/309 Clad	288ºC (550ºF) Reactor Coolant Water Max $5x10^9$ n/cm^2	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.2-b	3.1.1-01	

Table 3.1.2-2 Reactor Coolant System - Reactor Pressure Vessel - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Vessel Shell - • Vessel flange • Upper shell	Pressure Boundary	A533-65 GrB Cl 1, 308/309 Clad	288ºC (550ºF) Steam	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.A1.2-a	3.1.1-01	

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Access Hole Covers	Structural Support	Alloy 600, Alloy 182 welds	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD	IV.B1.1-d	3.1.1-32	B, 128
					Plant Chemistry Program	IV.B1.1-d	3.1.1-32	B
Control Rod Drive Housing	Structural Support	Stainless Steel	Up to 288ºC, (550ºF) reactor coolant water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.5-c	3.1.1-31	B
					Plant Chemistry Program	IV.B1.5-c	3.1.1-31	B
Control Rod Guide Tube (CRGT)	Structural Support	Stainless Steel	Up to 288ºC, (550ºF) reactor coolant water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.5-c	3.1.1-31	D
					Plant Chemistry Program	IV.B1.5-c	3.1.1-31	D
Control Rod Guide Tube Base	Structural Support	Cast Austenitic Stainless Steel	Up to 288ºC, (550ºF) reactor coolant water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.5-c	3.1.1-31	D, 123
					Plant Chemistry Program	IV.B1.5-c	3.1.1-31	D, 123
Core Plate	Structural Support	Stainless Steel	288ºC (550ºF) High Purity Water	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.1-c	3.1.1-01	

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Core Plate Core Plate Bolts	Structural Support	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.1-b	3.1.1-31	B
					Plant Chemistry Program	IV.B1.1-b	3.1.1-31	B
				Stress Relaxation	TLAA evaluated in accordance with 10 CFR 54.21 (c)			
Core Shroud (upper, central, lower)	Structural Support	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.1-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.1-a	3.1.1-31	B

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Core Spray Lines and Spargers Core Spray Lines (Headers) Spray rings Spray nozzles Thermal sleeves	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.3-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.3-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.3-b	3.1.1-01	
Core Spray Lines and Spargers Piping Supports Clamp Modification	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.3-a	3.1.1-31	D
					Plant Chemistry Program	IV.B1.3-a	3.1.1-31	D
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.3-b	3.1.1-01	

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Intermediate Range Monitor Dry Tubes Source Range Monitor Dry Tubes Incore Flux Monitor Guide Tubes Low Power Range Monitor (LPRM) Dry Tubes	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.6-b	3.1.1-01	
Intermediate Range Monitor Dry Tubes Source Range Monitor Dry Tubes Incore Flux Monitor Guide Tubes	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.6-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.6-a	3.1.1-31	B

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Jet Pump Assembly - • Riser Pipe	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.4-a	3.1.1-31	D
					Plant Chemistry Program	IV.B1.4-a	3.1.1-31	D
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.4-b	3.1.1-01	
Jet Pump Assemblies - • Castings: Elbow, Collar, Flare, Flange, Transition Piece	Pressure Boundary	Cast Austenitic Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.4-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.4-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.5-b	3.1.1-01	
				Loss of Fracture Toughness/ Thermal Aging and Neutron Irradiation Embrittlement	Thermal Aging & Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)	IV.B1.4-c	3.1.1-33	A

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Jet Pump Assemblies - • Diffuser	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.4-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.4-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.4-b	3.1.1-01	
Jet Pump Assemblies - • Holddown beams	Pressure Boundary	Alloy X-750	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.4-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.4-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.4-b	3.1.1-01	

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Jet Pump Assemblies - • Inlet elbow	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.4-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.4-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.4-b	3.1.1-01	
Jet Pump Assemblies - • Inlet header	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.4-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.4-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.4-b	3.1.1-01	

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Jet Pump Assemblies - • Mixing Assembly	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.4-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.4-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.4-b	3.1.1-01	
Jet Pump Assemblies - • Riser brace arm	Structural Support	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.4-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.4-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.4-b	3.1.1-01	

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Jet Pump Assemblies - • Thermal sleeve	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.4-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.4-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.4-b	3.1.1-01	
Low Power Range Monitor (LPRM) Dry Tubes	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.6-a	3.1.1-31	D
					Plant Chemistry Program	IV.B1.6-a	3.1.1-31	D
Orificed Fuel Support	Structural Support	Cast Austenitic Stainless Steel	288ºC (550ºF) High Purity Water	Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.5-b	3.1.1-01	
				Loss of Fracture Toughness/ Thermal Aging and Neutron Irradiation Embrittlement	Thermal Aging & Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)	IV.B1.5-a	3.1.1-33	A

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Shroud Support Structure (shroud support cylinder, shroud support plate, shroud support legs)	Structural Support	Alloy 600, Alloy 182 welds	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.1-f	3.1.1-31	B
					Plant Chemistry Program	IV.B1.1-f	3.1.1-31	B
Standby Liquid Control Distribution Pipe	Pressure Boundary	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.1-a	3.1.1-31	D
					Plant Chemistry Program	IV.B1.1-a	3.1.1-31	D
Steam Dryer	Structural Support	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/Cyclic Loading	BWR Vessel Internals			J, 136
				Crack initiation and Growth/Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.1-a	3.1.1-31	D, 136
					Plant Chemistry Program	IV.B1.1-a	3.1.1-31	D

Table 3.1.2-3 Reactor Coolant System - Reactor Pressure Vessel Internals - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Top Guide	Structural Support	Stainless Steel	288ºC (550ºF) High Purity Water	Crack initiation and Growth/ Stress Corrosion Cracking, Intergranular Stress Corrosion Cracking, Irradiation-Assisted Stress Corrosion Cracking	BWR Vessel Internals	IV.B1.2-a	3.1.1-31	B
					Plant Chemistry Program	IV.B1.2-a	3.1.1-31	B
				Cumulative Fatigue Damage/Fatigue	TLAA evaluated in accordance with 10 CFR 54.21 (c)	IV.B1.2-b	3.1.1-01	

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 112, 126
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 126
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 112, 126
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 126
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 101, 106, 127
			Primary Containment Air (Ext)	None	None			J, 101, 106, 127
Filters/Strainers	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
		Stainless Steel	Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Ext)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VIII.E.4-e	3.4.1-10	B, 126
				Loss of Material - MIC	Closed-Cycle Cooling Water	VIII.E.4-e	3.4.1-10	B, 112, 126
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VIII.E.4-e	3.4.1-10	B, 126
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.1-f	3.1.1-29	E, 108, 109
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	D
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 126
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 112, 126
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 112, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 126
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 126
Manifolds	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.1-f	3.1.1-29	E, 108
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
Piping and Fittings	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
				Loss of Material - FAC	Flow-Accelerated Corrosion	IV.C1.1-c	3.1.1-25	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	None	None			J, 127
			Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD	IV.C1.1-i	3.1.1-07	B
					BWR Stress Corrosion Cracking	IV.C1.1-f	3.1.1-29	B
					One-Time Inspection	IV.C1.1-i	3.1.1-07	A
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	B
						IV.C1.1-i	3.1.1-07	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
		Stainless Steel	Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	BWR Stress Corrosion Cracking	IV.C1.2-b	3.1.1-29	B, 123
					Plant Chemistry Program	IV.C1.2-b	3.1.1-29	B, 123
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
Tanks	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
Thermowells	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
		Stainless Steel	Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.1-f	3.1.1-29	E, 108
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 112, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
Valve Bodies	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B, 126
				Loss of Material - FAC	Flow-Accelerated Corrosion	IV.C1.3-a	3.1.1-25	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B, 126
		Stainless Steel	Lubricating Oil (Int)	None	None			J, 127
			Plant Indoor Air (Ext)	None	None			J, 127
			Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	BWR Stress Corrosion Cracking	IV.C1.3-c	3.1.1-29	B
					One-Time Inspection	IV.C1.3-c	3.1.1-29	E, 108
					Plant Chemistry Program	IV.C1.3-c	3.1.1-29	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 112, 126

Table 3.1.2-4 Reactor Coolant System - Reactor Recirculation System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 126

Table 3.1.2-5 Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 112, 126
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 126
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 112, 126
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 101, 106, 126
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 101, 106, 127
			Primary Containment Air (Ext)	None	None			J, 101, 106, 127
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126

Table 3.1.2-5 Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.1-f	3.1.1-29	E, 108
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126

Table 3.1.2-5 Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126

Table 3.1.2-5 Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 127
			Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD	IV.C1.1-i	3.1.1-07	B
					One-Time Inspection	IV.C1.1-i	3.1.1-07	A
					Plant Chemistry Program	IV.C1.1-i	3.1.1-07	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
Restricting Orifices	Flow Restriction	Stainless Steel	Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.1-f	3.1.1-29	E, 108
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	B

Table 3.1.2-5 Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Stainless Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
	Pressure Boundary	Stainless Steel	Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.1-f	3.1.1-29	E, 108
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126

Table 3.1.2-5 Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B, 126
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.1-f	3.1.1-29	E, 108
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	B

Table 3.1.2-5 Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 126
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 112, 126
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 126
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B, 126
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 112, 126

Table 3.1.2-5 Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B, 126
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 112, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 112, 126
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 126
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B, 126
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 127
			Primary Containment Air (Ext)	None	None			J, 127
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.3-c	3.1.1-29	E, 108
					Plant Chemistry Program	IV.C1.3-c	3.1.1-29	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 126
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 112, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 112, 126

Table 3.1.2-5 Reactor Coolant System - Reactor Vessel Instrumentation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 126
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 126

Notes for Tables 3.1.2-1 through 3.1.2-5

A Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

B Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

C Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

D Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

E Consistent with NUREG-1801 for material, environment and aging effect, but a different aging management program is credited.

F Material not in NUREG-1801 for this component.

G Environment not in NUREG-1801 for this component and material.

H Aging effect not in NUREG-1801 for this component, material, and environment combination.

I Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.

J Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-specific notes:

101 Internal aging effects/mechanisms are not applicable. For the component type, an internal environment is not applicable (e.g. bolting, walls, clad vessels, structural steel, etc.).

102 Components with a “wet air/gas” environment are analyzed in the same manner as raw water for conservatism.

103 Plant specific program identified in NUREG-1801. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

104 Material/environment combination and/or aging effects/mechanism not identified in NUREG-1801. The aging management program(s) referenced are appropriate for the aging effects/mechanisms identified and provide assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

105 Program different than identified in NUREG-1801. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

106 There are no bolts with a specified minimum yield strength >150 ksi in this system. Therefore, SCC is not an applicable aging effect/mechanism. The Bolting Integrity Program manages loss of preload. See Table 3.1.1 line item 3.1.1-26, Table 3.2.1 line item 3.2.1-18, Table 3.3.1 line item 3.3.1-24, or Table 3.4.1 line item 3.4.1-08 as applicable to the respective system for additional information.

107 Components with a “wet air/gas” environment are analyzed in the same manner as treated water for conservatism.

108 Program different than identified in NUREG-1801. The One-Time Inspection Program is used since the BWR Stress Corrosion Cracking Program is not applicable to this component. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

109 Component is different but consistent with NUREG-1801 for material, environment and aging effect. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

110 Aging effect/mechanism is applicable but does not require management since the intended function for this CDR component is post accident iodine plate-out and holdup. Main Condenser structural integrity is continuously demonstrated during normal plant operation thus the intended function is maintained.

111 Intentionally left blank.

112 Aging mechanism not in NUREG-1801 for this component, material and environment combination.

113 IAW the GALL, no IGSCC inspection is recommended for plants that have piping made of material that is resistant to IGSCC. Since MNGP satisfies this criterion and has satisfactorily completed all actions requested in NRC GL 89-10, the Plant Chemistry Program and the One-Time Inspection Program are used in lieu of the Reactor Water Cleanup Program to manage this potential aging effect/mechanism. These aging management programs are appropriate for the aging effects/mechanisms identified and provide assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

114 These Elastomers (neoprene, rubber, etc.) components are indoors and not subject to UV or ozone, nor are they in locations that are subject to radiation exposure. These locations are also not subject to temperatures where change in material properties or cracking could occur (>95 degrees F). Therefore no aging management is required.

115 Components that are buried in the ground are analyzed in the same manner as raw water (damp soil containing groundwater) for conservatism.

116 Intentionally left blank.

117 The material identified in this NUREG-1801 line item does not include cast iron or gray cast iron. Materials science supports the fact that the aging effects/mechanisms for cast iron are the same as those for carbon steel and low alloy steel with the exception that gray cast iron is also susceptible to selective leaching.

118 Intentionally left blank.

119 NUREG-1801, Volume 2, Chapter VII (Auxiliary Systems), Section G.6 (Fire Protection) does not address this environment for the mechanical portion of the “Fire Protection” AMP (XI.M26). The aging management program referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

120 No credit is taken for protective coatings of components such as paint, galvanized pipe, etc., in mechanical aging management evaluations.

121 Intentionally left blank.

122 Intentionally left blank.

123 The material identified in this NUREG-1801 line item is stainless steel or CASS. The aging effects/mechanisms for stainless steel are the same as those for CASS for loss of material and cracking and, conversely, the aging effects/mechanisms of CASS are the same as those for stainless steel for loss of material and cracking.

124 The Fuel Oil Chemistry Program includes provisions for performing tests and inspections for detecting tank wall loss.

125 In some cases where the Plant Chemistry Program is not a viable option and aging effects/mechanisms are not expected to be significant, the One-Time Inspection Program alone is credited for managing aging effects. The One-Time Inspection Program has provisions to increase frequency of inspections based on the results of the first inspection. This aging management program is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

126 In some cases, an applicable Volume 2 line item may be used from a different Chapter (i.e., Auxiliary Systems, Chapter VII vice Engineering Safety Features, Chapter V) if there was no appropriate line item for this combination in the associated system Chapter. These line item numbers are annotated with this Note and additional Notes may also be used.

127 Material science evaluation for this material in this environment results in no aging effects.

128 The ASME Section XI Program is augmented by UT examination of the access hole cover weld.

129 New Feedwater Nozzle Safe End design to reduce thermal cycling installed (1981).

130 CRD Hydraulic return Nozzle capped with a 4" diameter pipe cap (1977). CRD Return Nozzle weld butter removed and weld preparation reclad with CRC for improved IGSCC-resistance. New nozzle cap (1986). See Section 4.2.3.7.2 of the MNGP USAR for additional information.

131 Jet Pump Instrument and Standby Liquid Control components are nozzles, not penetrations.

132 New Core Spray Safe End adapters with IGSCC-resistant materials (1981). New Core Spray Nozzle Safe Ends with a tuning fork design and a thermal sleeve installed to minimize IGSCC (1986) SA-350LF2. Recirculation Inlet Safe Ends, Thermal Sleeve assembly and Recirculation Outlet Safe Ends were replaced with nuclear grade SS to resist IGSCC (1984).

133 New IGSCC-resistant Core Differential Spray and SBLC Nozzle Safe Ends (1984). Jet Pump Instrumentation Safe End and penetration seal replaced with 316L (1984).

134 Recirculation inlet has been determined to be located in the beltline region.

135 In conjunction with removal of the RHR head spray piping, the existing nozzle flange was removed and replaced with a blind flange (2003).

136 The inspection of the steam dryer is to be accomplished using the guidelines in the approved BWRVIP topical report(s) for steam dryer inspection. In the event a new steam dryer is installed, NMC will reevaluate the inspection requirements.

3.2 Aging Management of Engineered Safety Features

3.2.1 Introduction

This section provides the results of the aging management review for those components identified in Section 2.3.2, Engineered Safety Features, as being subject to aging management review. The systems, or portions of systems, which are addressed in this section, are described in the indicated sections.

- Automatic Pressure Relief System (Section 2.3.2.1)
- Combustible Gas Control System (Section 2.3.2.2)
- Core Spray System (Section 2.3.2.3)
- High Pressure Coolant Injection System (Section 2.3.2.4)
- Primary Containment Mechanical System (Section 2.3.2.5)
- Reactor Core Isolation Cooling System (Section 2.3.2.6)
- Residual Heat Removal System (Section 2.3.2.7)
- Secondary Containment System (Section 2.3.2.8)

Table 3.2.1, Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features, provides the summary of the programs evaluated in NUREG-1801 for the Engineered Safety Features component groups that are used in license renewal.

This table uses the format described in Section 3.0. Note that this table only includes those component groups that are applicable to a BWR.

3.2.2 Results

The following tables summarize the results of the aging management review for systems in the Engineered Safety Features system group.

Table 3.2.2-1, Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Table 3.2.2-2, Engineered Safety Features - Combustible Gas Control System - Summary of Aging Management Evaluation

Table 3.2.2-3, Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Table 3.2.2-4, Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Table 3.2.2-5, Engineered Safety Features - Primary Containment Mechanical System - Summary of Aging Management Evaluation

Table 3.2.2-6, Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Table 3.2.2-7, Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Table 3.2.2-8, Engineered Safety Features - Secondary Containment System - Summary of Aging Management Evaluation

The materials that specific components are fabricated from, the environments to which components are exposed, the potential aging effects requiring management, and the aging management programs used to manage these aging effects are provided for each of the above systems in the following subsections of Section 3.2.2.1, Materials, Environment, Aging Effects Requiring Management and Aging Management Programs:

Section 3.2.2.1.1, Automatic Pressure Relief System

Section 3.2.2.1.2, Combustible Gas Control System

Section 3.2.2.1.3, Core Spray System

Section 3.2.2.1.4, High Pressure Coolant Injection System

Section 3.2.2.1.5, Primary Containment Mechanical System

Section 3.2.2.1.6, Reactor Core Isolation Cooling System

Section 3.2.2.1.7, Residual Heat Removal System

Section 3.2.2.1.8, Secondary Containment System

3.2.2.1 Materials, Environment, Aging Effects Requiring Management and Aging Management Programs

3.2.2.1.1 Automatic Pressure Relief System

Materials

The materials of construction for the Automatic Pressure Relief System are:

- Carbon Steel
- Copper Alloy
- Nickel-Base Alloy
- Stainless Steel

Environment

The Automatic Pressure Relief System components are exposed to the following environments:

- Gas - Instrument Air (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Treated Water (Ext)
- Treated Water (Int)
- Treated Water or Steam (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Automatic Pressure Relief System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Automatic Pressure Relief System components:

- Bolting Integrity
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.2.2.1.2 Combustible Gas Control System

Materials

The materials of construction for the Combustible Gas Control System components are:

- Carbon Steel

- Stainless Steel

Environment

The Combustible Gas Control System components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Primary Containment Air (Int)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Combustible Gas Control System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Combustible Gas Control System components:

- Bolting Integrity
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.2.2.1.3 Core Spray System

Materials

The materials of construction for the Core Spray System are:

- Carbon Steel
- Cast Austenitic Stainless Steel (CASS)
- Copper Alloy
- Stainless Steel

Environment

The Core Spray System components are exposed to the following environments:

- Lubricating Oil (Ext)
- Lubricating Oil (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Primary Containment Air (Int)
- Raw Water (Int)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Core Spray System, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching
- Reduction of Fracture Toughness - Thermal Embrittlement

Aging Management Programs

The following aging management programs manage the aging effects for the Core Spray System components:

- ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD
- Bolting Integrity
- BWR Stress Corrosion Cracking
- One-Time Inspection
- Open-Cycle Cooling Water System
- Plant Chemistry Program

- Selective Leaching of Materials
- System Condition Monitoring Program

3.2.2.1.4 High Pressure Coolant Injection System

Materials

The materials of construction for the High Pressure Coolant Injection System are:

- Carbon Steel
- Copper Alloy
- Insulation
- Stainless Steel

Environment

The High Pressure Coolant Injection System components are exposed to the following environments:

- Gas - Instrument Air (Int)
- Lubricating Oil (Ext)
- Lubricating Oil (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Steam (Ext)
- Steam (Int)
- Treated Water (Ext)
- Treated Water (Int)
- Treated Water or Steam (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the High Pressure Coolant Injection System, require management:

- Cracking - SCC/IGA
- Heat Transfer Degradation - Fouling
- Loss of Material - Crevice Corrosion

- Loss of Material - FAC
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the High Pressure Coolant Injection System components:

- Bolting Integrity
- BWR Stress Corrosion Cracking
- Flow-Accelerated Corrosion
- One-Time Inspection
- Plant Chemistry Program
- Selective Leaching of Materials
- System Condition Monitoring Program

3.2.2.1.5 **Primary Containment Mechanical System**

Materials

The materials of construction for the Primary Containment Mechanical System are:

- Carbon Steel
- Copper Alloy
- Nickel-Base Alloy
- Stainless Steel

Environment

The Primary Containment Mechanical System components are exposed to the following environments:

- Air/Gas (Int)
- Gas - Instrument Air (Int)
- Gas - Nitrogen (Int)

- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Primary Containment Air (Int)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Primary Containment Mechanical System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Primary Containment Mechanical System components:

- Bolting Integrity
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.2.2.1.6 Reactor Core Isolation Cooling System

Materials

The materials of construction for the Reactor Core Isolation Cooling System components are:

- Brass
- Carbon Steel
- Copper Alloy
- Stainless Steel

Environment

The Reactor Core Isolation Cooling System components are exposed to the following environments:

- Gas - Instrument Air (Int)
- Lubricating Oil (Ext)
- Lubricating Oil (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Steam (Int)
- Treated Water (Ext)
- Treated Water (Int)
- Treated Water or Steam (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Reactor Core Isolation Cooling System, require management:

- Cracking - SCC/IGA
- Heat Transfer Degradation - Fouling
- Loss of Material - Crevice Corrosion
- Loss of Material - FAC
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Reactor Core Isolation Cooling System components:

- Bolting Integrity
- Flow-Accelerated Corrosion
- One-Time Inspection

- Plant Chemistry Program
- Selective Leaching of Materials
- System Condition Monitoring Program

3.2.2.1.7 Residual Heat Removal System

Materials

The materials of construction for the Residual Heat Removal System are:

- Carbon Steel
- Cast Austenitic Stainless Steel (CASS)
- Copper Alloy
- Insulation
- Stainless Steel

Environment

The Residual Heat Removal System components are exposed to the following environments:

- Gas - Instrument Air (Int)
- Lubricating Oil (Ext)
- Lubricating Oil (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Raw Water (Ext)
- Raw Water (Int)
- Treated Water (Ext)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Residual Heat Removal System, require management:

- Cracking - SCC/IGA
- Heat Transfer Degradation - Fouling
- Loss of Material - Crevice Corrosion
- Loss of Material - Fretting

- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching
- Red. of Fract. Toughness - Thermal Embrittlement

Aging Management Programs

The following aging management programs manage the aging effects for the Residual Heat Removal System components:

- ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD
- Bolting Integrity
- BWR Stress Corrosion Cracking
- Closed-Cycle Cooling Water
- One-Time Inspection
- Open-Cycle Cooling Water System
- Plant Chemistry Program
- Selective Leaching of Materials
- System Condition Monitoring Program

3.2.2.1.8 Secondary Containment System

Materials

The materials of construction for the Secondary Containment System are:

- Carbon Steel
- Copper Alloy
- Neoprene
- Stainless Steel

Environment

The Secondary Containment System components are exposed to the following environments:

- Buried in Ground (Ext)
- Outside Air (Int)

- Outside Air Protected from Weather (Ext)
- Plant Indoor Air (Ext)
- Plant Indoor Air (Int)
- Treated Water (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Secondary Containment System, require management:

- Change in Material Properties - Thermal Exposure
- Cracking - Thermal Exposure
- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Secondary Containment System components:

- Bolting Integrity
- Buried Piping & Tanks Inspection
- One-Time Inspection
- System Condition Monitoring Program

3.2.2.2 Further Evaluation of Aging Management as Recommended by NUREG-1801

NUREG-1801 Volume 1 Tables provide the basis for identifying those programs that warrant further evaluation by the reviewer in the license renewal application. For the Engineered Safety Features, those programs are addressed in the following sections.

3.2.2.2.1 Cumulative Fatigue Damage

Fatigue is a TLAA as defined in 10 CFR 54.3. TLAAs are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluation of this TLAA is addressed separately in Section 4.3.

3.2.2.2.2.1 Loss of Material Due to General Corrosion (Item 1)

This subsection discusses loss of material due to general corrosion of piping, fittings, pumps, and valves in the emergency core cooling system.

Aging effect is managed by the One-Time Inspection Program, or the combination of the One-Time Inspection Program and Plant Chemistry Program.

Exceptions apply to NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).

The One-Time Inspection Program is a new aging management program (AMP). The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23).

When applied in combination with the Plant Chemistry Program, the scope of this new AMP includes activities to verify the effectiveness of the Plant Chemistry Program, including a sample of components where the flow of water is low or stagnant conditions exist.

Implementation of the One-Time Inspection Program and the Plant Chemistry Program to manage the aging effect provides added assurance that the aging effect is not occurring or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.2.2.2.2.2 Loss of Material Due to General Corrosion (Item 2)

This subsection discusses loss of material due to general corrosion of components in the standby gas treatment, containment isolation, and emergency core cooling systems.

Aging effect is managed by the One-Time Inspection Program or System Condition Monitoring Program. The System Condition Monitoring Program is used to manage the aging effect in an air/gas external environment. The One-Time Inspection Program is used to manage the aging effect for an air/gas internal environment.

The System Condition Monitoring Program is an existing plant specific program. This program manages aging effects for normally accessible, external surfaces of piping, tanks, and other components and equipment within the scope of License Renewal. These aging effects are managed through visual inspection and monitoring of external surfaces for leakage and evidence of material degradation (refer to Appendix B, Section B2.1.32).

The One-Time Inspection Program is a new AMP. The scope of this new AMP is to include activities to verify potential long incubation periods for certain aging effect on structures and components. The environments applicable to this item are characteristic of long incubation periods (air/gas environments with the potential for moisture). The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23).

Implementation of these programs to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.2.2.2.3.1 Local Loss of Material due to Pitting and Crevice Corrosion (Item 1)

This subsection discusses loss of material due to pitting and crevice corrosion of piping, fittings, pumps, and valves in the emergency core cooling system.

Aging effect is managed by the One-Time Inspection Program, or the combination of the One-Time Inspection Program and Plant Chemistry Program.

Exceptions apply to NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).

The One-Time Inspection Program is a new AMP. The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23).

When applied in combination with the Plant Chemistry Program, the scope of this new AMP includes activities to verify the effectiveness of the Plant Chemistry Program, including a sample of components where the flow of water is low or stagnant conditions exist.

Implementation of the One-Time Inspection Program and the Plant Chemistry Program to manage the aging effect provides added assurance that the aging effect is not occurring or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.2.2.2.3.2 Local Loss of Material due to Pitting and Crevice Corrosion (Item 2)

This subsection discusses loss of material due to pitting and crevice corrosion of components in the standby gas treatment, containment isolation, and emergency core cooling systems.

Aging effect is managed by the One-Time Inspection Program, or the combination of the One-Time Inspection Program and Plant Chemistry Program.

Exceptions apply to NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).

The One-Time Inspection Program is a new aging management program (AMP). The scope of this new AMP is to include activities to verify potential long incubation periods for certain aging effects on structures and components. The environments applicable to this item are characteristic of long incubation periods (air/gas environments with the potential for moisture). The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23).

When applied in combination with the Plant Chemistry Program, the scope of this new AMP includes activities to verify the effectiveness of the Plant Chemistry Program, including a sample of components where the flow of water is low or stagnant conditions exist.

The Plant Chemistry Program mitigates the aging effect on component surfaces that are exposed to treated water or steam as the process fluid; the Plant Chemistry Program is used to control water chemistry for impurities (e.g., chloride and sulfate) that accelerate corrosion. This program relies on monitoring and control of water chemistry to keep peak levels of various contaminants below system-specific limits based on the EPRI guidelines of TR-1008192 for water chemistry in BWRs (refer to Appendix B, Section B2.1.25).

Implementation of these programs to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.2.2.2.4 Local Loss of Material due to Microbiologically Influenced Corrosion

This subsection discusses loss of material due to microbiologically influenced corrosion (MIC) of valves and associated piping in containment isolation.

Although this line item is not used at MNGP, loss of material due to microbiologically influenced corrosion is predicted for ESF system valve bodies and associated piping. The aging effect is managed by the combination of the Plant Chemistry Program and the One-Time Inspection Program.

The Plant Chemistry Program mitigates the aging effect on component surfaces that are exposed to water as the process fluid; the Plant Chemistry Program is used to control water chemistry for impurities (e.g., chloride and sulfate) that accelerate corrosion. This program relies on monitoring and control of water chemistry to keep peak levels of various contaminants below system-specific limits based on the EPRI guidelines of TR-1008192 for water chemistry in BWRs (refer to Appendix B, Section B2.1.25).

The One-Time Inspection Program is a new AMP. The scope of this new AMP is to include activities to verify the effectiveness of the Plant Chemistry Program, including a sample of components where the flow of water is low or stagnant conditions exist (refer to Appendix B, Section B2.1.23).

Implementation of this program to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.2.2.2.5 Changes in Properties due to Elastomer Degradation

This subsection discusses change in material properties of seals in the standby gas treatment system.

Aging effect is managed by the One-Time Inspection Program for the internal environment and the System Condition Monitoring Program for the external environment.

The System Condition Monitoring Program is an existing plant specific program. The One-Time Inspection Program is a new aging management program.

The System Condition Monitoring Program manages the aging effect for normally accessible, external surfaces of piping, tanks, and other components and equipment within the scope of License Renewal. The aging effect is managed through visual inspection and monitoring of external surfaces for leakage and evidence of material degradation (refer to Appendix B, Section B2.1.32).

The One-Time Inspection Program includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23).

Implementation of these programs to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.2.2.2.6 Local Loss of Material due to Erosion

Applicable to PWR Only

3.2.2.2.7 Buildup of Deposits due to Corrosion

This subsection discusses plugging of nozzles and flow orifices due to general corrosion of nozzles and flow orifices in the drywell and suppression chamber spray system.

The drywell and suppression chamber spray system nozzles are fabricated from copper alloy materials, which are not susceptible to loss of material (plugging of nozzles and flow orifices) due to general corrosion. Therefore no aging management is required. Copper alloy material is not evaluated in the associated NUREG-1801 line item.

3.2.2.3 Time-Limited Aging Analysis

The time-limited aging analyses (TLAA) identified below are associated with the Engineered Safety Features system components:

- Section 4.3.3, ASME Section III Class 1 Reactor Coolant Pressure Boundary (RCPB) Piping and Fatigue Analysis
- Section 4.3.4, RCPB Section III Class 2 and 3, Piping and Components
- Section 4.5, Effects of Reactor Coolant Environment

- Section 4.6, Fatigue Analyses of the Primary Containment, Attached Piping, and Components
- Section 4.10, Fatigue Analyses of HPCI & RCIC Turbine Exhaust Penetrations

3.2.3 Conclusion

The Engineered Safety Features piping, fittings, and components that are subject to aging management review have been identified in accordance with the requirements of 10 CFR 54.4. The aging management programs selected to manage aging effects for the Engineered Safety Features components are identified in the summaries in Section 3.2.2.1 above.

A description of these aging management programs is provided in Appendix B, along with the demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the demonstrations provided in Appendix B, the effects of aging associated with the Engineered Safety Features components will be adequately managed so that there is reasonable assurance that the intended function(s) will be maintained consistent with the current licensing basis during the period of extended operation.

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-01	Piping, fittings, and valves in emergency core cooling system	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA (see [SRP] subsection 3.2.2.2.1)	Further evaluation documented in Section 3.2.2.2.1.
3.2.1-02	Piping, fittings, pumps, and valves in emergency core cooling system	Loss of material due to general corrosion	Water chemistry and one-time inspection	Yes, detection of aging effects is to be further evaluated (see [SRP] subsection 3.2.2.2.2.1)	Aging effect is managed by the One-Time Inspection Program, or the combination of the Plant Chemistry Program and One-Time Inspection Program. Further evaluation documented in Section 3.2.2.2.2.1. Exceptions apply to NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).
3.2.1-03	Components in containment spray (PWR only), standby gas treatment (BWR only), containment isolation, and emergency core cooling systems	Loss of material due to general corrosion	Plant specific	Yes, plant specific (see [SRP] subsection 3.2.2.2.2.2)	Aging effect is managed by the One-Time Inspection Program or the System Condition Monitoring Program. The System Condition Monitoring Program is applied to manage the aging effect in an air/gas external environment. The One-Time Inspection Program is applied to manage the aging effect in an air/gas internal environment. Further evaluation documented in Section 3.2.2.2.2.2.
3.2.1-04	Piping, fittings, pumps, and valves in emergency core cooling system	Loss of material due to pitting and crevice corrosion	Water chemistry and one-time inspection	Yes, detection of aging effects is to be further evaluated (see [SRP] subsection 3.2.2.2.3.1)	Aging effect is managed by the One-Time Inspection Program, or the combination of the Plant Chemistry Program and One-Time Inspection Program. Further evaluation documented in Section 3.2.2.2.3.1. Exceptions apply to NUREG-1801 recommendations for Plant Chemistry Program Implementation (refer to Appendix B, Section B2.1.25).

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-05	Components in containment spray (PWR only), standby gas treatment (BWR only), containment isolation, and emergency core cooling systems	Loss of material due to pitting and crevice corrosion	Plant specific	Yes, plant specific (see [SRP] subsection 3.2.2.2.3.2)	Aging effect is managed by the One-Time Inspection Program, or the combination of the One-Time Inspection Program and Plant Chemistry Program. Further evaluation documented in Section 3.2.2.2.3.2. Exceptions apply to NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).
3.2.1-06	Containment isolation valves and associated piping	Loss of material due to microbiologically influenced corrosion	Plant specific	Yes, plant specific (see [SRP] subsection 3.2.2.2.4)	Although this line item is not used at MNGP, loss of material due to microbiologically influenced corrosion (MIC) is predicted for ESF system components. The aging effect is managed by the combination of the Plant Chemistry Program and One-Time Inspection Program. Further evaluation documented in Section 3.2.2.2.4. Exceptions apply to NUREG-1801 recommendations for Plant Chemistry Program Implementation (refer to Appendix B, Section B2.1.25).
3.2.1-07	Seals in standby gas treatment system	Changes in properties due to elastomer degradation	Plant specific	Yes, plant specific (see [SRP] subsection 3.2.2.2.5)	Aging effect is managed by the One-Time Inspection Program for the internal environment and the System Condition Monitoring Program for the external environment. Further evaluation documented in Section 3.2.2.2.5.
3.2.1-08	PWR only				
3.2.1-09	Drywell and suppression chamber spray system nozzles and flow orifices	Plugging of nozzles and flow orifices due to general corrosion	Plant specific	Yes, plant specific (see [SRP] subsection 3.2.2.2.7)	Not Applicable. Further evaluation documented in Section 3.2.2.2.7.

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-10	External surface of carbon steel components	Loss of material due to general corrosion	Plant specific	Yes, plant specific	Aging effect is managed by the System Condition Monitoring Program, with the exception of the PCM system guard pipes connected to flued heads. The aging effect is managed by One-Time Inspection Program for these PCM system components. The SRP (NUREG-1800) does not provide a further evaluation discussion as recommended by the GALL Report (NUREG-1801) for this line item. Loss of material due to external corrosion of carbon steel components is predicted for components in air/gas environments exposed to moisture. To manage this aging effect, the System Condition Monitoring Program and the One-Time Inspection Program will be used. The System Condition Monitoring Program is an existing plant specific program. The One-Time Inspection Program is a new aging management program. The System Condition Monitoring Program manages the aging effect for normally accessible, external surfaces of piping, tanks, and other components and equipment within the scope of License Renewal. The aging effect is managed through visual inspection and monitoring of external surfaces for leakage and evidence of material degradation (refer to Appendix B, Section B2.1.32). Due to the inaccessibility of some components (guard pipes connected to flued heads) in the PCM system, the One-Time Inspection program is a more appropriate AMP than the System Condition Monitoring Program. Additionally, the One-Time Inspection Program has provisions to increase frequency of

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-10 continued					inspections based on the results of the first inspection (refer to Appendix B, Section B2.1.23). Implementation of these programs to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.
3.2.1-11	Piping and fittings of CASS in emergency core cooling system	Loss of fracture toughness due to thermal aging embrittlement	Thermal aging embrittlement of CASS	No	Not Applicable. CASS components in the ESF systems subject to an environment that supports loss of fracture toughness due to thermal aging embrittlement were assigned the ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD Program. Those CASS components that are subject to this effect/mechanism are valves. This component type screens out from being subject to the thermal aging embrittlement of CASS AMP per NUREG-1801, Volume 2, Appendix B, Section XI.M12.

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-12	Components serviced by open-cycle cooling system	Local loss of material due to corrosion and/or buildup of deposit due to biofouling	Open-cycle cooling water system	No	Aging effects are managed by the Open-Cycle Cooling Water System Program, One-Time Inspection Program, and Plant Chemistry Program. Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25). For those ESF heat exchangers that have a raw water environment, consistent with NUREG-1801, the Open-Cycle Cooling Water System Program is credited. For heat exchangers that have a treated water environment, the One-Time Inspection Program and Plant Chemistry Program are credited.
3.2.1-13	Components serviced by closed-cycle cooling system	Loss of material due to general, pitting, and crevice corrosion	Closed-cycle cooling water system	No	Aging effect is managed by the Closed-Cycle Cooling Water Program. Exceptions apply to the NUREG-1801 recommendations for Closed-Cycle Cooling Water System Program implementation (refer to Appendix B, Section B2.1.13). For those ESF heat exchangers that have a treated water environment, consistent with NUREG-1801, the Closed-Cycle Cooling Water System Program is credited.

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-14	Emergency core cooling system valves and lines to and from HPC and RCI pump turbines	Wall thinning due to flow-accelerated corrosion	Flow-accelerated corrosion	No	Aging effect is managed by the Flow-Accelerated Corrosion Program. Consistent with NUREG-1801, some sections of the High Pressure Coolant Injection (HPC) and Reactor Core Isolation Cooling (RCI) systems are susceptible to flow-accelerated corrosion (FAC) and the Flow-Accelerated Corrosion Program is credited to manage the aging effect. The predominate sections of the HPC and RCI systems were evaluated as not susceptible to FAC based on material type or the components have no flow or operate less than 2% of plant operating time. The components that fall in the latter category do not require aging management for FAC in accordance with EPRI, NSAC-202L, R2 and NUREG-1557, “Summary of Technical Information and Agreements from Nuclear Management and Resources Council Industry Reports Addressing License Renewal.”
3.2.1-15	PWR only				

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-16	Pumps, valves, piping, and fittings in emergency core cooling systems	Crack initiation and growth due to SCC and IGSCC	Water chemistry and BWR stress corrosion cracking	No	Aging effect is managed by the Plant Chemistry Program and BWR Stress Corrosion Cracking Program, or the Plant Chemistry Program and One-Time Inspection Program. Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25). Exceptions apply to the NUREG-1801 recommendations for BWR Stress Corrosion Cracking Program implementation (refer to Appendix B, Section B2.1.10). The Plant Chemistry Program mitigates the aging effect on component surfaces that are exposed to water as the process fluid; the Plant Chemistry Program is used to control water chemistry for impurities (e.g., chloride and sulfate) that accelerate crack initiation and growth. This program relies on monitoring and control of water chemistry to keep peak levels of various contaminants below system-specific limits based on the EPRI guidelines of TR-1008192 for water chemistry in BWRs (refer to Appendix B, Section B2.1.25). The One-Time Inspection Program is a new aging management program (AMP). The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-16 continued					effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23). Application of the BWR Stress Corrosion Cracking AMP as proposed by NUREG-1801 was implemented on a limited basis for this aging effect. The BWR Stress Corrosion Cracking AMP is limited in scope to piping 4 inch or larger nominal diameter, pump casings, valves bodies and reactor vessel attachments containing reactor coolant at a temperature above 200 degrees F. Some ESF components susceptible to this aging effect are not within the defined scope of this program. Implementation of the One-Time Inspection Program, BWR Stress Corrosion Cracking, and Plant Chemistry Program to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.
3.2.1-17	PWR only				

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-18	Closure bolting in high pressure or high temperature systems	Loss of material due to general corrosion, loss of preload due to stress relaxation, and crack initiation and growth due to cyclic loading or SCC	Bolting integrity	No	The aging effect loss of material due to general corrosion is managed by the Bolting Integrity Program. There are no bolts with a specified minimum yield strength greater than 150 ksi in the ESF Systems. Therefore, crack initiation and growth due to SCC is not an applicable aging effect. Closure bolting preload is effectively addressed in the design (material selection, bolt and nut sizes), installation (torque, lubricant, bolting pattern), and maintenance requirements (retorquing, final checks). Operating temperatures in MNGP systems are below the threshold temperature where thermal creep of the bolting material could occur. MNGP plant operating experience shows no bolted closure failures due to loss of preload. While not specifically identified as an aging effect in the respective system Table 2, Summary of Aging Management Evaluation, loss of preload is managed for carbon steel and stainless steel closure bolting used in pressure retaining joints by the Bolting Integrity Program. The Bolting Integrity Program manages loss of preload associated with closure bolting through periodic inspection, material selection, thread lubricant control, assembly and torque requirements, and repair and replacement requirements. These activities are based on the applicable requirements of ASME Section XI and plant operating experience and includes consideration of the guidance contained in NUREG-1339, Resolution of

Table 3.2.1 Summary of Aging Management Evaluations in Chapter V of NUREG-1801 for Engineered Safety Features

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-18 continued					Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants, EPRI NP-5769, Degradation and Failure of Bolting in Nuclear Power Plants, EPRI TR-104213, Bolted Joint Maintenance & Application Guide, and EPRI NP-5067 Volumes 1 and 2, Good Bolting Practices.

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Accumulators	Pressure Boundary	Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201 206,
		Nickel-Base Alloy	Primary Containment Air (Ext)	None	None			J, 201, 206, 227
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 201, 206, 227
			Primary Containment Air (Ext)	None	None			J, 201, 206, 227

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Ext)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Ext)	Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 203, 207
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
		Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
Thermowells	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Primary Containment Air (Ext)	None	None			J, 227
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Valve Bodies	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 207, 225
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 207, 212, 225
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A, 207, 225
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 207, 212, 225
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 207, 225
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 212, 226

Table 3.2.2-1 Engineered Safety Features - Automatic Pressure Relief System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209

Table 3.2.2-2 Engineered Safety Features - Combustible Gas Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 201, 206, 227
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212

Table 3.2.2-2 Engineered Safety Features - Combustible Gas Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-2 Engineered Safety Features - Combustible Gas Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 209, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 209
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 201, 206, 227
			Primary Containment Air (Ext)	None	None			J, 201, 206, 227
Gauges (Flow, Level and Sight)	Pressure Boundary	Copper Alloy	Primary Containment Air (Ext)	None	None			J, 227
			Primary Containment Air (Int)	None	None			J, 227

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
		Copper Alloy	Lubricating Oil (Ext)	None	None			J, 227
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System			J, 204
				Loss of Material - MIC	Open-Cycle Cooling Water System			J, 204
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System			J, 204
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.2-a	3.2.1-02, 3.2.1-04	B, 212

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.2-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-04	B
Restricting Orifices	Flow Restriction	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Cast Austenitic Stainless Steel (CASS)	Primary Containment Air (Ext)	None	None			J, 227
			Treated Water (Int)	Cracking - SCC/IGA	BWR Stress Corrosion Cracking	V.D2.3-c	3.2.1-16	B, 223
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B, 223
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 223, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 223, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 212, 223, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 212, 223, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 223, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 223, 226
				Red. of Fract. Toughness - Thermal Embrittlement	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD	IV.C1.3-b	3.1.1-23	B, 226

Table 3.2.2-3 Engineered Safety Features - Core Spray System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fan/Blower/ Housings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 203, 207, 209
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 201, 206, 227
			Primary Containment Air (Ext)	None	None			J, 201, 206, 227
Filters/Housings	Filtration	Carbon Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
Gauges (Flow, Level and Sight)	Pressure Boundary	Copper Alloy	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Heat Transfer	Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
			Steam (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Crevice Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204
			Treated Water (Int)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Crevice Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - MIC	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Heat Transfer	Copper Alloy	Treated Water (Int)	Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204
	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 226
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 212, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 212, 226
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 226
			Treated Water (Ext)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	D

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Ext)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	C, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	D, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	D
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	C, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	D, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	D
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	D
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	C, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	D, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	D

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	C, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	D, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	D
		Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
			Steam (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Crevice Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204
			Treated Water (Int)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Copper Alloy	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - MIC	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 212, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 212, 226
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
			Treated Water (Ext)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Ext)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	IV.C1.1-c	3.1.1-25	A, 226
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 227
			Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
	Thermal Insulation	Insulation	Plant Indoor Air (Ext)	None	None			F, 201, 216
Pump Casings	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.2-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.2-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-04	B
Restricting Orifices	Flow Restriction	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Stainless Steel	Steam (Int)	Cracking - SCC/IGA	BWR Stress Corrosion Cracking	V.D2.1-c	3.2.1-16	B
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Stainless Steel	Wet Air/Gas (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Steam (Int)	Cracking - SCC/IGA	BWR Stress Corrosion Cracking	V.D2.1-c	3.2.1-16	B
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
Steam Traps	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 212, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 212, 226

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Steam Traps	Pressure Boundary	Carbon Steel	Steam (Int)	Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 203, 207
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
Tanks	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Turbines	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Turbines	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209
Valve Bodies	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 226

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Steam (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 212, 226
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 212, 226
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 226
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 207, 225
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 207, 212, 225
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A, 207, 225
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 207, 212, 225
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 207 225
		Copper Alloy	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
		Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
			Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.3-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 209
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203, 209
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 209
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203, 209
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.3-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209

Table 3.2.2-4 Engineered Safety Features - High Pressure Coolant Injection System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Wet Air/Gas (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209

Table 3.2.2-5 Engineered Safety Features - Primary Containment Mechanical System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Accumulators	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 201, 206, 227
			Primary Containment Air (Ext)	None	None			J, 201, 206, 227

Table 3.2.2-5 Engineered Safety Features - Primary Containment Mechanical System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203
Flow Element	Pressure Boundary	Carbon Steel	Gas - Nitrogen (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A

Table 3.2.2-5 Engineered Safety Features - Primary Containment Mechanical System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Int)	None	None			J, 227

Table 3.2.2-5 Engineered Safety Features - Primary Containment Mechanical System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Gas - Nitrogen (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Int)	None	None			J, 227
		Stainless Steel	Air/Gas (Int)	None	None			J, 227
			Gas - Instrument Air (Int)	None	None			J, 227

Table 3.2.2-5 Engineered Safety Features - Primary Containment Mechanical System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Primary Containment Air (Int)	None	None			J, 227
	Pressure Boundary/ Fission Product Retention	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.E.1-b	3.2.1-10	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.E.1-b	3.2.1-10	E, 203
			Primary Containment Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Int)	None	None			J, 227

Table 3.2.2-5 Engineered Safety Features - Primary Containment Mechanical System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Rupture Disks	Pressure Boundary	Nickel-Base Alloy	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Int)	None	None			J, 227
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Int)	None	None			J, 227
Valve Bodies	Pressure Boundary	Carbon Steel	Gas - Nitrogen (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A

Table 3.2.2-5 Engineered Safety Features - Primary Containment Mechanical System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 209, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.5-a	3.2.1-03	E, 203, 209
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B

Table 3.2.2-5 Engineered Safety Features - Primary Containment Mechanical System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Int)	None	None			J, 227
		Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Gas - Nitrogen (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Int)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 201, 206, 227
			Primary Containment Air (Ext)	None	None			J, 201, 206, 227
Filters/Strainers	Filtration	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 203, 207
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 203, 207
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
Heat Exchangers	Heat Transfer	Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
			Treated Water (Int)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Crevice Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - MIC	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 226
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 212, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 212, 226
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 226
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	D

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	C, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	D, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	D
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	C, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	D, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	D
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 203, 207, 209
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
			Treated Water (Int)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Crevice Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - MIC	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 212, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 212, 226
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Steam (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
			Treated Water (Ext)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	IV.C1.1-c	3.1.1-25	A, 226

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.2-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-02	B

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.2-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-04	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A, 207, 225
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 207, 212, 225
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02	A, 207, 225
				Loss of Material - MIC	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 207, 212, 225
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A, 207, 225
Restricting Orifices	Flow Restriction	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
Steam Traps	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 212, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 212, 226
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Steam Traps	Pressure Boundary	Carbon Steel	Steam (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 226
Tanks	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Turbines	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 203, 207, 209
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209
Valve Bodies	Pressure Boundary	Brass	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
		Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 226
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 212, 226
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 212, 226
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 226
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 226
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 207, 225
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 207, 212, 225
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A, 207, 225
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 207, 212, 225
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 207, 225
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.3-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 209
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203, 209
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 209
					Plant Chemistry Program	V.D2.1-e	3.2.1-05	E, 203, 209
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.3-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.3-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B

Table 3.2.2-6 Engineered Safety Features - Reactor Core Isolation Cooling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 209, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207, 209

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Accumulators	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 201, 206, 227
			Primary Containment Air (Ext)	None	None			J, 201, 206, 227
Filters/Strainers	Filtration	Stainless Steel	Treated Water (Ext)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Stainless Steel	Treated Water (Ext)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
	Pressure Boundary	Stainless Steel	Treated Water (Ext)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Heat Exchangers	Heat Transfer	Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System			J, 204
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System			J, 204
				Loss of Material - MIC	Open-Cycle Cooling Water System			J, 204
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System			J, 204
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204
		Stainless Steel	Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	V.D2.4-b	3.2.1-12	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Heat Transfer	Stainless Steel	Raw Water (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
			Treated Water (Ext)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Heat Transfer Degradation - Fouling	One-Time Inspection	V.D2.4-b	3.2.1-12	E, 205
					Plant Chemistry Program	V.D2.4-b	3.2.1-12	E, 205
				Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.4-a	3.2.1-12	E, 205
					Plant Chemistry Program	V.D2.4-a	3.2.1-12	E, 205
				Loss of Material - Fretting	One-Time Inspection	V.D2.4-a	3.2.1-12	E, 205, 212
				Loss of Material - MIC	One-Time Inspection	V.D2.4-a	3.2.1-12	E, 205
					Plant Chemistry Program	V.D2.4-a	3.2.1-12	E, 205
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.4-a	3.2.1-12	E, 205
					Plant Chemistry Program	V.D2.4-a	3.2.1-12	E, 205
	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Raw Water (Ext)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A, 212
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A, 212
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
			Treated Water (Ext)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B, 212

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Ext)	Loss of Material - General Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B, 212
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B
					One-Time Inspection	V.D2.1-a	3.2.1-04	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	D
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B, 212
					One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	C, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	D, 212
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B
					One-Time Inspection	V.D2.1-a	3.2.1-02	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	D

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B, 212
					One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	C, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	D, 212
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B
					One-Time Inspection	V.D2.1-a	3.2.1-04	C
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	D
		Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 204
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System			J, 204
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System			J, 204
				Loss of Material - MIC	Open-Cycle Cooling Water System			J, 204
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System			J, 204
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Stainless Steel	Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	V.D2.4-b	3.2.1-12	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	V.D2.4-a	3.2.1-12	A
			Treated Water (Ext)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 208
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B
				Heat Transfer Degradation - Fouling	One-Time Inspection	V.D2.4-b	3.2.1-12	E, 205
					Plant Chemistry Program	V.D2.4-b	3.2.1-12	E, 205
				Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.4-a	3.2.1-12	E, 205
					Plant Chemistry Program	V.D2.4-a	3.2.1-12	E, 205
				Loss of Material - Fretting	One-Time Inspection	V.D2.4-a	3.2.1-12	E, 205, 212
				Loss of Material - MIC	One-Time Inspection	V.D2.4-a	3.2.1-12	E, 205
					Plant Chemistry Program	V.D2.4-a	3.2.1-12	E, 205
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.4-a	3.2.1-12	E, 205
					Plant Chemistry Program	V.D2.4-a	3.2.1-12	E, 205

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B, 212
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	V.D2.4-c	3.2.1-13	B
	Thermal Insulation	Insulation	Plant Indoor Air (Ext)	None	None			F, 201, 216
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Nozzles	Flow Restriction	Copper Alloy	Primary Containment Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - MIC	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Nozzles	Flow Restriction	Copper Alloy	Treated Water (Int)	Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204
	Pressure Boundary	Copper Alloy	Primary Containment Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - MIC	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 204
					Plant Chemistry Program			J, 204
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 204
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Ext)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.2-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.2-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.2-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.2-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.2-a	3.2.1-04	B
Restricting Orifices	Flow Restriction	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.1-a	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A
					Plant Chemistry Program	V.D2.1-a	3.2.1-04	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 226

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-02	B
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212
					Plant Chemistry Program	V.D2.3-b	3.2.1-02, 3.2.1-04	B, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A
					Plant Chemistry Program	V.D2.3-b	3.2.1-04	B

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Cast Austenitic Stainless Steel (CASS)	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Treated Water (Int)	Cracking - SCC/IGA	BWR Stress Corrosion Cracking	V.D2.3-c	3.2.1-16	B, 223
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B, 223
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 223, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 223, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 212, 223, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 212, 223, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 223, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 223, 226
				Red. of Fract. Toughness - Thermal Embrittlement	ASME Section XI In-Service Inspection, Subsections IWB, IWC, and IWD	IV.C1.3-b	3.1.1-23	B, 226

Table 3.2.2-7 Engineered Safety Features - Residual Heat Removal System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Primary Containment Air (Ext)	None	None			J, 227
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 212, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 212, 226
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 226
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 226

Table 3.2.2-8 Engineered Safety Features - Secondary Containment System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Damper Housings	Pressure Boundary	Carbon Steel	Outside Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Plant Indoor Air (Int)	None	None			J, 227
Ductwork	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.B.1-a	3.2.1-03	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.B.1-a	3.2.1-03	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203

Table 3.2.2-8 Engineered Safety Features - Secondary Containment System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fan/Blower/ Housings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.B.1-a	3.2.1-03	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.B.1-a	3.2.1-03	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206, 212
				Loss of Material - General Corrosion	Bolting Integrity	V.E.2-a	3.2.1-18	A, 201, 206
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 201, 206, 227
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 201, 206, 227
Filters/Housings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.B.2-a	3.2.1-03	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.B.2-a	3.2.1-03	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.2-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.2-a	3.2.1-03	E, 203

Table 3.2.2-8 Engineered Safety Features - Secondary Containment System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Flow Restriction	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203

Table 3.2.2-8 Engineered Safety Features - Secondary Containment System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Plant Indoor Air (Int)	None	None			J, 227
Piping and Fittings	Pressure Boundary	Carbon Steel	Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 226
				Loss of Material - Galvanic Corrosion	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 212, 226
				Loss of Material - General Corrosion	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 226
				Loss of Material - MIC	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 226
				Loss of Material - Pitting Corrosion	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 226
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 225

Table 3.2.2-8 Engineered Safety Features - Secondary Containment System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212, 225
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-02	A, 225
				Loss of Material - MIC	One-Time Inspection	V.D2.1-a	3.2.1-02, 3.2.1-04	A, 212, 225
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-a	3.2.1-04	A, 225
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 227
			Plant Indoor Air (Int)	None	None			J, 227
		Stainless Steel	Outside Air Protected from Weather (Ext)	None	None			J, 227
			Plant Indoor Air (Ext)	None	None			J, 227
			Plant Indoor Air (Int)	None	None			J, 227
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 203, 207, 212
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 203, 207

Table 3.2.2-8 Engineered Safety Features - Secondary Containment System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203

Table 3.2.2-8 Engineered Safety Features - Secondary Containment System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 227
			Plant Indoor Air (Int)	None	None			J, 227
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A, 212
				Loss of Material - General Corrosion	System Condition Monitoring Program	V.E.1-b	3.2.1-10	A
			Plant Indoor Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 209, 212
				Loss of Material - General Corrosion	One-Time Inspection	V.B.1-a	3.2.1-03	E, 203, 209
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 225
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212, 225
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A, 225
				Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 212, 225
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 225

Table 3.2.2-8 Engineered Safety Features - Secondary Containment System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 227
			Plant Indoor Air (Int)	None	None			J, 227
		Stainless Steel	Outside Air Protected from Weather (Ext)	None	None			J, 227
			Plant Indoor Air (Int)	None	None			J, 227
Ventilation Seal	Pressure Boundary	Neoprene	Plant Indoor Air (Ext)	Change in Material Properties - Thermal Exposure	System Condition Monitoring Program	V.B.1-b	3.2.1-07	A
				Cracking - Thermal Exposure	System Condition Monitoring Program	V.B.1-b	3.2.1-07	A
			Plant Indoor Air (Int)	Change in Material Properties - Thermal Exposure	One-Time Inspection	V.B.1-b	3.2.1-07	E, 203
				Cracking - Thermal Exposure	One-Time Inspection	V.B.1-b	3.2.1-07	E, 203

Notes for Tables 3.2.2-1 through 3.2.2-8

A Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

B Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

C Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

D Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

E Consistent with NUREG-1801 for material, environment and aging effect, but a different aging management program is credited.

F Material not in NUREG-1801 for this component.

G Environment not in NUREG-1801 for this component and material.

H Aging effect not in NUREG-1801 for this component, material, and environment combination.

I Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.

J Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-specific notes:

201 Internal aging effects/mechanisms are not applicable. For the component type, an internal environment is not applicable (e.g. bolting, walls, clad vessels, structural steel, etc.).

202 Components with a “wet air/gas” environment are analyzed in the same manner as raw water for conservatism.

203 Plant specific program identified in NUREG-1801. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

204 Material/environment combination and/or aging effects/mechanism not identified in NUREG-1801. The aging management program(s) referenced are appropriate for the aging effects/mechanisms identified and provide assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

205 Program different than identified in NUREG-1801. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

206 There are no bolts with a specified minimum yield strength >150 ksi in this system. Therefore, SCC is not an applicable aging effect/mechanism. The Bolting Integrity Program manages loss of preload. See Table 3.1.1 line item 3.1.1-26, Table 3.2.1 line item 3.2.1-18, Table 3.3.1 line item 3.3.1-24, or Table 3.4.1 line item 3.4.1-08 as applicable to the respective system for additional information.

207 Components with a "wet air/gas" environment are analyzed in the same manner as treated water for conservatism.

208 Program different than identified in NUREG-1801. The One-Time Inspection Program is used since the BWR Stress Corrosion Cracking Program is not applicable to this component. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

209 Component is different but consistent with NUREG-1801 for material, environment and aging effect. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

210 Aging effect/mechanism is applicable but does not require management since the intended function for this CDR component is post accident iodine plate-out and holdup. Main Condenser structural integrity is continuously demonstrated during normal plant operation thus the intended function is maintained.

211 Intentionally left blank.

212 Aging mechanism not in NUREG-1801 for this component, material and environment combination.

213 IAW the GALL, no IGSCC inspection is recommended for plants that have piping made of material that is resistant to IGSCC. Since MNGP satisfies this criterion and has satisfactorily completed all actions requested in NRC GL 89-10, the Plant Chemistry Program and the One-Time Inspection Program are used in lieu of the Reactor Water Cleanup Program to manage this potential aging effect/mechanism. These aging management programs are appropriate for the aging effects/mechanisms identified and provide assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

214 These Elastomers (neoprene, rubber, etc.) components are indoors and not subject to UV or ozone, nor are they in locations that are subject to radiation exposure. These locations are also not subject to temperatures where change in material properties or cracking could occur (>95 degrees F). Therefore no aging management is required.

215 Components that are buried in the ground are analyzed in the same manner as raw water (damp soil containing groundwater) for conservatism.

216 Insulation is credited in room heat-up evaluation. Materials science yields no aging effects for insulation in an indoor air environment.

217 The material identified in this NUREG-1801 line item does not include cast iron or gray cast iron. Materials science supports the fact that the aging effects/mechanisms for cast iron are the same as those for carbon steel and low alloy steel with the exception that gray cast iron is also susceptible to selective leaching.

218 Intentionally left blank.

219 NUREG-1801, Volume 2, Chapter VII (Auxiliary Systems), Section G.6 (Fire Protection) does not address this environment for the mechanical portion of the “Fire Protection” AMP (XI.M26). The aging management program referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

220 No credit is taken for protective coatings of components such as paint, galvanized pipe, etc., in mechanical aging management evaluations.

221 Intentionally left blank.

222 Intentionally left blank.

223 The material identified in this NUREG-1801 line item is stainless steel or CASS. The aging effects/mechanisms for stainless steel are the same as those for CASS for loss of material and cracking and, conversely, the aging effects/mechanisms of CASS are the same as those for stainless steel for loss of material and cracking.

224 The Fuel Oil Chemistry Program includes provisions for performing tests and inspections for detecting tank wall loss.

225 In some cases where the Plant Chemistry Program is not a viable option and aging effects/mechanisms are not expected to be significant, the One-Time Inspection alone is credited for managing aging effects. The One-Time Inspection Program has provisions to increase frequency of inspections based on the results of the first inspection. This aging management program is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

226 In some cases, an applicable Volume 2 line item may be used from a different Chapter (i.e., Auxiliary Systems, Chapter VII vice Engineering Safety Features, Chapter V) if there was no appropriate line item for this combination in the associated system Chapter. These line item numbers are annotated with this Note and additional Notes may also be used.

227 Material science evaluation for this material in this environment results in no aging effects.

3.3 Aging Management of Auxiliary Systems

3.3.1 Introduction

This section provides the results of the aging management review for those components identified in Section 2.3.3, Auxiliary Systems, as being subject to aging management review. The systems, or portions of systems, which are addressed in this section, are described in the indicated sections.

- Alternate Nitrogen System (Section 2.3.3.1)
- Chemistry Sampling System (Section 2.3.3.2)
- Circulating Water System (Section 2.3.3.3)
- Control Rod Drive System (Section 2.3.3.4)
- Demineralized Water System (Section 2.3.3.5)
- Emergency Diesel Generators System (Section 2.3.3.6)
- Emergency Filtration Train System (Section 2.3.3.7)
- Emergency Service Water System (Section 2.3.3.8)
- Fire System (Section 2.3.3.9)
- Fuel Pool Cooling and Cleanup System (Section 2.3.3.10)
- Heating and Ventilation System (Section 2.3.3.11)
- Instrument and Service Air System (Section 2.3.3.12)
- Radwaste Solid and Liquid System (Section 2.3.3.13)
- Reactor Building Closed Cooling Water System (Section 2.3.3.14)
- Reactor Water Cleanup System (Section 2.3.3.15)
- Service and Seal Water System (Section 2.3.3.16)
- Standby Liquid Control System (Section 2.3.3.17)
- Wells and Domestic Water System (Section 2.3.3.18)

Table 3.3.1, Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems, provides the summary of the programs evaluated in NUREG-1801 for the Auxiliary Systems component groups that are relied on for license renewal.

This table uses the format described in Section 3.0. Note that this table only includes those component groups that are applicable to a BWR.

3.3.2 Results

The following tables summarize the results of the aging management review for systems in the Auxiliary Systems group:

Table 3.3.2-1, Auxiliary Systems - Alternate Nitrogen System - Summary of Aging Management Evaluation

Table 3.3.2-2, Auxiliary Systems - Chemistry Sampling System - Summary of Aging Management Evaluation

Table 3.3.2-3, Auxiliary Systems - Circulating Water System - Summary of Aging Management Evaluation

Table 3.3.2-4, Auxiliary Systems - Control Rod Drive System - Summary of Aging Management Evaluation

Table 3.3.2-5, Auxiliary Systems - Demineralized Water System - Summary of Aging Management Evaluation

Table 3.3.2-6, Auxiliary Systems - Emergency Diesel Generators System - Summary of Aging Management Evaluation

Table 3.3.2-7, Auxiliary Systems - Emergency Filtration Train System - Summary of Aging Management Evaluation

Table 3.3.2-8, Auxiliary Systems - Emergency Service Water System - Summary of Aging Management Evaluation

Table 3.3.2-9, Auxiliary Systems - Fire System - Summary of Aging Management Evaluation

Table 3.3.2-10, Auxiliary Systems - Fuel Pool Cooling and Cleanup System - Summary of Aging Management Evaluation

Table 3.3.2-11, Auxiliary Systems - Heating and Ventilation System - Summary of Aging Management Evaluation

Table 3.3.2-12, Auxiliary Systems - Instrument and Service Air System - Summary of Aging Management Evaluation

Table 3.3.2-13, Auxiliary Systems - Radwaste Solid and Liquid System - Summary of Aging Management Evaluation

Table 3.3.2-14, Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Table 3.3.2-15, Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Table 3.3.2-16, Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Table 3.3.2-17, Auxiliary Systems - Standby Liquid Control System - Summary of Aging Management Evaluation

Table 3.3.2-18, Auxiliary Systems - Wells and Domestic Water System - Summary of Aging Management Evaluation

The materials that specific components are fabricated from, the environments to which components are exposed, the potential aging effects requiring management, and the aging management programs used to manage these aging effects are provided for each of the above systems in the following subsections of Section 3.3.2.1, Materials, Environment, Aging Effects Requiring Management and Aging Management Programs:

Section 3.3.2.1.1, Alternate Nitrogen System

Section 3.3.2.1.2, Chemistry Sampling System

Section 3.3.2.1.3, Circulating Water System

Section 3.3.2.1.4, Control Rod Drive System

Section 3.3.2.1.5, Demineralized Water System

Section 3.3.2.1.6, Emergency Diesel Generators System

Section 3.3.2.1.7, Emergency Filtration Train System

Section 3.3.2.1.8, Emergency Service Water System

Section 3.3.2.1.9, Fire System

Section 3.3.2.1.10, Fuel Pool Cooling and Cleanup System

Section 3.3.2.1.11, Heating and Ventilation System

Section 3.3.2.1.12, Instrument and Service Air System

Section 3.3.2.1.13, Radwaste Solid and Liquid System

Section 3.3.2.1.14, Reactor Building Closed Cooling Water System

Section 3.3.2.1.15, Reactor Water Cleanup System

Section 3.3.2.1.16, Service and Seal Water System

Section 3.3.2.1.17, Standby Liquid Control System

Section 3.3.2.1.18, Wells and Domestic Water System

3.3.2.1 Materials, Environment, Aging Effects Requiring Management and Aging Management Programs

3.3.2.1.1 Alternate Nitrogen System

Materials

The materials of construction for the Alternate Nitrogen System components are:

- Carbon Steel
- Copper Alloy
- Stainless Steel

Environment

The Alternate Nitrogen System components are exposed to the following environments:

- Gas - Instrument Air (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)

Aging Effects Requiring Management

The following aging effects, associated with the Alternate Nitrogen System, require management:

- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Alternate Nitrogen System components:

- Bolting Integrity
- System Condition Monitoring Program

3.3.2.1.2 Chemistry Sampling System

Materials

The materials of construction for the Chemistry Sampling System components are:

- Carbon Steel

- Stainless Steel

Environment

The Chemistry Sampling System components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Treated Water (Int)
- Treated Water or Steam (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Chemistry Sampling System, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - FAC
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Chemistry Sampling System components:

- Bolting Integrity
- Flow-Accelerated Corrosion
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.3.2.1.3 Circulating Water System

Materials

The materials of construction for the Circulating Water System components are:

- Carbon Steel

- Copper Alloy
- Rubber
- Stainless Steel

Environment

The Circulating Water System components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Raw Water (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Circulating Water System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Erosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Circulating Water System components:

- Bolting Integrity
- Open-Cycle Cooling Water System
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.4 Control Rod Drive System

Materials

The materials of construction for the Control Rod Drive System components are:

- Carbon Steel
- Copper Alloy
- Stainless Steel

Environment

The Control Rod Drive System components are exposed to the following environments:

- Gas - Instrument Air (Int)
- Gas - Nitrogen (Int)
- Lubricating Oil (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Treated Water (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Control Rod Drive System, require management:

- Cracking - SCC/IGA
- Cracking - Stress Corrosion Cracking
- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Control Rod Drive System components:

- Bolting Integrity
- BWR Stress Corrosion Cracking
- Closed-Cycle Cooling Water
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.3.2.1.5 Demineralized Water System

Materials

The materials of construction for the Demineralized Water System components are:

- Carbon Steel
- Copper Alloy
- Fiberglass
- PVC
- Rubber
- Stainless Steel

Environment

The Demineralized Water System components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Plant Indoor Air (Int)
- Raw Water (Int)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Demineralized Water System, require management:

- Loss of Material - Crevice Corrosion

- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Demineralized Water System components:

- Bolting Integrity
- One-Time Inspection
- Plant Chemistry Program
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.6 Emergency Diesel Generators System

Materials

The materials of construction for the Emergency Diesel Generators System components are:

- Carbon Steel
- Cast Iron
- Copper Alloy
- Rubber
- Stainless Steel

Environment

The Emergency Diesel Generators System components are exposed to the following environments:

- Air/Gas (Int)
- Buried in Ground (Ext)
- Exposed to Weather (Ext)
- Fuel Oil (Ext)
- Fuel Oil (Int)

- Gas - Instrument Air (Int)
- Lubricating Oil (Ext)
- Lubricating Oil (Int)
- Outside Air (Ext)
- Outside Air (Int)
- Outside Air Protected from Weather (Ext)
- Plant Indoor Air (Ext)
- Raw Water (Int)
- Treated Water (Ext)
- Treated Water (Int)
- Wet Air/Gas (Ext)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Emergency Diesel Generators System, require management:

- Cracking - Stress Corrosion Cracking
- Heat Transfer Degradation - Fouling
- Loss of Material - Crevice Corrosion
- Loss of Material - Erosion
- Loss of Material - Fretting
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Emergency Diesel Generators System components:

- Bolting Integrity
- Buried Piping & Tanks Inspection

- Closed-Cycle Cooling Water
- Fuel Oil Chemistry
- One-Time Inspection
- Open-Cycle Cooling Water System
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.7 Emergency Filtration Train System

Materials

The materials of construction for the Emergency Filtration Train System components are:

- Carbon Steel
- Copper Alloy
- Elastomers (Rubber, Neoprene, Silicone, Etc.)
- Stainless Steel

Environment

The Emergency Filtration Train System components are exposed to the following environments:

- Air/Gas (Ext)
- Air/Gas (Int)
- Dry Air (Int)
- Gas - Refrigerant (Int)
- Plant Indoor Air (Ext)
- Raw Water (Int)
- Wet Air/Gas (Ext)

Aging Effects Requiring Management

The following aging effects, associated with the Emergency Filtration Train System, require management:

- Heat Transfer Degradation - Fouling
- Loss of Material - Crevice Corrosion
- Loss of Material - Erosion

- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Emergency Filtration Train System components:

- One-Time Inspection
- Open-Cycle Cooling Water System
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.8 Emergency Service Water System

Materials

The materials of construction for the Emergency Service Water System components are:

- Carbon Steel
- Cast Iron
- Copper Alloy
- Stainless Steel

Environment

The Emergency Service Water System components are exposed to the following environments:

- Buried in Ground (Ext)
- Gas - Instrument Air (Int)
- Lubricating Oil (Ext)
- Lubricating Oil (Int)
- Plant Indoor Air (Ext)
- Raw Water (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Emergency Service Water System, require management:

- Heat Transfer Degradation - Fouling
- Loss of Material - Crevice Corrosion
- Loss of Material - Erosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Emergency Service Water System components:

- Bolting Integrity
- Buried Piping & Tanks Inspection
- One-Time Inspection
- Open-Cycle Cooling Water System
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.9 Fire System

Materials

The materials of construction for the Fire System components are:

- Bronze
- Carbon Steel
- Cast Iron
- Copper Alloy
- Ductile Iron
- Galvanized Steel

- Gray Cast Iron
- Stainless Steel

Environment

The Fire System components are exposed to the following environments:

- Air/Gas (Int)
- Atmosphere/Weather (Ext)
- Buried in Ground (Ext)
- Exposed to Weather (Ext)
- Gas - Halon (Int)
- Glycol Corrosion-Inhibited Treated Water (Ext)
- Glycol Corrosion-Inhibited Treated Water (Int)
- Outside Air Protected from Weather (Ext)
- Plant Indoor Air (Ext)
- Raw Water (Ext)
- Raw Water (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Fire System, require management:

- Heat Transfer Degradation - Fouling
- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Fire System components:

- Bolting Integrity

- Buried Piping & Tanks Inspection
- Fire Protection
- Fire Water System
- System Condition Monitoring Program

3.3.2.1.10 **Fuel Pool Cooling and Cleanup System**

Materials

The materials of construction for the Fuel Pool Cooling and Cleanup System components are:

- Carbon Steel
- Copper Alloy
- Stainless Steel

Environment

The Fuel Pool Cooling and Cleanup System components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Fuel Pool Cooling and Cleanup System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Fuel Pool Cooling and Cleanup System components:

- Bolting Integrity
- One-Time Inspection

- Plant Chemistry Program
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.11 **Heating and Ventilation System**

Materials

The materials of construction for the Heating and Ventilation System components are:

- Carbon Steel
- Cast Iron
- Copper Alloy
- Stainless Steel

Environment

The Heating and Ventilation System components are exposed to the following environments:

- Air/Gas (Int)
- Plant Indoor Air (Ext)
- Raw Water (Int)
- Treated Water (Int)
- Treated Water or Steam (Int)
- Wet Air/Gas (Ext)

Aging Effects Requiring Management

The following aging effects, associated with the Heating and Ventilation System, require management:

- Cracking - SCC/IGA
- Heat Transfer Degradation - Fouling
- Loss of Material - Crevice Corrosion
- Loss of Material - Erosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC

- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Heating and Ventilation System components:

- Bolting Integrity
- Closed-Cycle Cooling Water
- One-Time Inspection
- Open-Cycle Cooling Water System
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.12 I**nstrument and Service Air System**

Materials

The materials of construction for the Instrument and Service Air System components are:

- Carbon Steel
- Copper Alloy
- Stainless Steel

Environment

The Instrument and Service Air System components are exposed to the following environments:

- Gas - Compressed Air (Int)
- Gas - Instrument Air (Int)
- Gas - Nitrogen (Int)
- Plant Indoor Air (Ext)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Instrument and Service Air System, require management:

- Loss of Material - Crevice Corrosion

- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Instrument and Service Air System components:

- Bolting Integrity
- Closed-Cycle Cooling Water
- Compressed Air Monitoring
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.13 Radwaste Solid and Liquid System

Materials

The materials of construction for the Radwaste Solid and Liquid System components are:

- Carbon Steel
- Copper Alloy
- Gray Cast Iron
- Stainless Steel

Environment

The Radwaste Solid and Liquid System components are exposed to the following environments:

- Concrete (Ext)
- Gas - Instrument Air (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Radwaste Solid and Liquid System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Radwaste Solid and Liquid System components:

- Bolting Integrity
- One-Time Inspection
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.14 Reactor Building Closed Cooling Water System

Materials

The materials of construction for the Reactor Building Closed Cooling Water System components are:

- Carbon Steel
- Copper Alloy
- Stainless Steel

Environment

The Reactor Building Closed Cooling Water System components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Raw Water (Int)

- Treated Water (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Reactor Building Closed Cooling Water System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Erosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Reactor Building Closed Cooling Water System components:

- Bolting Integrity
- Closed-Cycle Cooling Water
- One-Time Inspection
- Open-Cycle Cooling Water System
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.15 Reactor Water Cleanup System

Materials

The materials of construction for the Reactor Water Cleanup System components are:

- Carbon Steel
- Cast Austenitic Stainless Steel (CASS)
- Stainless Steel

Environment

The Reactor Water Cleanup System components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Reactor Water Cleanup System, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - FAC
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Reactor Water Cleanup System components:

- Bolting Integrity
- Flow-Accelerated Corrosion
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.3.2.1.16 Service and Seal Water System

Materials

The materials of construction for the Service and Seal Water System components are:

- Carbon Steel
- Cast Iron

- Copper Alloy
- Rubber
- Stainless Steel

Environment

The Service and Seal Water System components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Raw Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Service and Seal Water System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Erosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Service and Seal Water System components:

- Bolting Integrity
- Open-Cycle Cooling Water System
- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.1.17 **Standby Liquid Control System**

Materials

The materials of construction for the Standby Liquid Control System are:

- Carbon Steel
- Cast Austenitic Stainless Steel (CASS)

- Rubber
- Stainless Steel

Environment

The Standby Liquid Control System components are exposed to the following environments:

- Gas - Nitrogen (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Treated Water (Ext)
- Treated Water (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Standby Liquid Control System, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Standby Liquid Control System components:

- Bolting Integrity
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.3.2.1.18 Wells and Domestic Water System

Materials

The materials of construction for the Wells and Domestic Water System components are:

- Carbon Steel
- Cast Iron
- Copper Alloy
- Stainless Steel

Environment

The Wells and Domestic Water System components are exposed to the following environments:

- Concrete (Ext)
- Plant Indoor Air (Ext)
- Raw Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Wells and Domestic Water System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Erosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Wells and Domestic Water System components:

- Bolting Integrity
- One-Time Inspection

- Selective Leaching of Materials
- System Condition Monitoring Program

3.3.2.2 Further Evaluation of Aging Management as Recommended by NUREG-1801

NUREG-1801 Volume 1 Tables provide the basis for identifying those programs that warrant further evaluation by the reviewer in the license renewal application. For the Auxiliary Systems, those programs are addressed in the following sections.

3.3.2.2.1.1 Loss of Material due to General, Pitting, and Crevice Corrosion (Item 1)

This subsection discusses loss of material due to general, pitting, and crevice corrosion of heat exchanger components in the auxiliary systems.

Aging effect is managed by the One-Time Inspection Program, or the combination of the One-Time Inspection Program and Plant Chemistry Program.

Exceptions apply to NUREG-1801 recommendations for the Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).

The One-Time Inspection Program is a new aging management program (AMP). The scope of this new AMP is to include activities to verify potential long incubation periods for certain aging effects on structures and components. The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23).

When applied in combination with the Plant Chemistry Program, the scope of this new AMP includes activities to verify the effectiveness of the Plant Chemistry Program, including a sample of components where the flow of water is low or stagnant conditions exist.

Implementation of the One-Time Inspection Program and the Plant Chemistry Program to manage the aging effect provides added assurance that aging effect is not occurring or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.3.2.2.1.2 Loss of Material due to General, Pitting, and Crevice Corrosion (Item 2)

This subsection discusses loss of material due to pitting and crevice corrosion of components in the auxiliary systems.

Loss of material due to pitting and crevice corrosion of components is managed by the combination of the One-Time Inspection Program and the Plant Chemistry Program, solely the One-Time Inspection Program, or the Compressed Air Monitoring Program.

Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).

Exceptions apply to NUREG-1801 recommendations for Compressed Air Monitoring Program implementation (refer to Appendix B, Section B2.1.14).

The One-Time Inspection Program is a new AMP. The scope of this new AMP is to include activities to verify the effectiveness of the Plant Chemistry Program, including a sample of components where the flow of water is low or stagnant conditions exist (refer to Appendix B, Section B2.1.23).

For components in the Heating and Ventilation, and Radwaste Solid and Liquid Systems, the Plant Chemistry Program is not a viable option and aging effects/mechanisms are not expected to be significant. For these components, the One-Time Inspection Program is credited for managing the aging effect. The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23).

The Compressed Air Monitoring Program is used to manage loss of material of stainless steel valve bodies of the Instrument and Service Air System in an air/gas environment. The scope of MNGP's Compressed Air Monitoring Program includes procedurally required testing for water vapor, oil content, and particulate to ensure the instrument air quality has acceptable levels of contaminants. In addition, external visual inspections of the Instrument and Service Air Systems are performed once per cycle, for corrosion and system pressure boundary degradation (refer to Appendix B, Section B2.1.14).

Implementation of these programs to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.3.2.2.2 Hardening and Cracking or Loss of Strength due to Elastomer Degradation or Loss of Material due to Wear

This subsection discusses hardening, cracking, loss of strength, and loss of material of components in the auxiliary systems.

Loss of strength due to elastomer degradation, and loss of material due to wear of linings in the spent fuel pool cooling and cleanup system and of seals and collars in the ventilation systems could occur on elastomer components exposed to air and a range of atmospheric conditions.

These elastomer (neoprene, rubber, etc.) components are indoors and not subject to ultra-violet or ozone, nor are they in locations that are subject to radiation exposure. These locations are also not subject to temperatures where change in material properties or cracking could occur. Therefore, no aging management is required.

3.3.2.2.3 Cumulative Fatigue Damage

This subsection discusses cumulative fatigue damage due to fatigue of components in load handling and reactor water cleanup systems.

Fatigue is a TLAA as defined in 10 CFR 54.3. TLAAs are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluation of this TLAA for mechanical Auxiliary Systems is addressed separately in Section 4.3.

The Reactor Building Crane is the only load handling component meeting the TLAA requirements in 10 CFR 54.21. The evaluation of the Reactor Building Crane TLAA is addressed separately in Section 4.9.

3.3.2.2.4 Crack Initiation and Growth due to Cracking or Stress Corrosion Cracking

This subsection discusses cracking for heat exchangers in the reactor water cleanup system.

Cracking due to SCC is not applicable to MNGP Reactor Water Cleanup System heat exchangers. Materials science evaluation for the carbon steel, Reactor Water Cleanup System heat exchanger components in-scope for License Renewal in the treated water environment does not support the occurrence of the aging effect for these components. Therefore, no aging management is required.

3.3.2.2.5 Loss of Material due to General, Microbiologically Influenced, Pitting, and Crevice Corrosion

This subsection discusses loss of material of mechanical components in the auxiliary systems.

Loss of material due to corrosion of mechanical components could occur on surfaces exposed to air/gas under a range of atmospheric conditions. For the internal surfaces of mechanical components in the Emergency Diesel Generators, Emergency Filtration Train, and Heating and Ventilation systems of auxiliary systems, the One-Time Inspection Program is credited with managing the aging effect. For the external surfaces of mechanical components in all auxiliary systems, one or more of the following programs is credited with managing the aging effect. Programs include Fire Water System Program, Fire Protection Program, System Condition Monitoring Program, and One-Time Inspection Program.

Note: Closure bolting is addressed in item 3.3.1-24.

Exceptions apply to NUREG-1801 recommendations for the Fire Protection Program implementation (refer to Appendix B, Section B2.1.17).

The Fire Water System Program relies on testing of water based fire protection system piping and components in accordance with applicable NFPA recommendations. Testing and inspection is conducted for piping, pumps, detection and suppression systems, hydrants, and sprinkler systems at regularly scheduled intervals. The AMP is credited in conjunction with System Condition Monitoring Program to manage the aging effect.

The MNGP Fire Protection Program consists of activities that manage aging effects for components in the Fire System, including components for the diesel

fire pump. During testing the diesel-driven fire pump is observed and monitored, by procedure, for indications of degradation. The AMP is credited in conjunction with System Condition Monitoring Program to manage the aging effect.

The Fire Protection Program is the aging management program credited for managing loss of material due to general corrosion of carbon steel structural components used in fire protection. The MNGP Fire Protection Program consists of visual inspections for corrosion of carbon steel structural components with fire protection functions.

The System Condition Monitoring Program is an existing plant-specific AMP. This program manages aging effects for normally accessible external surfaces of piping, tanks, and other components and equipment within the scope of License Renewal. These aging effects are managed through visual inspection and monitoring of external surfaces for leakage and evidence of material degradation (refer to Appendix B, Section B2.1.32).

The One-Time Inspection Program is a new AMP. The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23).

Implementation of these programs to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.3.2.2.6 Loss of Material due to General, Galvanic, Pitting, and Crevice Corrosion

This subsection discusses loss of material for components in the reactor coolant pump oil collection system in fire protection. MNGP is not designed with a reactor coolant pump (recirculation pump) oil collection system because these pumps are contained within the primary containment, which is inerted with nitrogen during normal operation.

3.3.2.2.7 Loss of Material due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion and Biofouling

This subsection discusses loss of material of the internal and external surfaces of fuel oil tanks in the Emergency Diesel Generators System.

Loss of material due to general, pitting, crevice corrosion, and MIC for components in the emergency diesel generators system is managed by the Fuel Oil Chemistry Program and One-Time Inspection Program.

Exceptions apply to the NUREG-1801 recommendations for Fuel Oil Chemistry Program implementation (refer to Appendix B, Section B2.1.20).

The Fuel Oil Chemistry Program manages loss of material for all components wetted by fuel oil. The effectiveness of the Fuel Oil Chemistry Program is confirmed by the One-Time Inspection Program. The MNGP Fuel Oil Chemistry Program is an existing program using existing diesel oil system procedures that encompass the NUREG-1801 program requirements. The Fuel Oil Chemistry Program mitigates and manages aging effects on the surfaces wetted by fuel oil of fuel oil storage tanks and associated components. This also includes the tank and other components supplying fuel to the diesel fire pump. The program includes (a) surveillance and monitoring procedures for maintaining fuel oil quality by controlling contaminants in accordance with applicable ASTM Standards, (b) periodic draining of water from fuel oil tanks, (c) periodic or conditional visual inspection of internal surfaces or wall thickness measurements (e.g., by UT) from external surfaces of fuel oil tanks, and (d) one-time inspections of a representative sample of components in systems that contain fuel oil.

The One-Time Inspection Program is a new AMP. The scope of this new AMP is to include activities to verify the effectiveness of the Fuel Oil Chemistry Program. The program uses a variety of non-destructive examination (NDE) methods at locations susceptible to the aging effect (refer to Appendix B, Section B2.1.23).

Implementation of these programs to manage the aging effect provides added assurance that aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.3.2.2.9 Crack Initiation and Growth due to Stress Corrosion Cracking and Cyclic Loading

Applicable to PWR Only

3.3.2.2.10 Reduction of Neutron-Absorbing Capacity and Loss of Material due to General Corrosion

This subsection discusses various aging effects for Boral. This subsection specifically discusses the plant specific programs used to manage the aging effects for Boral.

The Plant Chemistry Program is used to manage the aging effects loss of material and reduction of neutron-absorbing capacity of Boral in treated water environment due to crevice, galvanic, MIC and pitting corrosion and the aging effect cracking due to stress corrosion cracking by ensuring that corrosive ion concentrations do not exceed acceptable limits and by limiting the amount of impurities in the water. General corrosion is not applicable since boral/aluminum develops a strongly bonded oxide film with excellent corrosion resistance.

The One-Time Inspection Program will verify the effectiveness of the Plant Chemistry Program by confirming the absence of aging effects on Boral coupon samples stored in the spent fuel pool. Aging effects that could affect rack integrity or neutron absorption characteristics are not expected since none have been observed during coupon sample evaluations conducted over the past 20 years.

Exceptions apply to NUREG-1801 recommendations for the Plant Chemistry Program implementation.

Implementation of the One-Time Inspection Program in conjunction with the Plant Chemistry Program to manage the aging effects for Boral provides added assurance that the aging effects are not occurring; or that the aging effects are progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.3.2.2.11 Loss of Material due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion

This subsection discusses loss of material of underground (buried) piping and fittings in the Emergency Service Water, Emergency Diesel Generators, and Fire Systems.

Loss of material due to general, pitting, crevice corrosion, and MIC as well as galvanic corrosion and selective leaching for buried valve bodies, piping and

fittings is managed by the Buried Piping & Tanks Inspection Program. The Bolting Integrity Program manages loss of material due to general, pitting, crevice corrosion, and MIC as well as galvanic corrosion for buried fasteners.

The Buried Piping & Tanks Inspection Program consists of preventive and condition monitoring measures to manage the aging effect. Preventive measures consist of protective coatings and/or wraps on buried components. Condition monitoring consists of periodic inspections of buried components. MNGP operating experience has shown no buried pipe/tank failures for components in-scope for License Renewal (refer to Appendix B, Section B2.1.5).

The Bolting Integrity Program consists of guidelines on materials selection, strength and hardness properties, installation procedures, lubricants and sealants, corrosion considerations in the selection and installation of pressure-retaining bolting for nuclear applications, and inspection techniques (refer to Appendix B, Section B2.1.4).

Implementation of the Buried Piping and Tanks Inspection Program and Bolting Integrity Program to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.3.2.3 Time-Limited Aging Analysis

The time-limited aging analyses (TLAA) identified below are associated with the Auxiliary Systems components:

- Section 4.3.3, ASME Section III Class 1 Reactor Coolant Pressure Boundary (RCPB) Piping and Fatigue Analysis
- Section 4.3.4, RCPB Section III Class 2 and 3, Piping and Components

3.3.3 Conclusion

The Auxiliary System piping, fittings, and components that are subject to aging management review have been identified in accordance with the requirements of 10 CFR 54.4. The aging management programs selected to manage aging effects for the Auxiliary Systems components are identified in the summaries in Section 3.3.2.1 above.

A description of these aging management programs is provided in Appendix B, along with the demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the demonstrations provided in Appendix B, the effects of aging associated with the Auxiliary System components will be adequately managed so that there is reasonable assurance that the intended function(s) will be maintained consistent with the current licensing basis during the period of extended operation.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-01	Components in spent fuel pool cooling and cleanup	Loss of material due to general, pitting, and crevice corrosion	Water chemistry and one-time inspection	Yes, detection of aging effects is to be further evaluated (see [SRP] subsections 3.3.2.2.1.1 and 3.3.2.2.1.2)	Aging effect is managed by the One-Time Inspection Program, or the combination of the Plant Chemistry Program and One-Time Inspection Program. Further evaluation is documented in Sections Section 3.3.2.2.1.1 and Section 3.3.2.2.1.2. Exceptions apply to NUREG-1801 recommendations for the Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).
3.3.1-02	Linings in spent fuel pool cooling and cleanup system; seals and collars in ventilation systems	Hardening, cracking and loss of strength due to elastomer degradation; loss of material due to wear	Plant specific	Yes, plant specific (see [SRP] subsection 3.3.2.2.2)	Not applicable; further evaluation documented in Section 3.3.2.2.2.
3.3.1-03	Components in load handling, chemical and volume control system (PWR), and reactor water cleanup and shutdown cooling systems (older BWR)	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA (see [SRP] subsection 3.3.2.2.3)	Further evaluation documented in Section 3.3.2.2.3.
3.3.1-04	Heat exchangers in reactor water cleanup system (BWR); high pressure pumps in chemical and volume control system (PWR)	Crack initiation and growth due to SCC or cracking	Plant specific	Yes, plant specific (see [SRP] subsection 3.3.2.2.4)	Not applicable; further evaluation documented in Section 3.3.2.2.4.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-05	Components in ventilation systems, diesel fuel oil system, and emergency diesel generator systems; external surfaces of carbon steel components	Loss of material due to general, pitting, and crevice corrosion, and MIC	Plant specific	Yes, plant specific (see [SRP] subsection 3.3.2.2.5)	Further evaluation of structural components is documented in Section 3.3.2.2.5. Aging effect is managed by the Fire Water System Program, Fire Protection Program, System Condition Monitoring Program, or One-Time Inspection Program for exterior and interior surfaces of mechanical components. Further evaluation is documented in Section 3.3.2.2.5. Exceptions apply to NUREG-1801 recommendations for the Fire Protection Program implementation (refer to Appendix B, Section B2.1.17).
3.3.1-06	Components in reactor coolant pump oil collect system of fire protection	Loss of material due to galvanic, general, pitting, and crevice corrosion	One-time inspection	Yes, detection of aging effects is to be further evaluated (see [SRP] subsection 3.3.2.2.6)	Not applicable; further evaluation documented in Section 3.3.2.2.6.
3.3.1-07	Diesel fuel oil tanks in diesel fuel oil system and emergency diesel generator system	Loss of material due to general, pitting, and crevice corrosion, MIC, and biofouling	Fuel oil chemistry and one-time inspection	Yes, detection of aging effects is to be further evaluated (see [SRP] subsection 3.3.2.2.7)	Aging effect is managed by the combination of the Fuel Oil Chemistry and One-Time Inspection Programs. Further evaluation is documented in Section 3.3.2.2.7. Exceptions apply to NUREG-1801 recommendations for Fuel Oil Chemistry Program implementation (refer to Appendix B, Section B2.1.20).

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-08	Piping, pump casing, and valve body and bonnets in shutdown cooling system (older BWR)	Loss of material due to pitting and crevice corrosion	Water chemistry and one-time inspection	Yes, detection of aging effects is to be further evaluated (see [SRP] subsection 3.3.2.2.1.2)	Aging effect is managed by the One-Time Inspection Program, or the combination of the Plant Chemistry Program and One-Time Inspection Program. For stainless steel valve bodies in the Instrument and Service Air System, the aging effect is managed by the Compressed Air Monitoring Program. Further evaluation is documented in Section 3.3.2.2.1.2. Exceptions apply to NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25). Exceptions apply to NUREG-1801 recommendations for Compressed Air Monitoring Program implementation (refer to Appendix B, Section B2.1.14).
3.3.1-09	PWR only				
3.3.1-10	Neutron absorbing sheets in spent fuel storage racks	Reduction of neutron absorbing capacity and loss of material due to general corrosion (Boral, boron steel)	Plant specific	Yes, plant specific (see [SRP] subsection 3.3.2.2.10)	Further evaluation documented in Section 3.3.2.2.10.
3.3.1-11	New fuel rack assembly	Loss of material due to general, pitting, and crevice corrosion	Structures monitoring	No	This line discusses loss of material for the carbon steel new fuel rack assembly. The material for the new fuel racks, located in the new fuel storage vault, is aluminum not carbon steel as specified in NUREG-1801. An MNGP plant specific evaluation for aluminum in air/gas does not identify any aging effect or mechanism for this material/environment combination.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-12	Neutron absorbing sheets in spent fuel storage racks	Reduction of neutron absorbing capacity due to Boraflex degradation	Boraflex monitoring	No	Boraflex is not used at MNGP.
3.3.1-13	Spent fuel storage racks and valves in spent fuel pool cooling and cleanup	Crack initiation and growth due to stress corrosion cracking	Water chemistry	No	This line discusses crack initiation and growth for spent fuel storage racks and is not applicable for mechanical components. Crack initiation and growth for valves in the PWR spent fuel pool cooling and cleanup system is not applicable since MNGP is a BWR type facility. Materials for the spent fuel storage racks are aluminum (original rack material) and stainless steel (new high density fuel storage racks). NUREG-1801 does not specify an aluminum rack material. The Plant Chemistry Program is credited with managing the aluminum spent fuel storage rack for crack initiation and growth due to stress corrosion cracking and loss of material due to crevice, galvanic, MIC and pitting corrosion. The Plant Chemistry Program is credited with managing the high density stainless steel spent fuel storage racks for crack initiation and growth due to stress corrosion cracking and loss of material due to crevice, MIC and pitting corrosion. Exceptions apply to NUREG-1801 recommendations for the Plant Chemistry Program implementation.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-14	Closure bolting and external surfaces of carbon steel and low-alloy steel components	Loss of material due to boric acid corrosion	Boric acid corrosion	No	Not applicable. Loss of material due to boric acid corrosion is not applicable since MNGP is a BWR type facility that does not utilize boric acid.
3.3.1-15	Components in or serviced by closed-cycle cooling water system	Loss of material due to general, pitting, and crevice corrosion, and MIC	Closed-cycle cooling water system	No	Loss of material due to general, pitting, crevice corrosion, and MIC is managed by Closed-Cycle Cooling Water System Program or the One-Time Inspection Program. Exceptions apply to NUREG-1801 recommendations for Closed-Cycle Cooling Water Program implementation (refer to Appendix B, Section B2.1.13). For some components in the Radwaste Solid and Liquid System and the Reactor Building Closed Cooling Water System, the Closed-Cycle Cooling Water System Program is not a viable option and aging effects/mechanisms are not expected to be significant. For these components, the One-Time Inspection Program is credited for managing aging the effect. The One-Time Inspection Program is a new AMP. The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23).

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-15 continued					Implementation of the Closed-Cycle Cooling Water Program and One-Time Inspection Program to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.
3.3.1-16	Cranes including bridge and trolleys and rail system in load handling system	Loss of material due to general corrosion and wear	Overhead heavy load and light load handling systems	No	This line discusses loss of material for cranes including bridge and trolleys and rail systems. The Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems Program is credited with managing loss of material for cranes, including bridge, trolleys and rail systems. Exceptions apply to NUREG-1801 recommendations for the Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems Program implementation.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-17	Components in or serviced by open-cycle cooling water systems	Loss of material due to general, pitting, crevice, and galvanic corrosion, MIC, and biofouling; buildup of deposit due to biofouling	Open-cycle cooling water system	No	Loss of material due to general, pitting, crevice, galvanic corrosion, and MIC as well as erosion, and heat transfer degradation due to fouling of components in the auxiliary systems are managed by Open-Cycle Cooling Water System Program (refer to Appendix B, Section B2.1.24) or the One-Time Inspection Program (refer to Appendix B, Section B2.1.23). For some components in the Demineralized Water System, Emergency Service Water System and the Wells and Domestic Water System, the Open-Cycle Cooling Water System Program is not a viable option and aging effects/mechanisms are not expected to be significant. For these components, the One-Time Inspection Program is credited for managing the aging effect. The One-Time Inspection Program is a new AMP. The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation. Implementation of the Open-Cycle Cooling Water System Program and One-Time Inspection Program to manage the aging effects provides added assurance that aging effects are not occurring; or that aging effects are progressing very slowly such that the

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-17 continued					component's intended function will be maintained during the period of extended operation.
3.3.1-18	Buried piping and fittings	Loss of material due to general, pitting, and crevice corrosion, and MIC	Buried piping and tanks surveillance or Buried piping and tanks inspection	No Yes, detection of aging effects and operating experience are to be further evaluated (see [SRP] subsection 3.3.2.2.11)	Aging effect is managed by the Buried Piping & Tanks Inspection Program or the Bolting Integrity Program. Further evaluation is documented in Section 3.3.2.2.11.
3.3.1-19	Components in compressed air system	Loss of material due to general and pitting corrosion	Compressed air monitoring	No	Loss of material due to general and pitting corrosion of valve bodies, piping and fittings in the instrument and service air system is managed by the Compressed Air Monitoring Program. Exceptions apply to NUREG-1801 recommendations for Compressed Air Monitoring Program implementation (refer to Appendix B, Section B2.1.14). Implementation of the Compressed Air Monitoring Program to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-20	Components (doors and barrier penetration seals) and concrete structures in fire protection	Loss of material due to wear; hardening and shrinkage due to weathering	Fire protection	No	This line discusses loss of material for components in fire protection. The Fire Protection Program is credited with managing loss of material for fire doors and fire barrier penetration seals. Exceptions apply to NUREG-1801 recommendations for the Fire Protection Program implementation. Concrete structures relied upon for fire protection are evaluated in 3.3.1-30.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-21	Components in water-based fire protection	Loss of material due to general, pitting, crevice, and galvanic corrosion, MIC, and biofouling	Fire water system	No	Loss of material due to general, pitting, crevice, galvanic corrosion, and MIC as well heat transfer degradation due to fouling for components in the fire system are managed by the Fire Protection and Fire Water System Programs. The Fire Water System Program is applied for the majority of the components in the fire system (refer to Appendix B, Section B2.1.18). The Fire Protection Program is applied to those components in the fire system associated with the diesel fire pump with the exception of the diesel fire pump diesel engine fuel oil supply. In addition, the Fire Protection Program is applied to non-water-based fire protection subsystems such as Halon. Exceptions apply to NUREG-1801 recommendations for Fire Protection Program implementation (refer to Appendix B, Section B2.1.17). Implementation of the Fire Water System and Fire Protection Programs to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-22	Components in diesel fire system	Loss of material due to galvanic, general, pitting, and crevice corrosion	Fire protection and fuel oil chemistry	No	This line item was not used at MNGP. The Fire Protection Program is applied to those components in the fire system associated with the diesel fire pump with the exception of the diesel fire pump diesel engine fuel oil supply. See item 3.3.1-21 for further discussion. The Fire Protection Program includes performance and condition monitoring of the diesel fire pump. Components in the diesel fire pump diesel engine fuel oil supply are included in the Emergency Diesel Generators System. See item 3.3.1-07 for further discussion. For these components, the aging effect is managed by the combination of the Fuel Oil Chemistry and One-Time Inspection Programs.
3.3.1-23	Tanks in diesel fuel oil system	Loss of material due to general, pitting, and crevice corrosion	Above ground carbon steel tanks	No	Not applicable. NUREG-1801 identifies the aboveground carbon steel tanks program (NUREG-1801, Chapter XI.M29) as an applicable aging management program for the external surfaces of carbon steel tanks exposed to outdoor ambient conditions. The program is not credited for License Renewal at MNGP since MNGP does not have any above ground carbon steel tanks exposed to outdoor ambient conditions within the scope of License Renewal.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-24	Closure bolting	Loss of material due to general corrosion; crack initiation and growth due to cyclic loading and SCC	Bolting integrity	No	Loss of material due to general corrosion as well as galvanic corrosion for fasteners/bolting in the auxiliary systems is managed by the Bolting Integrity Program (refer to Appendix B, Section B2.1.4). There are no fasteners/bolts with a specified minimum yield strength greater than 150 ksi in the auxiliary systems at MNGP. Therefore, crack initiation and growth due to SCC is not an applicable aging effect. Closure bolting preload is effectively addressed in the design (material selection, bolt and nut sizes), installation (torque, lubricant, bolting pattern), and maintenance requirements (retorquing, final checks). Operating temperatures in MNGP systems are below the threshold temperature where thermal creep of the bolting material could occur. MNGP plant operating experience shows no bolted closure failures due to loss of preload. While not specifically identified as an aging effect in the respective system Table 2, Summary of Aging Management Evaluation, loss of preload is managed for carbon steel and stainless steel closure bolting used in pressure retaining joints by the Bolting Integrity Program. The Bolting Integrity Program manages loss of preload associated with closure bolting through periodic inspection, material selection, thread lubricant control, assembly and torque requirements, and repair and replacement requirements. These activities are based on the applicable requirements of ASME Section XI and plant operating experience and

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-24 continued					includes consideration of the guidance contained in NUREG-1339, Resolution of Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants, EPRI NP-5769, Degradation and Failure of Bolting in Nuclear Power Plants, EPRI TR-104213, Bolted Joint Maintenance & Application Guide, and EPRI NP-5067 Volumes 1 and 2, Good Bolting Practices. Implementation of the Bolting Integrity Program to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.
3.3.1-25	Components in contact with sodium pentaborate solution in standby liquid control system (BWR)	Crack initiation and growth due to SCC	Water chemistry	No	Not applicable. NUREG-1801 identifies crack initiation and growth due to SCC of stainless steel as an applicable aging effect for components in contact with a sodium pentaborate solution. At MNGP, the components exposed to sodium pentaborate solution are in an environment such that the components are not susceptible to SCC. The high temperature Standby Liquid Control System components operate in a reactor water environment free of a significant concentration of sodium pentaborate.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-26	Components in reactor water cleanup system	Crack initiation and growth due to SCC and IGSCC	Reactor water cleanup system inspection	No	Cracking due to SCC as well as intergranular attack (IGA) for components in the reactor water cleanup system is managed by the Plant Chemistry Program and One-Time Inspection Programs. Exceptions apply to NUREG-1801 recommendations for the Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25). In accordance with NUREG-1801, Chapter XI.M25, no IGSCC inspection is recommended for plants that have piping made of material that is resistant to IGSCC. Since MNGP satisfies this criterion and has satisfactorily completed all actions requested in NRC GL 89-10, the Plant Chemistry and One-Time Inspection Programs are utilized in lieu of the reactor water cleanup system inspection program to manage this aging effect for components in the Reactor Water Cleanup System. The Plant Chemistry Program mitigates the aging effects on component surfaces that are exposed to water as the process fluid; chemistry programs are used to control water chemistry for impurities (e.g., chloride and sulfate) that accelerate crack initiation and growth. This program relies on monitoring and control of water chemistry to keep peak levels of various contaminants below system-specific limits based on the EPRI guidelines of TR-1008192 for water chemistry in BWRs (refer to Appendix B, Section B2.1.25). The One-Time Inspection Program is a new AMP. The scope of this new AMP is to include activities to verify the effectiveness of the Plant

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-26 continued					Chemistry Program, including a sample of components where the flow of water is low or stagnant conditions exist. The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23). Implementation of the Plant Chemistry Program and One-Time Inspection Programs to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-27	Components in shutdown cooling system (older BWR)	Crack initiation and growth due to SCC	BWR stress corrosion cracking and water chemistry	No	Cracking due to SCC in the auxiliary systems is managed by (1) the BWR Stress Corrosion Cracking Program in conjunction with the Plant Chemistry Program, (2) the Plant Chemistry Program in conjunction with the One-Time Inspection Program, (3) solely the One-Time Inspection Program, or (4) the Closed-Cycle Cooling Water Program. Exceptions apply to the NUREG-1801 recommendations for BWR Stress Corrosion Cracking Program implementation (refer to Appendix B, Section B2.1.10). Exceptions apply to the NUREG-1801 recommendations for Closed Cycle Cooling Water System Program implementation (refer to Appendix B, Section B2.1.13). Exceptions apply to the NUREG-1801 recommendations for Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25). The Monticello Nuclear Generating Plant BWR Stress Corrosion Cracking Program is an existing program and is part of the MNGP ASME Section XI Inservice Inspection Program. The Plant Chemistry Program mitigates the aging effects on component surfaces that are exposed to water as the process fluid; chemistry programs are used to control water chemistry for impurities (e.g., chloride and sulfate) that accelerate crack initiation and growth. This program relies on monitoring and control of water chemistry to keep peak levels of various contaminants below system-specific

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-27 continued					limits based on the EPRI guidelines of TR-1008192 for water chemistry in BWRs. The One-Time Inspection Program is a new AMP. The scope of this new AMP is to include activities to verify the effectiveness of the Plant Chemistry Program, including a sample of components where the flow of water is low or stagnant conditions exist (refer to Appendix B, Section B2.1.23). For some components in the Control Rod Drive System in a wet air/gas environment, the Plant Chemistry Program is not a viable option and aging effects/mechanisms are not expected to be significant. For these components, the One-Time Inspection Program is credited for managing the aging effect. The One-Time Inspection Program is a new AMP. The AMP includes (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation (refer to Appendix B, Section B2.1.23). For some components in the Heating and Ventilation System the MNGP Closed-Cycle Cooling Water Program includes preventive

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-27 continued					measures to minimize corrosion and periodic system and component performance testing and inspection to monitor the effects of corrosion and confirm intended functions are met. This program, as applied to closed-cycle cooling water systems, relies on: (1) the use of appropriate materials and, a water treatment program to inhibit cracking, and (2) testing and inspection to evaluate system and component performance and detect aging effects. Implementation of these programs to manage the aging effect provides added assurance that the effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.
3.3.1-28	Components in shutdown cooling system (older BWR)	Loss of material due to pitting and crevice corrosion, and MIC	Closed-cycle cooling water system	No	This line item was not used. The NUREG-1801 item applies to shutdown cooling system heat exchangers exposed to reactor coolant water and closed cooling water. The applicable MNGP heat exchangers are in the Residual Heat Removal system, an ESF system. These heat exchangers are exposed to Emergency Service Water (an open-cycle cooling water system).

Table 3.3.1 Summary of Aging Management Evaluations in Chapter VII of NUREG-1801 for Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-29	Components (aluminum bronze, brass, cast iron, cast steel) in open-cycle and closed-cycle cooling water systems, and ultimate heat sink	Loss of material due to selective leaching	Selective leaching of materials	No	Loss of material due to selective leaching of components in the auxiliary systems is managed by the Selective Leaching of Materials Program. Exceptions apply to NUREG-1801 recommendations for Selective Leaching of Materials Program implementation (refer to Appendix B, Section B2.1.30). Implementation of the Selective Leaching of Materials Program to manage the aging effect provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.
3.3.1-30	Fire barriers, walls, ceilings and floors in fire protection	Concrete cracking and spalling due to freeze-thaw, aggressive chemical attack, and reaction with aggregates; loss of material due to corrosion of embedded steel	Fire protection and structures monitoring	No	This line discusses cracking and spalling for concrete in fire protection. The Fire Protection Program and the Structures Monitoring Program are credited with managing aging effects associated with concrete structures relied upon for fire protection. Exceptions apply to NUREG-1801 recommendations for the Fire Protection Program implementation.

Table 3.3.2-1 Auxiliary Systems - Alternate Nitrogen System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
			Primary Containment Air (Ext)	None	None			J, 301, 306, 327
Flexible Connections	Pressure Boundary	Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
Piping and Fittings	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-1 Auxiliary Systems - Alternate Nitrogen System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
		Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Primary Containment Air (Ext)	None	None			J, 327
Tanks	Pressure Boundary	Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Primary Containment Air (Ext)	None	None			J, 327
Valve Bodies	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-1 Auxiliary Systems - Alternate Nitrogen System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
		Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Primary Containment Air (Ext)	None	None			J, 327

Table 3.3.2-2 Auxiliary Systems- Chemistry Sampling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Chillers	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Filters/Housings	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.2-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.2-a	3.3.1-01	B
				Loss of Material - MIC	One-Time Inspection	VII.A4.2-a	3.3.1-01	A, 312
					Plant Chemistry Program	VII.A4.2-a	3.3.1-01	B, 312

Table 3.3.2-2 Auxiliary Systems- Chemistry Sampling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Housings	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.2-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.2-a	3.3.1-01	B
Flow Element	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Heat Exchangers	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D

Table 3.3.2-2 Auxiliary Systems- Chemistry Sampling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-2 Auxiliary Systems- Chemistry Sampling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E4.1-c	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E4.1-c	3.3.1-27	B

Table 3.3.2-2 Auxiliary Systems- Chemistry Sampling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-2 Auxiliary Systems- Chemistry Sampling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326

Table 3.3.2-2 Auxiliary Systems- Chemistry Sampling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 326
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.C.2-a	3.4.1-06	A, 326
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 312, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 326
				Loss of Material - MIC	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 326

Table 3.3.2-2 Auxiliary Systems- Chemistry Sampling System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E4.3-a	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E4.3-a	3.3.1-27	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Condenser Water Box	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water Systemm	VII.C1.1-a	3.3.1-17	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Expansion Joints	Pressure Boundary	Rubber	Plant Indoor Air (Ext)	None	None			J, 314, 327
			Raw Water (Int)	None	None			J, 314, 327

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Filters/Strainers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.1-a	3.3.1-29	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 302
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 302
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 302
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.1-a	3.3.1-29	B, 302

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 302
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 302
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 302
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 302
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 302
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A, 302
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17, 3.3.1-29	A, 302, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A, 302

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A, 302
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A, 302
Tanks	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	C, 302
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	C, 302
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	C, 302
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	C, 302
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	C, 302
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 302
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 302, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 302
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 302
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 302
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A

Table 3.3.2-3 Auxiliary Systems- Circulating Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.2-a	3.3.1-29	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 302
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 302
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 302
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.2-a	3.3.1-29	B, 302

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Accumulators	Pressure Boundary	Carbon Steel	Gas - Nitrogen (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Gas - Nitrogen (Int)	None	None			J, 327

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Accumulators	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E4.1-c	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E4.1-c	3.3.1-27	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
			Primary Containment Air (Ext)	None	None			J, 301, 306, 327

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E4.1-c	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E4.1-c	3.3.1-27	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Flow Element	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E.4.1-c	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E.4.1-c	3.3.1-27	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Heat Exchangers	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B
Manifolds	Pressure Boundary	Stainless Steel	Gas - Nitrogen (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E4.1-c	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E4.1-c	3.3.1-27	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Piping and Fittings	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 326
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 303, 307, 312, 326
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 303, 307, 326
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 303, 307, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 326
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
		Stainless Steel	Gas - Nitrogen (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Primary Containment Air (Ext)	Cracking - Stress Corrosion Cracking	System Condition Monitoring Program			J
			Treated Water (Int)	Cracking - SCC/IGA	BWR Stress Corrosion Cracking	VII.E4.1-c	3.3.1-27	B
					One-Time Inspection	VII.E4.1-c	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E4.1-c	3.3.1-27	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
			Wet Air/Gas (Int)	Cracking - Stress Corrosion Cracking	One-Time Inspection	VII.E4.1-c	3.3.1-27	E, 307, 308
				Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 326
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 303, 307, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 326

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B
Restricting Orifices	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E4.1-c	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E4.1-c	3.3.1-27	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Speed Increaser Assembly	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
Tanks	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Wet Air/Gas (Int)	Cracking - Stress Corrosion Cracking	One-Time Inspection	VII.E4.1-c	3.3.1-27	E, 307, 308, 309
				Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 309, 326
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 303, 307, 309, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 309, 326
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Valve Bodies	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
		Stainless Steel	Gas - Nitrogen (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E4.3-a	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E4.3-a	3.3.1-27	B

Table 3.3.2-4 Auxiliary Systems- Control Rod Drive System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
			Wet Air/Gas (Int)	Cracking - Stress Corrosion Cracking	One-Time Inspection	VII.E4.3-a	3.3.1-27	E, 307, 308
				Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 309, 326
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 303, 307, 309, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 309, 326

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Filters/Housings	Pressure Boundary	PVC	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	None	None			J, 327
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		PVC	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	None	None			J, 327
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Heat Exchangers	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		PVC	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	None	None			J, 327

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Rubber	Plant Indoor Air (Ext)	None	None			J, 314, 327
			Treated Water (Int)	None	None			J, 314, 327
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
				Loss of Material - MIC	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Pump Casings	Pressure Boundary	PVC	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	None	None			J, 327

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
Restricting Orifices	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Tanks	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
				Loss of Material - General Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
				Loss of Material - MIC	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
		Fiberglass	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	None	None			J, 327
		PVC	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	None	None			J, 327
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B, 326

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B, 326
Thermowells	Pressure Boundary	PVC	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	None	None			J, 327
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
UV Light Housings	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Plant Indoor Air (Int)	None	None			J, 327

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.2-a	3.3.1-29	E, 305
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		PVC	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	None	None			J, 327
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305

Table 3.3.2-5 Auxiliary Systems- Demineralized Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Raw Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 306, 309, 315
				Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 306, 309, 315
				Loss of Material - General Corrosion	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 306, 309, 315
				Loss of Material - MIC	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 306, 309, 315
				Loss of Material - Pitting Corrosion	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 306, 309, 315
			Exposed to Weather (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Exposed to Weather (Ext)	None	None			J, 301, 306, 327
			Plant Indoor Air (Ext)	None	None			J, 301, 306, 327

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Housings	Pressure Boundary	Carbon Steel	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Carbon Steel	Fuel Oil (Ext)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Carbon Steel	Fuel Oil (Int)	Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Gas - Instrument Air (Int)	None	None			J, 327
			Outside Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Outside Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.H2.3-a	3.3.1-05	E, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.H2.3-a	3.3.1-05	E, 303
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Wet Air/Gas (Ext)	Loss of Material - Crevice Corrosion	System Condition Monitoring Program	VII.H2.4-a	3.3.1-05	A, 302
				Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.H2.4-a	3.3.1-05	A, 302, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.H2.4-a	3.3.1-05	A, 302

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Carbon Steel	Wet Air/Gas (Ext)	Loss of Material - MIC	System Condition Monitoring Program	VII.H2.4-a	3.3.1-05	A, 302, 312
				Loss of Material - Pitting Corrosion	System Condition Monitoring Program	VII.H2.4-a	3.3.1-05	A, 302
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303
				Loss of Material - MIC	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303
	Pressure Boundary	Carbon Steel	Fuel Oil (Ext)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Fuel Oil (Ext)	Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
Flame Arrestors	Pressure Boundary	Copper Alloy	Air/Gas (Int)	None	None			J, 327
			Exposed to Weather (Ext)	None	None			J, 327

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Pressure Boundary	Carbon Steel	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Outside Air Protected from Weather (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Fuel Oil (Int)	Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Heat Transfer	Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 304
				Loss of Material - Fretting	One-Time Inspection			J, 304
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	VII.C1.3-b	3.3.1-17	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	B
			Treated Water (Ext)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			J, 304
				Heat Transfer Degradation - Fouling	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Heat Transfer	Copper Alloy	Treated Water (Ext)	Loss of Material - Fretting	One-Time Inspection			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
			Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			J, 304
				Heat Transfer Degradation - Fouling	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
	Pressure Boundary	Carbon Steel	Lubricating Oil (Ext)	None	None			J, 327
			Lubricating Oil (Int)	None	None			J, 327

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
			Treated Water (Ext)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			H, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Ext)	Loss of Material - MIC	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
			Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			H, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
		Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 304
				Loss of Material - Fretting	One-Time Inspection			J, 304
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	VII.C1.3-b	3.3.1-17	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	B
			Treated Water (Ext)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			J, 304
				Heat Transfer Degradation - Fouling	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Fretting	One-Time Inspection			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Copper Alloy	Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			J, 304
				Heat Transfer Degradation - Fouling	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
Heaters/Coolers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			H, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heaters/Coolers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
Manifolds	Pressure Boundary	Carbon Steel	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
		Stainless Steel	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Fuel Oil (Int)	Loss of Material - MIC	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
			Plant Indoor Air (Ext)	None	None			J, 327
Piping and Fittings	Pressure Boundary	Carbon Steel	Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315
				Loss of Material - Galvanic Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315
				Loss of Material - General Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315
				Loss of Material - MIC	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315
				Loss of Material - Pitting Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315
			Exposed to Weather (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Fuel Oil (Ext)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Fuel Oil (Ext)	Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Lubricating Oil (Int)	None	None			J, 327
			Outside Air (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.H2.3-a	3.3.1-05	E, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.H2.3-a	3.3.1-05	E, 303
			Outside Air Protected from Weather (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			H, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	B

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303
				Loss of Material - MIC	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
		Rubber	Gas - Instrument Air (Int)	None	None			J, 314, 327
			Plant Indoor Air (Ext)	None	None	VII.F4.1-b	3.3.1-02	I, 314, 327
		Stainless Steel	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Fuel Oil (Int)	Loss of Material - MIC	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
			Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
Pump Casings	Pressure Boundary	Carbon Steel	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Lubricating Oil (Int)	None	None			J, 327

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
		Cast Iron	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 317
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 317
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312, 317
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312, 317
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 317
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 317
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 317
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 317
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 317
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 317
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.H2.5-A	3.3.1-07	E, 309, 312, 317
			Lubricating Oil (Int)	None	None			J, 327

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Cast Iron	Outside Air Protected from Weather (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			H, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15, 3.3.1-29	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15, 3.3.1-29	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C2.3-a	3.3.1-29	B

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Silencer	Pressure Boundary	Carbon Steel	Exposed to Weather (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303
				Loss of Material - MIC	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.H2.4-a	3.3.1-05	E, 302, 303
Tanks	Pressure Boundary	Carbon Steel	Air/Gas (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.H2.2-a	3.3.1-05	E, 303, 309, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.H2.2-a	3.3.1-05	E, 303, 309
			Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Buried Piping & Tanks Inspection	VIII.E.5-d	3.4.1-12	A, 315, 326
				Loss of Material - Galvanic Corrosion	Buried Piping & Tanks Inspection	VIII.E.5-d	3.4.1-12	A, 312, 315, 326
				Loss of Material - General Corrosion	Buried Piping & Tanks Inspection	VIII.E.5-d	3.4.1-12	A, 315, 326

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Buried in Ground (Ext)	Loss of Material - MIC	Buried Piping & Tanks Inspection	VIII.E.5-d	3.4.1-12	A, 315, 326
				Loss of Material - Pitting Corrosion	Buried Piping & Tanks Inspection	VIII.E.5-d	3.4.1-12	A, 315, 326
			Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	B, 324
					One-Time Inspection	VII.H2.5-a	3.3.1-07	A
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	B, 312, 324
					One-Time Inspection	VII.H2.5-a	3.3.1-07	A, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	B, 324
					One-Time Inspection	VII.H2.5-a	3.3.1-07	A
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	B, 324
					One-Time Inspection	VII.H2.5-a	3.3.1-07	A
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	B, 324
					One-Time Inspection	VII.H2.5-a	3.3.1-07	A
			Gas - Instrument Air (Int)	None	None			J, 327
			Lubricating Oil (Int)	None	None			J, 327

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Outside Air Protected from Weather (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			H, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.H2.1-a	3.3.1-15	D
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Valve Bodies	Pressure Boundary	Carbon Steel	Exposed to Weather (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Galvanic Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D, 312
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C, 312
				Loss of Material - General Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - MIC	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry	VII.H2.5-a	3.3.1-07	D
					One-Time Inspection	VII.H2.5-a	3.3.1-07	C
			Gas - Instrument Air (Int)	None	None			J, 327
			Lubricating Oil (Int)	None	None			J, 327
			Outside Air Protected from Weather (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			H, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
		Copper Alloy	Fuel Oil (Int)	Cracking - Stress Corrosion Cracking	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
				Loss of Material - Crevice Corrosion	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
				Loss of Material - MIC	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
			Gas - Instrument Air (Int)	None	None			J, 327

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - Stress Corrosion Cracking	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		Stainless Steel	Fuel Oil (Int)	Loss of Material - Crevice Corrosion	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
				Loss of Material - MIC	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	Fuel Oil Chemistry			J, 304
					One-Time Inspection			J, 304
			Gas - Instrument Air (Int)	None	None			J, 327

Table 3.3.2-6 Auxiliary Systems- Emergency Diesel Generators System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327

Table 3.3.2-7 Auxiliary Systems - Emergency Filtration Train System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Chillers	Heat Transfer	Copper Alloy	Gas - Refrigerant (Int)	None	None			J, 327
			Wet Air/Gas (Ext)	Loss of Material - Crevice Corrosion	System Condition Monitoring Program	VII.F1.2-a	3.3.1-05	A
				Loss of Material - MIC	System Condition Monitoring Program	VII.F1.2-a	3.3.1-05	A, 312
				Loss of Material - Pitting Corrosion	System Condition Monitoring Program	VII.F1.2-a	3.3.1-05	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
	Pressure Boundary	Copper Alloy	Gas - Refrigerant (Int)	None	None			J, 327
			Wet Air/Gas (Ext)	Loss of Material - Crevice Corrosion	System Condition Monitoring Program	VII.F1.2-a	3.3.1-05	A
				Loss of Material - MIC	System Condition Monitoring Program	VII.F1.2-a	3.3.1-05	A, 312
				Loss of Material - Pitting Corrosion	System Condition Monitoring Program	VII.F1.2-a	3.3.1-05	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304

Table 3.3.2-7 Auxiliary Systems - Emergency Filtration Train System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Damper Housings	Pressure Boundary	Carbon Steel	Air/Gas (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.F1.1-a	3.3.1-05	E, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.F1.1-a	3.3.1-05	E, 303
			Dry Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
Ductwork	Pressure Boundary	Carbon Steel	Air/Gas (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.F1.1-a	3.3.1-05	E, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.F1.1-a	3.3.1-05	E, 303
			Dry Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
Fan/Blower/ Housings	Pressure Boundary	Carbon Steel	Air/Gas (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.F1.1-a	3.3.1-05	E, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.F1.1-a	3.3.1-05	E, 303
			Dry Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327

Table 3.3.2-7 Auxiliary Systems - Emergency Filtration Train System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Filters/Housings	Component Structural Support	Carbon Steel	Air/Gas (Ext)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.I.1-b	3.3.1-05	E, 301, 305, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.I.1-b	3.3.1-05	E, 301, 305
	Pressure Boundary	Carbon Steel	Air/Gas (Ext)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.I.1-b	3.3.1-05	E, 301, 305, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.I.1-b	3.3.1-05	E, 301, 305,
Heat Exchangers	Heat Transfer	Copper Alloy	Air/Gas (Ext)	None	None			J, 327
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	VII.C1.3-b	3.3.1-17	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A

Table 3.3.2-7 Auxiliary Systems - Emergency Filtration Train System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Heat Transfer	Copper Alloy	Raw Water (Int)	Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	B
	Pressure Boundary	Carbon Steel	Gas - Refrigerant (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
		Copper Alloy	Air/Gas (Ext)	None	None			J, 327
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	VII.C1.3-b	3.3.1-17	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A

Table 3.3.2-7 Auxiliary Systems - Emergency Filtration Train System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	B
Piping and Fittings	Pressure Boundary	Stainless Steel	Air/Gas (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
Valve Bodies	Pressure Boundary	Stainless Steel	Air/Gas (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
Ventilation Seal	Pressure Boundary	Elastomers (Rubber, Neoprene, Silicone, Etc.)	Air/Gas (Int)	None	None	VII.F1.1-b	3.3.1-02	I, 314, 327
			Plant Indoor Air (Ext)	None	None	VII.F1.1-b	3.3.1-02	I, 314, 327

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Bolting Integrity	VII.C1.1-b	3.3.1-18	E, 301, 306, 309, 315
				Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.C1.1-b	3.3.1-18	E, 301, 306, 309, 312, 315
				Loss of Material - General Corrosion	Bolting Integrity	VII.C1.1-b	3.3.1-18	E, 301, 306, 309, 315
				Loss of Material - MIC	Bolting Integrity	VII.C1.1-b	3.3.1-18	E, 301, 306, 309, 315
				Loss of Material - Pitting Corrosion	Bolting Integrity	VII.C1.1-b	3.3.1-18	E, 301, 306, 309, 315
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Housings	Filtration	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
Filters/Strainers	Filtration	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Carbon Steel	Raw Water (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
Flow Element	Flow Restriction	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Flow Restriction	Stainless Steel	Raw Water (Int)	Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
Heat Exchangers	Heat Transfer	Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 304
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	VII.C1.3-b	3.3.1-17	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A, 312

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Heat Transfer	Copper Alloy	Raw Water (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	B
	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
		Copper Alloy	Lubricating Oil (Ext)	Heat Transfer Degradation - Fouling	One-Time Inspection			J, 304
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	VII.C1.3-b	3.3.1-17	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	B
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 312

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Raw Water (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Piping and Fittings	Pressure Boundary	Carbon Steel	Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 315
				Loss of Material - Galvanic Corrosion	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 312, 315
				Loss of Material - General Corrosion	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 315
				Loss of Material - MIC	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 315
				Loss of Material - Pitting Corrosion	Buried Piping & Tanks Inspection	VII.C1.1-b	3.3.1-18	A, 315
			Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 312

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
Restricting Orifices	Flow Restriction	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Stainless Steel	Raw Water (Int)	Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.4-a	3.3.1-17	A
Tanks	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Valve Bodies	Pressure Boundary	Carbon Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
		Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 302, 305, 317
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17, 3.3.1-29	E, 302, 305, 312, 317
				Loss of Material - General Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 302, 305, 317

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Cast Iron	Wet Air/Gas (Int)	Loss of Material - MIC	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 302, 305, 317
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 302, 305, 317
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.2-a	3.3.1-29	A, 302, 317
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.2-a	3.3.1-29	B
		Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327

Table 3.3.2-8 Auxiliary Systems- Emergency Service Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 302, 305
				Loss of Material - MIC	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 302, 305
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 302, 305

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 305, 306, 309, 315
				Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 305, 306, 309, 315
				Loss of Material - General Corrosion	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 305, 306, 309, 315
				Loss of Material - MIC	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 305, 306, 309, 315
				Loss of Material - Pitting Corrosion	Bolting Integrity	VII.H1.1-b	3.3.1-18	E, 301, 305, 306, 309, 315
			Exposed to Weather (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Exposed to Weather (Ext)	None	None			J, 301, 306, 327
			Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Filters/Strainers	Filtration	Bronze	Raw Water (Ext)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Bronze	Raw Water (Int)	Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
		Gray Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 312, 317
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Gray Cast Iron	Plant Indoor Air (Ext)	Loss of Material - General Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 317
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Galvanic Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Bronze	Raw Water (Ext)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
		Gray Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 312, 317
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 317
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Gray Cast Iron	Raw Water (Int)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312
Fire Hydrants	Pressure Boundary	Ductile Iron	Exposed to Weather (Ext)	Loss of Material - Galvanic Corrosion	Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312,317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312,317
				Loss of Material - General Corrosion	Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fire Hydrants	Pressure Boundary	Ductile Iron	Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Galvanic Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
Flexible Connections	Pressure Boundary	Bronze	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
		Stainless Steel	Gas - Halon (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Water System	VII.G.6-b	3.3.1-21	A, 312
Heat Exchangers	Heat Transfer	Copper Alloy	Glycol Corrosion-Inhibited Treated Water (Ext)	Heat Transfer Degradation - Fouling	Fire Protection			J, 319
				Loss of Material - Crevice Corrosion	Fire Protection			J, 319
				Loss of Material - MIC	Fire Protection			J, 319
				Loss of Material - Pitting Corrosion	Fire Protection			J, 319
				Loss of Material - Selective Leaching	Fire Protection			J, 319
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Fire Protection			J, 319
				Loss of Material - Crevice Corrosion	Fire Protection			J, 319

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Heat Transfer	Copper Alloy	Raw Water (Int)	Loss of Material - MIC	Fire Protection			J, 319
				Loss of Material - Pitting Corrosion	Fire Protection			J, 319
				Loss of Material - Selective Leaching	Fire Protection			J, 319
	Pressure Boundary	Copper Alloy	Glycol Corrosion-Inhibited Treated Water (Ext)	Heat Transfer Degradation - Fouling	Fire Protection			J, 319
				Loss of Material - Crevice Corrosion	Fire Protection			J, 319
				Loss of Material - MIC	Fire Protection			J, 319
				Loss of Material - Pitting Corrosion	Fire Protection			J, 319
				Loss of Material - Selective Leaching	Fire Protection			J, 319
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Fire Protection			J, 319
				Loss of Material - Crevice Corrosion	Fire Protection			J, 319
				Loss of Material - MIC	Fire Protection			J, 319

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - Pitting Corrosion	Fire Protection			J, 319
				Loss of Material - Selective Leaching	Fire Protection			J, 319
		Gray Cast Iron	Glycol Corrosion-Inhibited Treated Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection			J, 319
				Loss of Material - Galvanic Corrosion	Fire Protection			J, 319
				Loss of Material - General Corrosion	Fire Protection			J, 319
				Loss of Material - MIC	Fire Protection			J, 319
				Loss of Material - Pitting Corrosion	Fire Protection			J, 319
				Loss of Material - Selective Leaching	Fire Protection			J, 319
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 312, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Gray Cast Iron	Raw Water (Ext)	Heat Transfer Degradation - Fouling	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 312, 319
				Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319
				Loss of Material - Galvanic Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319
				Loss of Material - General Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 312, 319
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319
				Loss of Material - Galvanic Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319
				Loss of Material - General Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 319

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Gray Cast Iron	Raw Water (Int)	Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 309, 312, 319
Manifolds	Pressure Boundary	Carbon Steel	Gas - Halon (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 312
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-a	3.3.1-21	E, 319
					Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - Galvanic Corrosion	Fire Protection	VII.G.6-a	3.3.1-21	E, 319
					Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Protection	VII.G.6-a	3.3.1-21	E, 319
					Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-a	3.3.1-21	E, 319
					Fire Water System	VII.G.6-a	3.3.1-21	A

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-a	3.3.1-21	E, 319
					Fire Water System	VII.G.6-a	3.3.1-21	A
		Stainless Steel	Gas - Halon (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
Nozzles	Flow Restriction	Copper Alloy	Atmosphere/ Weather (Ext)	None	None			J, 327
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Selective Leaching	Fire Water System	VII.G.6-b	3.3.1-21	A, 302, 312
	Pressure Boundary	Copper Alloy	Atmosphere/ Weather (Ext)	None	None			J, 327

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Nozzles	Pressure Boundary	Copper Alloy	Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Selective Leaching	Fire Water System	VII.G.6-b	3.3.1-21	A, 302, 312
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	Fire Water System	VII.I.1-b	3.3.1-05	E, 303
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - Galvanic Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A, 302
				Loss of Material - Galvanic Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A, 302
				Loss of Material - General Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A, 302
				Loss of Material - MIC	Fire Water System	VII.G.6-a	3.3.1-21	A, 302
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A, 302
		Galvanized Steel	Gas - Halon (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 312, 320
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 320
				Loss of Material - General Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 320
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 320
		Gray Cast Iron	Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315, 317
				Loss of Material - Galvanic Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315, 317
				Loss of Material - General Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315, 317

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Gray Cast Iron	Buried in Ground (Ext)	Loss of Material - MIC	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315, 317
				Loss of Material - Pitting Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 315, 317
				Loss of Material - Selective Leaching	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	A, 312, 315, 317
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - Galvanic Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Water System	VII.G.6-a	3.3.1-21	A, 312
		Stainless Steel	Gas - Halon (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-a	3.3.1-21	A

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Raw Water (Int)	Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
Pump Casings	Pressure Boundary	Gray Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312, 317
				Loss of Material - General Corrosion	Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 317
				Loss of Material - Selective Leaching	Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312, 317
			Raw Water (Ext)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Galvanic Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Gray Cast Iron	Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Galvanic Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312
Restricting Orifices	Flow Restriction	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-a	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-a	3.3.1-21	A
Sprinkler Heads	Flow Restriction	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Water System	VII.G.6-b	3.3.1-21	A, 312
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Sprinkler Heads	Flow Restriction	Copper Alloy	Wet Air/Gas (Int)	Loss of Material - Selective Leaching	Fire Water System	VII.G.6-b	3.3.1-21	A, 302, 312
	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Water System	VII.G.6-b	3.3.1-21	A, 312
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Selective Leaching	Fire Water System	VII.G.6-b	3.3.1-21	A, 302, 312
Tanks	Pressure Boundary	Carbon Steel	Gas - Halon (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 312
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - General Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
Valve Bodies	Pressure Boundary	Carbon Steel	Air/Gas (Int)	Loss of Material - Galvanic Corrosion	Fire Water System			J
				Loss of Material - General Corrosion	Fire Water System			J
			Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315
				Loss of Material - Galvanic Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315
				Loss of Material - General Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315
				Loss of Material - MIC	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315
				Loss of Material - Pitting Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 312
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - General Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Galvanic Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Galvanic Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - General Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
		Cast Iron	Gas - Halon (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 312, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
		Copper Alloy	Air/Gas (Int)	None	None			J, 327
			Gas - Halon (Int)	None	None			J, 327
			Outside Air Protected from Weather (Ext)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - MIC	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Pitting Corrosion	Fire Water System	VII.G.6-b	3.3.1-21	A, 302
				Loss of Material - Selective Leaching	Fire Water System	VII.G.6-b	3.3.1-21	A, 302, 312
		Gray Cast Iron	Buried in Ground (Ext)	Loss of Material - Crevice Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315, 317
				Loss of Material - Galvanic Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315, 317
				Loss of Material - General Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315, 317
				Loss of Material - MIC	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315, 317

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Gray Cast Iron	Buried in Ground (Ext)	Loss of Material - Pitting Corrosion	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 315, 317
				Loss of Material - Selective Leaching	Buried Piping & Tanks Inspection	VII.H1.1-b	3.3.1-18	C, 312, 315, 317
			Exposed to Weather (Ext)	Loss of Material - Galvanic Corrosion	Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 312, 317
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 312, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 303, 317
					Fire Water System	VII.I.1-b	3.3.1-05	E, 303, 317
					System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Gray Cast Iron	Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Galvanic Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - General Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Selective Leaching	Fire Protection	VII.G.6-b	3.3.1-21	E, 312, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A, 312
		Stainless Steel	Air/Gas (Int)	None	None			J, 327
			Gas - Halon (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A

Table 3.3.2-9 Auxiliary Systems- Fire System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Raw Water (Int)	Loss of Material - MIC	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A
				Loss of Material - Pitting Corrosion	Fire Protection	VII.G.6-b	3.3.1-21	E, 319
					Fire Water System	VII.G.6-b	3.3.1-21	A

Table 3.3.2-10 Auxiliary Systems - Fuel Pool Cooling and Cleanup - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Heat Exchangers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A, 312
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B
				Loss of Material - MIC	One-Time Inspection	VII.A4.4-b	3.3.1-01	A, 312
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B

Table 3.3.2-10 Auxiliary Systems - Fuel Pool Cooling and Cleanup - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.1-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.1-a	3.3.1-01	B

Table 3.3.2-10 Auxiliary Systems - Fuel Pool Cooling and Cleanup - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.A4.1-a	3.3.1-01	A, 312
					Plant Chemistry Program	VII.A4.1-a	3.3.1-01	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.1-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.1-a	3.3.1-01	B
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-10 Auxiliary Systems - Fuel Pool Cooling and Cleanup - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.1-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.1-a	3.3.1-01	B
				Loss of Material - MIC	One-Time Inspection	VII.A4.1-a	3.3.1-01	A, 312
					Plant Chemistry Program	VII.A4.1-a	3.3.1-01	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.1-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.1-a	3.3.1-01	B

Table 3.3.2-10 Auxiliary Systems - Fuel Pool Cooling and Cleanup - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.2-a	3.3.1-08	B
Tanks	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B, 326

Table 3.3.2-10 Auxiliary Systems - Fuel Pool Cooling and Cleanup - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B, 312, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B, 326
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-10 Auxiliary Systems - Fuel Pool Cooling and Cleanup - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J. 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.1-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.1-a	3.3.1-01	B
				Loss of Material - MIC	One-Time Inspection	VII.A4.1-a	3.3.1-01	A, 312
					Plant Chemistry Program	VII.A4.1-a	3.3.1-01	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.1-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.1-a	3.3.1-01	B
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-10 Auxiliary Systems - Fuel Pool Cooling and Cleanup - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304

Table 3.3.2-10 Auxiliary Systems - Fuel Pool Cooling and Cleanup - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
					Plant Chemistry Program			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.3-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.3-a	3.3.1-01	B
				Loss of Material - MIC	One-Time Inspection	VII.A4.3-a	3.3.1-01	A, 312
					Plant Chemistry Program	VII.A4.3-a	3.3.1-01	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.3-a	3.3.1-01	A
					Plant Chemistry Program	VII.A4.3-a	3.3.1-01	B

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Chillers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A, 325
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A, 312, 325
				Loss of Material - General Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A, 325
				Loss of Material - MIC	One-Time Inspection	VII.A4.4-b	3.3.1-01	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A, 325
		Copper Alloy	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Chillers	Pressure Boundary	Copper Alloy	Wet Air/Gas (Ext)	Loss of Material - Crevice Corrosion	System Condition Monitoring Program	VII.F2.2-a	3.3.1-05	A, 307
				Loss of Material - MIC	System Condition Monitoring Program	VII.F2.2-a	3.3.1-05	A, 307, 312
				Loss of Material - Pitting Corrosion	System Condition Monitoring Program	VII.F2.2-a	3.3.1-05	A, 307
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304, 307
Damper Housings	Pressure Boundary	Carbon Steel	Air/Gas (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.F2.1-a	3.3.1-05	E, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.F2.1-a	3.3.1-05	E, 303
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
Ductwork	Pressure Boundary	Carbon Steel	Air/Gas (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.F2.1-a	3.3.1-05	E, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.F2.1-a	3.3.1-05	E, 303
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fan/Blower/ Housings	Pressure Boundary	Carbon Steel	Air/Gas (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.F2.1-a	3.3.1-05	E, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.F2.1-a	3.3.1-05	E, 303
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Filters/Strainers	Filtration	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
					One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B, 312
					One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
					One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
					One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
Gauges (Flow, Level and Sight)	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
Heaters/Coolers	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heaters/Coolers	Pressure Boundary	Copper Alloy	Treated Water or Steam (Int)	Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
HVAC Units	Heat Transfer	Copper Alloy	Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	VII.C1.3-b	3.3.1-17	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	B
			Wet Air/Gas (Ext)	Loss of Material - Crevice Corrosion	System Condition Monitoring Program	VII.F2.2-a	3.3.1-05	A, 307
				Loss of Material - MIC	System Condition Monitoring Program	VII.F2.2-a	3.3.1-05	A, 307, 312
				Loss of Material - Pitting Corrosion	System Condition Monitoring Program	VII.F2.2-a	3.3.1-05	A, 307
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304, 307

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
HVAC Units	Pressure Boundary	Carbon Steel	Air/Gas (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.F2.1-a	3.3.1-05	E, 303, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.F2.1-a	3.3.1-05	E, 303
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Heat Transfer Degradation - Fouling	Open-Cycle Cooling Water System	VII.C1.3-b	3.3.1-17	A
				Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	B

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
HVAC Units	Pressure Boundary	Copper Alloy	Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
			Wet Air/Gas (Ext)	Loss of Material - Crevice Corrosion	System Condition Monitoring Program	VII.F2.2-a	3.3.1-05	A, 307
				Loss of Material - MIC	System Condition Monitoring Program	VII.F2.2-a	3.3.1-05	A, 307, 312
				Loss of Material - Pitting Corrosion	System Condition Monitoring Program	VII.F2.2-a	3.3.1-05	A, 307
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304, 307
Instrumentation	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	B

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Wet Air/Gas (Ext)	Loss of Material - Crevice Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 307, 312
				Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 307, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 307
				Loss of Material - MIC	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 307, 312
				Loss of Material - Pitting Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 307, 312
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Copper Alloy	Treated Water or Steam (Int)	Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
			Treated Water or Steam (Int)	Cracking - SCC/IGA	Closed-Cycle Cooling Water	VII.E4.1-c	3.3.1-27	E, 305
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	D
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	D
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
					One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 325

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15, 3.3.1-29	B, 312
					One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312, 325
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
					One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
					One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 325
		Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15, 3.3.1-29	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Cast Iron	Treated Water or Steam (Int)	Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C2.3-a	3.3.1-29	B
Steam Traps	Pressure Boundary	Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	D
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15, 3.3.1-29	D, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	D
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	D
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C2.3-a	3.3.1-29	D
Tanks	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 325, 326
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 312, 325, 326

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 325, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 312, 325, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 325, 326
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	D
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	D, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	D
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.F2.3-a	3.3.1-15	D
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 325, 326
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 325, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 325, 326

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 325, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 325, 326
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
		Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 317, 325, 326
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 317, 325, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 317, 325, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 317, 325, 326

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Cast Iron	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 317, 325, 326
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C2.3-a	3.3.1-29	D
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.3-a	3.3.1-01	A, 325

Table 3.3.2-11 Auxiliary Systems - Heating and Ventilation - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.A4.3-a	3.3.1-01	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.3-a	3.3.1-01	A, 325
			Treated Water or Steam (Int)	Cracking - SCC/IGA	Closed-Cycle Cooling Water	VII.E4.3-a	3.3.1-27	E, 305
				Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B

Table 3.3.2-12 Auxiliary Systems- Instrument and Service Air System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Gauges (Flow, Level and Sight)	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
Piping and Fittings	Pressure Boundary	Carbon Steel	Gas - Compressed Air (Int)	Loss of Material - Crevice Corrosion	Compressed Air Monitoring	VII.D.1-a	3.3.1-19	B, 312
				Loss of Material - Galvanic Corrosion	Compressed Air Monitoring	VII.D.1-a	3.3.1-19	B, 312
				Loss of Material - General Corrosion	Compressed Air Monitoring	VII.D.1-a	3.3.1-19	B

Table 3.3.2-12 Auxiliary Systems- Instrument and Service Air System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Gas - Compressed Air (Int)	Loss of Material - MIC	Compressed Air Monitoring	VII.D.1-a	3.3.1-19	B, 312
				Loss of Material - Pitting Corrosion	Compressed Air Monitoring	VII.D.1-a	3.3.1-19	B
			Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327

Table 3.3.2-12 Auxiliary Systems- Instrument and Service Air System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
Tanks	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B

Table 3.3.2-12 Auxiliary Systems- Instrument and Service Air System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B
Valve Bodies	Pressure Boundary	Carbon Steel	Gas - Compressed Air (Int)	Loss of Material - Crevice Corrosion	Compressed Air Monitoring	VII.D.2-a	3.3.1-19	B, 312
				Loss of Material - Galvanic Corrosion	Compressed Air Monitoring	VII.D.2-a	3.3.1-19	B, 312
				Loss of Material - General Corrosion	Compressed Air Monitoring	VII.D.2-a	3.3.1-19	B
				Loss of Material - MIC	Compressed Air Monitoring	VII.D.2-a	3.3.1-19	B, 312
				Loss of Material - Pitting Corrosion	Compressed Air Monitoring	VII.D.2-a	3.3.1-19	B
			Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-12 Auxiliary Systems- Instrument and Service Air System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Gas - Compressed Air (Int)	Loss of Material - Crevice Corrosion	Compressed Air Monitoring			J, 304
				Loss of Material - MIC	Compressed Air Monitoring			J, 304
				Loss of Material - Pitting Corrosion	Compressed Air Monitoring			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
			Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		Stainless Steel	Gas - Compressed Air (Int)	Loss of Material - Crevice Corrosion	Compressed Air Monitoring	VII.E4.1-a	3.3.1-08	E, 307, 309
				Loss of Material - MIC	Compressed Air Monitoring	VII.E4.1-a	3.3.1-08	E, 307, 309, 312

Table 3.3.2-12 Auxiliary Systems- Instrument and Service Air System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Gas - Compressed Air (Int)	Loss of Material - Pitting Corrosion	Compressed Air Monitoring	VII.E4.1-a	3.3.1-08	E, 307, 309
			Gas - Instrument Air (Int)	None	None			J, 327
			Gas - Nitrogen (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B

Table 3.3.2-13 Auxiliary Systems- Radwaste Solid and Liquid System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
			Primary Containment Air (Ext)	None	None			J, 301, 306, 327
Heat Exchangers	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 325
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 325
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 325

Table 3.3.2-13 Auxiliary Systems- Radwaste Solid and Liquid System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 325
Piping and Fittings	Pressure Boundary	Carbon Steel	Concrete (Ext)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325

Table 3.3.2-13 Auxiliary Systems- Radwaste Solid and Liquid System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Gray Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C2.3-a	3.3.1-15	E, 305, 309
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C2.3-a	3.3.1-15, 3.3.1-29	E, 305, 309, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.C2.3-a	3.3.1-15, 3.3.1-29	E, 305, 309, 312
				Loss of Material - MIC	One-Time Inspection	VII.C2.3-a	3.3.1-15, 3.3.1-29	E, 305, 309, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C2.3-a	3.3.1-15	E, 305, 309
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C2.3-a	3.3.1-29	D
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325

Table 3.3.2-13 Auxiliary Systems- Radwaste Solid and Liquid System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Structural Support for Non-Safety Related	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 325
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312, 325
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312, 325

Table 3.3.2-13 Auxiliary Systems- Radwaste Solid and Liquid System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.2-a	3.3.1-08	A, 325
		Gray Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C2.3-a	3.3.1-15	E, 305
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C2.3-a	3.3.1-15, 3.3.1-29	E, 305, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.C2.3-a	3.3.1-15, 3.3.1-29	E, 305, 312
				Loss of Material - MIC	One-Time Inspection	VII.C2.3-a	3.3.1-15, 3.3.1-29	E, 305, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C2.3-a	3.3.1-15	E, 305
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C2.3-a	3.3.1-29	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 325

Table 3.3.2-13 Auxiliary Systems- Radwaste Solid and Liquid System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 325
Restricting Orifices	Flow Restriction	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 325
Tanks	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-13 Auxiliary Systems- Radwaste Solid and Liquid System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 325
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 312, 325
				Loss of Material - General Corrosion	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 325
				Loss of Material - MIC	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 325
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 325, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 312, 325, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 325, 326
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312

Table 3.3.2-13 Auxiliary Systems- Radwaste Solid and Liquid System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 325
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 325
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 325
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 327
			Plant Indoor Air (Ext)	None	None			J, 327
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 325
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 325
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 325

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
			Primary Containment Air (Ext)	None	None			J, 301, 306, 327
Flexible Connections	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flexible Connections	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
Flow Element	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	B
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
Heat Exchangers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.A4.4-a	3.3.1-15	B
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Primary Containment Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	D
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	D, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	D

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.3-a	3.3.1-15	B
Tanks	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.4-a	3.3.1-15	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 305, 307
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 305, 307
				Loss of Material - General Corrosion	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 305, 307
				Loss of Material - MIC	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 305, 307
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C2.4-a	3.3.1-15	E, 305, 307
Thermowells	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
				Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.1-a	3.3.1-15	B
		Stainless Steel	Primary Containment Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	D
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	D, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	D
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B, 312
				Loss of Material - General Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B, 312
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - MIC	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B
				Loss of Material - MIC	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B, 312

Table 3.3.2-14 Auxiliary Systems - Reactor Building Closed Cooling Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	Closed-Cycle Cooling Water	VII.C2.2-a	3.3.1-15	B

Table 3.3.2-15 Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
			Primary Containment Air (Ext)	None	None			J, 301, 306, 327
Flow Element	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E3.1-a	3.3.1-26	E, 313
					Plant Chemistry Program	VII.E3.1-a	3.3.1-26	E, 313
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-15 Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A, 312
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B
				Loss of Material - MIC	One-Time Inspection	VII.A4.4-b	3.3.1-01	A, 312
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.4-b	3.3.1-01	A
					Plant Chemistry Program	VII.A4.4-b	3.3.1-01	B

Table 3.3.2-15 Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E3.1-a	3.3.1-26	E, 313
					Plant Chemistry Program	VII.E3.1-a	3.3.1-26	E, 313
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.E.1-a	3.4.1-06	A, 326

Table 3.3.2-15 Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Primary Containment Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E3.1-a	3.3.1-26	E, 313
					Plant Chemistry Program	VII.E3.1-a	3.3.1-26	E, 313
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-15 Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Pump Casings	Pressure Boundary	Cast Austenitic Stainless Steel (CASS)	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E3.2-a	3.3.1-26	E, 313
					Plant Chemistry Program	VII.E3.2-a	3.3.1-26	E, 313
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 323
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 323
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 323
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312, 323
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 323
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 323
Restricting Orifices	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E3.1-a	3.3.1-26	E, 313
					Plant Chemistry Program	VII.E3.1-a	3.3.1-26	E, 313
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-15 Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-15 Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E3.1-a	3.3.1-26	E, 313
					Plant Chemistry Program	VII.E3.1-a	3.3.1-26	E, 313
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.E.2-a	3.4.1-06	A, 326

Table 3.3.2-15 Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
		Cast Austenitic Stainless Steel (CASS)	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E3.1-a	3.3.1-26	E, 309, 313, 323
					Plant Chemistry Program	VII.E3.1-a	3.3.1-26	E, 309, 313, 323
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 323
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 323

Table 3.3.2-15 Auxiliary Systems - Reactor Water Cleanup System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Cast Austenitic Stainless Steel (CASS)	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 323
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312, 323
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 323
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 323
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Primary Containment Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E3.1-a	3.3.1-26	E, 309, 313
					Plant Chemistry Program	VII.E3.1-a	3.3.1-26	E, 309, 313
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Expansion Joints	Pressure Boundary	Rubber	Plant Indoor Air (Ext)	None	None			J, 314, 327
			Raw Water (Int)	None	None			J, 314, 327
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Filters/Strainers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.6-a	3.3.1-17	A
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.1-a	3.3.1-29	B
Heat Exchangers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	B

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Raw Water (Int)	Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.1-a	3.3.1-29	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17, 3.3.1-29	A, 312

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.5-a	3.3.1-17	A
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	C
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	C, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	C
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	C
Restricting Orifices	Flow Restriction	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Carbon Steel	Raw Water (Int)	Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17, 3.3.1-29	A, 312

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Raw Water (Int)	Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.1-a	3.3.1-17	A
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
		Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Cast Iron	Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 317
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 312, 317
				Loss of Material - Galvanic Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 312, 317
				Loss of Material - General Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 317
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 317
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A, 317
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.2-a	3.3.1-29	B, 317
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A

Table 3.3.2-16 Auxiliary Systems - Service and Seal Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.2-a	3.3.1-29	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17, 3.3.1-29	A, 312
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.2-a	3.3.1-17	A

Table 3.3.2-17 Auxiliary Systems - Standby Liquid Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Accumulators	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Rubber	Gas - Nitrogen (Int)	None	None			J, 314, 327
			Treated Water (Ext)	None	None			J, 314, 327

Table 3.3.2-17 Auxiliary Systems - Standby Liquid Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
			Primary Containment Air (Ext)	None	None			J, 301, 306, 327
Manifolds	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-17 Auxiliary Systems - Standby Liquid Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Primary Containment Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B

Table 3.3.2-17 Auxiliary Systems - Standby Liquid Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Pump Casings	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
Tanks	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B, 312, 326

Table 3.3.2-17 Auxiliary Systems - Standby Liquid Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B, 326
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 309, 326
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 303, 307, 309, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 303, 307, 309, 326
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312

Table 3.3.2-17 Auxiliary Systems - Standby Liquid Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	A, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	A
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	B
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326

Table 3.3.2-17 Auxiliary Systems - Standby Liquid Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 312, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 312, 326
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 326
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 326
		Cast Austenitic Stainless Steel (CASS)	Plant Indoor Air (Ext)	None	None			J, 327
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 323
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 323
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312, 323
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312, 323
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 323
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 323

Table 3.3.2-17 Auxiliary Systems - Standby Liquid Control System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 327
			Primary Containment Air (Ext)	None	None			J, 327
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	VII.E4.3-a	3.3.1-27	E, 308
					Plant Chemistry Program	VII.E4.3-a	3.3.1-27	B
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D
				Loss of Material - MIC	One-Time Inspection	VII.E4.1-a	3.3.1-08	C, 312
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D, 312
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.E4.1-a	3.3.1-08	C
					Plant Chemistry Program	VII.E4.1-a	3.3.1-08	D

Table 3.3.2-18 Auxiliary Systems - Wells and Domestic Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306, 312
				Loss of Material - General Corrosion	Bolting Integrity	VII.I.2-a	3.3.1-24	A, 301, 306
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 301, 306, 327
Piping and Fittings	Pressure Boundary	Carbon Steel	Concrete (Ext)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
				Loss of Material - Erosion	One-Time Inspection	VII.C1.1-a	3.3.1-17, 3.3.1-29	E, 305, 312
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
				Loss of Material - General Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
				Loss of Material - MIC	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305

Table 3.3.2-18 Auxiliary Systems - Wells and Domestic Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Raw Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.1-a	3.3.1-17	E, 305
		Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 309
				Loss of Material - Erosion	One-Time Inspection	VII.C1.5-a	3.3.1-17, 3.3.1-29	E, 309, 312
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17, 3.3.1-29	E, 309, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 309
				Loss of Material - MIC	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 309
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 309
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.5-a	3.3.1-29	D
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304

Table 3.3.2-18 Auxiliary Systems - Wells and Domestic Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Copper Alloy	Raw Water (Int)	Loss of Material - Erosion	One-Time Inspection			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 305
				Loss of Material - Erosion	One-Time Inspection	VII.C1.5-a	3.3.1-17, 3.3.1-29	E, 305, 312
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17, 3.3.1-29	E, 305, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 305
				Loss of Material - MIC	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 305
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 305

Table 3.3.2-18 Auxiliary Systems - Wells and Domestic Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305
				Loss of Material - Erosion	One-Time Inspection	VII.C1.2-a	3.3.1-17, 3.3.1-29	E, 305, 312
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17, 3.3.1-29	E, 305, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305
				Loss of Material - MIC	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.2-a	3.3.1-17	E, 305
		Cast Iron	Concrete (Ext)	None	None			J, 327
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 312, 317
				Loss of Material - General Corrosion	System Condition Monitoring Program	VII.I.1-b	3.3.1-05	A, 317
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 309
				Loss of Material - Erosion	One-Time Inspection	VII.C1.5-a	3.3.1-17, 3.3.1-29	E, 309, 312

Table 3.3.2-18 Auxiliary Systems - Wells and Domestic Water System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Cast Iron	Raw Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17, 3.3.1-29	E, 309, 312
				Loss of Material - General Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 309
				Loss of Material - MIC	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 309
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.C1.5-a	3.3.1-17	E, 309
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.5-a	3.3.1-29	D
		Copper Alloy	Plant Indoor Air (Ext)	None	None			J, 327
			Raw Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 304
				Loss of Material - Erosion	One-Time Inspection			J, 304
				Loss of Material - MIC	One-Time Inspection			J, 304
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 304
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 304

Notes for Tables 3.3.2-1 through 3.3.2-18

A Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

B Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

C Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

D Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

E Consistent with NUREG-1801 for material, environment and aging effect, but a different aging management program is credited.

F Material not in NUREG-1801 for this component.

G Environment not in NUREG-1801 for this component and material.

H Aging effect not in NUREG-1801 for this component, material, and environment combination.

I Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.

J Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-specific notes:

301 Internal aging effects/mechanisms are not applicable. For the component type, an internal environment is not applicable (e.g. bolting, walls, clad vessels, structural steel, etc.).

302 Components with a “wet air/gas” environment are analyzed in the same manner as raw water for conservatism.

303 Plant specific program identified in NUREG-1801. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

304 Material/environment combination and/or aging effects/mechanism not identified in NUREG-1801. The aging management program(s) referenced are appropriate for the aging effects/mechanisms identified and provide assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

305 Program different than identified in NUREG-1801. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

306 There are no bolts with a specified minimum yield strength >150 ksi in this system. Therefore, SCC is not an applicable aging effect/mechanism. The Bolting Integrity Program manages loss of preload. See Table 3.1.1 line item 3.1.1-26, Table 3.2.1 line item 3.2.1-18, Table 3.3.1 line item 3.3.1-24, or Table 3.4.1 line item 3.4.1-08 as applicable to the respective system for additional information.

307 Components with a "wet air/gas" environment are analyzed in the same manner as treated water for conservatism.

308 Program different than identified in NUREG-1801. The One-Time Inspection Program is used since the BWR Stress Corrosion Cracking Program is not applicable to this component. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

309 Component is different but consistent with NUREG-1801 for material, environment and aging effect. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

310 Aging effect/mechanism is applicable but does not require management since the intended function for this CDR component is post accident iodine plate-out and holdup. Main Condenser structural integrity is continuously demonstrated during normal plant operation thus the intended function is maintained.

311 Intentionally left blank.

312 Aging mechanism not in NUREG-1801 for this component, material and environment combination.

313 IAW the GALL, no IGSCC inspection is recommended for plants that have piping made of material that is resistant to IGSCC. Since MNGP satisfies this criterion and has satisfactorily completed all actions requested in NRC GL 89-10, the Plant Chemistry Program and the One-Time Inspection Program are used in lieu of the Reactor Water Cleanup Program to manage this potential aging effect/mechanism. These aging management programs are appropriate for the aging effects/mechanisms identified and provide assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

314 These Elastomers (neoprene, rubber, etc.) components are indoors and not subject to UV or ozone, nor are they in locations that are subject to radiation exposure. These locations are also not subject to temperatures where change in material properties or cracking could occur (>95 degrees F). Therefore no aging management is required.

315 Components that are buried in the ground are analyzed in the same manner as raw water (damp soil containing groundwater) for conservatism.

316 Intentionally left blank.

317 The material identified in this NUREG-1801 line item does not include cast iron or gray cast iron. Materials science supports the fact that the aging effects/mechanisms for cast iron are the same as those for carbon steel and low alloy steel with the exception that gray cast iron is also susceptible to selective leaching.

318 Intentionally left blank.

319 NUREG-1801, Volume 2, Chapter VII (Auxiliary Systems), Section G.6 (Fire Protection) does not address this environment for the mechanical portion of the “Fire Protection” AMP (XI.M26). The aging management program referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

320 No credit is taken for protective coatings of components such as paint, galvanized pipe, etc., in mechanical aging management evaluations.

321 Intentionally left blank.

322 Intentionally left blank.

323 The material identified in this NUREG-1801 line item is stainless steel or CASS. The aging effects/mechanisms for stainless steel are the same as those for CASS for loss of material and cracking and, conversely, the aging effects/mechanisms of CASS are the same as those for stainless steel for loss of material and cracking.

324 The Fuel Oil Chemistry Program includes provisions for performing tests and inspections for detecting tank wall loss.

325 In some cases where the Plant Chemistry Program is not a viable option and aging effects/mechanisms are not expected to be significant, the One-Time Inspection alone is credited for managing aging effects. The One-Time Inspection Program has provisions to increase frequency of inspections based on the results of the first inspection. This aging management program is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

326 In some cases, an applicable Volume 2 line item may be used from a different Chapter (i.e., Auxiliary Systems, Chapter VII vice Engineering Safety Features, Chapter V) if there was no appropriate line item for this combination in the associated system Chapter. These line item numbers are annotated with this Note and additional Notes may also be used.

327 Material science evaluation for this material in this environment results in no aging effects.

3.4 Aging Management of Steam and Power Conversion System

3.4.1 Introduction

This section provides the results of the aging management review for those components identified in Section 2.3.4, Steam and Power Conversion System, as being subject to aging management review. The systems, or portions of systems, which are addressed in this section, are described in the indicated sections.

- Condensate Storage System (Section 2.3.4.1)
- Condensate and Feedwater System (Section 2.3.4.2)
- Main Condenser System (Section 2.3.4.3)
- Main Steam System (Section 2.3.4.4)
- Turbine Generator System (Section 2.3.4.5)

Table 3.4.1, Summary of Aging Management Evaluations in Chapter VIII of NUREG-1801 for Steam and Power Conversion System, provides the summary of the programs evaluated in NUREG-1801 for the Steam and Power Conversion System component groups that are relied on for license renewal.

This table uses the format described in Section 3.0. Note that this table only includes those component groups that are applicable to a BWR.

3.4.2 Results

The following tables summarize the results of the aging management review for systems in the Steam and Power Conversion Systems group:

Table 3.4.2-1, Steam and Power Conversion Systems - Condensate Storage System - Summary of Aging Management Evaluation

Table 3.4.2-2, Steam and Power Conversion Systems - Condensate and Feedwater System - Summary of Aging Management Evaluation

Table 3.4.2-3, Steam and Power Conversion Systems - Main Condenser System - Summary of Aging Management Evaluation

Table 3.4.2-4, Steam and Power Conversion Systems - Main Steam System - Summary of Aging Management Evaluation

Table 3.4.2-5, Steam and Power Conversion Systems - Turbine Generator System - Summary of Aging Management Evaluation

The materials that specific components are fabricated from, the environments to which components are exposed, the potential aging effects requiring management, and the aging

management programs used to manage these aging effects are provided for each of the above systems in the following subsections of Section 3.4.2.1, Materials, Environment, Aging Effects Requiring Management and Aging Management Programs:

Section 3.4.2.1.1, Condensate Storage System

Section 3.4.2.1.2, Condensate and Feedwater System

Section 3.4.2.1.3, Main Condenser System

Section 3.4.2.1.4, Main Steam System

Section 3.4.2.1.5, Turbine Generator System

3.4.2.1 Materials, Environment, Aging Effects Requiring Management and Aging Management Programs

3.4.2.1.1 Condensate Storage System

Materials

The materials of construction for the Condensate Storage System components are:

- Carbon Steel
- Cast Iron
- Stainless Steel

Environment

The Condensate Storage System components are exposed to the following environments:

- Plant Indoor Air (Ext)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Condensate Storage Water System, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC

- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Condensate Storage System components:

- Bolting Integrity
- One-Time Inspection
- Plant Chemistry Program
- Selective Leaching of Materials
- System Condition Monitoring Program

3.4.2.1.2 Condensate and Feedwater System

Materials

The materials of construction for the Condensate and Feedwater System components are:

- Carbon Steel
- Rubber
- Stainless Steel

Environment

The Condensate and Feedwater System components are exposed to the following environments:

- Lubricating Oil (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)
- Treated Water (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Condensate and Feedwater System, require management:

- Change in Material Properties - Thermal Exposure
- Cracking - SCC/IGA
- Cracking - Thermal Exposure

- Loss of Material - Crevice Corrosion
- Loss of Material - FAC
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Condensate and Feedwater System components:

- Bolting Integrity
- Flow-Accelerated Corrosion
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.4.2.1.3 Main Condenser System

Materials

The materials of construction for the Main Condenser System components are:

- Carbon Steel
- Copper Alloy
- Rubber
- Stainless Steel

Environment

The Main Condenser System components are exposed to the following environments:

- Dry Air (Int)
- Plant Indoor Air (Ext)
- Raw Water (Ext)
- Steam (Ext)
- Steam (Int)
- Treated Water (Int)

- Treated Water or Steam (Int)
- Wet Air/Gas (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Main Condenser System, require management:

- Loss of Material - Crevice Corrosion
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Main Condenser System components:

- Bolting Integrity
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.4.2.1.4 Main Steam System

Materials

The materials of construction for the Main Steam System components are:

- Carbon Steel
- Cast Austenitic Stainless Steel (CASS)
- Copper Alloy
- Stainless Steel

Environment

The Main Steam System components are exposed to the following environments:

- Gas - Instrument Air (Int)
- Plant Indoor Air (Ext)
- Primary Containment Air (Ext)

- Steam (Ext)
- Steam (Int)
- Treated Water or Steam (Int)

Aging Effects Requiring Management

The following aging effects, associated with the Main Steam System, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - FAC
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion

Aging Management Programs

The following aging management programs manage the aging effects for the Main Steam System components:

- Bolting Integrity
- Flow-Accelerated Corrosion
- One-Time Inspection
- Plant Chemistry Program
- System Condition Monitoring Program

3.4.2.1.5 Turbine Generator System

Materials

The materials of construction for the Turbine Generator System components are:

- Carbon Steel
- Cast Iron
- Copper Alloy
- Stainless Steel

Environment

The Turbine Generator System components are exposed to the following environments:

- Gas - Hydrogen (Int)
- Lubricating Oil (Ext)
- Lubricating Oil (Int)
- Plant Indoor Air (Ext)
- Raw Water (Int)
- Steam (Int)
- Treated Water (Int)
- Treated Water or Steam (Int)
- Wet Air/Gas (Ext)

Aging Effects Requiring Management

The following aging effects, associated with the Turbine Generator System, require management:

- Cracking - SCC/IGA
- Loss of Material - Crevice Corrosion
- Loss of Material - Erosion
- Loss of Material - FAC
- Loss of Material - Galvanic Corrosion
- Loss of Material - General Corrosion
- Loss of Material - MIC
- Loss of Material - Pitting Corrosion
- Loss of Material - Selective Leaching

Aging Management Programs

The following aging management programs manage the aging effects for the Turbine Generator System components:

- Bolting Integrity
- Flow-Accelerated Corrosion
- One-Time Inspection
- Open-Cycle Cooling Water System

- Plant Chemistry Program
- Selective Leaching of Materials
- System Condition Monitoring Program

3.4.2.2 Further Evaluation of Aging Management as Recommended by NUREG-1801

NUREG-1801 provides the basis for identifying those programs that warrant further evaluation by the reviewer in the license renewal application. For the Steam and Power Conversion Systems, those programs are addressed in the following sections.

3.4.2.2.1 Cumulative Fatigue Damage

Fatigue is a TLAA as defined in 10 CFR 54.3. TLAAs are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluation of this TLAA is addressed separately in Section 4.3.

3.4.2.2.2 Loss of Material due to General, Pitting, and Crevice Corrosion

This subsection discusses loss of material due to general, pitting and crevice corrosion of carbon steel and cast iron piping and fittings, valve bodies and bonnets, pump casings, pump suction and discharge lines, tanks, tubesheets, channel heads, and shells except for main steam system components, in the steam and power conversion system. This subsection also discusses loss of material due to pitting and crevice corrosion of stainless steel components in the steam and power conversion system.

Aging effect is managed by the One-Time Inspection Program and Plant Chemistry Program.

Exceptions apply to NUREG-1801 recommendations for the Plant Chemistry Program implementation (refer to Appendix B, Section B2.1.25).

The One-Time Inspection Program is a new AMP. The scope of this new AMP is to include activities to verify the effectiveness of the Plant Chemistry Program, including a sample of components where the flow of water is low or stagnant conditions exist (refer to Appendix B, Section B2.1.23).

Implementation of the One-Time Inspection Program, in conjunction with the Plant Chemistry Program, to manage the aging effect provides added assurance that the aging effect is not occurring at locations of stagnant or low flow; or that the aging effect is progressing very slowly such that the

component's intended function will be maintained during the period of extended operation.

3.4.2.2.3 Loss of Material due to General, Pitting, and Crevice Corrosion, Microbiologically Influenced Corrosion, and Biofouling

Applicable to PWR Only

3.4.2.2.4 General Corrosion

This subsection discusses loss of material due to general corrosion on the external surfaces of carbon steel and cast iron components of the steam and power conversion system in air/gas environments.

Aging effect is managed by the System Condition Monitoring Program. The System Condition Monitoring Program is used to manage the aging effect on the external surfaces of carbon steel and cast iron components in air/gas environments.

Management of the aging effect associated with certain components of the Main Condenser with the intended function, “plateout and holdup of radioactive material,” is not applicable since the Main Condenser structural integrity is continuously demonstrated during normal plant operation.

The System Condition Monitoring Program is a new plant-specific program. This program manages aging effects for normally accessible, external surfaces of piping, tanks, and other components and equipment within the scope of License Renewal. These aging effects are managed through visual inspection and monitoring of external surfaces for leakage and evidence of material degradation (refer to Appendix B, Section B2.1.32).

Implementation of the System Condition Monitoring Program to manage corrosion provides added assurance that corrosion is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.4.2.2.5.1 Loss of Material due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion (Item 1)

Applicable to PWR Only

3.4.2.2.5.2 Loss of Material due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion (Item 2)

The MNGP condensate storage tanks are not within the scope of license renewal and are located above ground. The Steam and Power Conversion systems do not credit a buried piping and tanks surveillance program nor the Buried Piping & Tanks Inspection Program.

3.4.2.3 Time-Limited Aging Analysis

The time-limited aging analyses (TLAA) identified below are associated with the Steam and Power Conversion Systems components:

- Section 4.3.3, ASME Section III Class 1 Reactor Coolant Pressure Boundary (RCPB) Piping and Fatigue Analysis
- Section 4.3.4, RCPB Section III Class 2 and 3, Piping and Components
- Section 4.5, Effects of Reactor Coolant Environment

3.4.3 Conclusion

The Steam and Power Conversion System piping, fittings, and components that are subject to aging management review have been identified in accordance with the requirements of 10 CFR 54.4. The aging management programs selected to manage aging effects for the Steam and Power Conversion System components are identified in the summaries in Section 3.4.2.1 above.

A description of these aging management programs is provided in Appendix B, along with the demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the demonstrations provided in Appendix B, the effects of aging associated with the Steam and Power Conversion System components will be adequately managed so that there is reasonable assurance that the intended function(s) will be maintained consistent with the current licensing basis during the period of extended operation.

Table 3.4.1 Summary of Aging Management Evaluations in Chapter VIII of NUREG-1801 for Steam and Power Conversion System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-01	Piping and fittings in main feedwater line, steam line and AFW piping (PWR only)	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA (see [SRP] subsection 3.4.2.2.1)	Further evaluation documented in Section 3.4.2.2.1.
3.4.1-02	Piping and fittings, valve bodies and bonnets, pump casings, tanks, tubes, tubesheets, channel head and shell (except main steam system)	Loss of material due to general (carbon steel only), pitting, and crevice corrosion	Water chemistry and one-time inspection	Yes, detection of aging effects is to be further evaluated (see [SRP] subsection 3.4.2.2.2)	Aging effect is managed by the combination of the Plant Chemistry Program and One-Time Inspection Program. Further evaluation documented in Section 3.4.2.2.2. Exceptions apply to NUREG-1801 recommendations for Plant Chemistry Program Implementation.
3.4.1-03	PWR only				
3.4.1-04	PWR only				
3.4.1-05	External surface of carbon steel components	Loss of material due to general corrosion	Plant specific	Yes, plant specific (see [SRP] subsection 3.4.2.2.4)	Aging effect is managed by the System Condition Monitoring Program. The System Condition Monitoring Program is used to manage the aging effect on the external surfaces of carbon steel and cast iron components in air/gas environments. Further evaluation documented in Section 3.4.2.2.4.
3.4.1-06	Carbon steel piping and valve bodies	Wall thinning due to flow-accelerated corrosion	Flow-accelerated corrosion	No	Aging effect is managed by the Flow-Accelerated Corrosion Program. Consistent with NUREG-1801, some portions of the steam and power conversion systems are susceptible to flow-accelerated corrosion (FAC) and the Flow-Accelerated Corrosion Program is credited to manage the aging effect.

Table 3.4.1 Summary of Aging Management Evaluations in Chapter VIII of NUREG-1801 for Steam and Power Conversion System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-07	Carbon steel piping and valve bodies in main steam system	Loss of material due to pitting and crevice corrosion	Water chemistry	No	This line item was not used at MNGP. See item 3.4.1-02.
3.4.1-08	Closure bolting in high-pressure or high-temperature systems	Loss of material due to general corrosion; crack initiation and growth due to cyclic loading and/or SCC	Bolting integrity	No	The aging effect is managed by the Bolting Integrity Program. Consistent with NUREG-1801, the aging effect loss of material due to general corrosion is managed by the Bolting Integrity Program. There are no bolts with a specified minimum yield strength greater than 150 ksi in the steam and power conversion systems. Therefore, crack initiation and growth due to SCC is not an applicable aging effect. Closure bolting preload is effectively addressed in the design (material selection, bolt and nut sizes), installation (torque, lubricant, bolting pattern), and maintenance requirements (retorquing, final checks). Operating temperatures in MNGP systems are below the threshold temperature where thermal creep of the bolting material could occur. MNGP plant operating experience shows no bolted closure failures due to loss of preload. While not specifically identified as an aging effect in the respective system Table 2, Summary of Aging Management Evaluation, loss of preload is managed for carbon steel and stainless steel closure bolting used in pressure retaining joints by the Bolting Integrity Program. The Bolting Integrity Program manages loss of preload associated with closure bolting

Table 3.4.1 Summary of Aging Management Evaluations in Chapter VIII of NUREG-1801 for Steam and Power Conversion System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-08 continued					through periodic inspection, material selection, thread lubricant control, assembly and torque requirements, and repair and replacement requirements. These activities are based on the applicable requirements of ASME Section XI and plant operating experience and includes consideration of the guidance contained in NUREG-1339, Resolution of Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants, EPRI NP-5769, Degradation and Failure of Bolting in Nuclear Power Plants, EPRI TR-104213, Bolted Joint Maintenance & Application Guide, and EPRI NP-5067 Volumes 1 and 2, Good Bolting Practices.
3.4.1-09	Heat exchangers and coolers/ condensers serviced by open-cycle cooling water	Loss of material due to general (carbon steel only), pitting, and crevice corrosion, MIC, and biofouling; buildup of deposit due to biofouling	Open-cycle cooling water system	No	Not applicable. Management of aging effects associated with certain components of the Main Condenser with the intended function “plateout and holdup of radioactive material,” is not applicable since the Main Condenser structural integrity is continuously demonstrated during normal plant operation.
3.4.1-10	Heat exchangers and coolers/ condensers serviced by closed-cycle cooling water	Loss of material due to general (carbon steel only), pitting, and crevice corrosion	Closed-cycle cooling water system	No	Not applicable. There are no heat exchangers in the steam and power conversion systems that are serviced by closed-cycle cooling water.
3.4.1-11	External surface of above ground condensate storage tank	Loss of material due to general (carbon steel only), pitting, and crevice corrosion	Above ground carbon steel tanks	No	Not applicable. The MNGP condensate storage tanks are not with in the scope of license renewal.

Table 3.4.1 Summary of Aging Management Evaluations in Chapter VIII of NUREG-1801 for Steam and Power Conversion System

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.4.1-12	External surface of buried condensate storage tank and AFW piping	Loss of material due to general, pitting, and crevice corrosion and MIC	Buried piping and tanks surveillance or Buried piping and tanks inspection	No Yes, detection of aging effects and operating experience are to be further evaluated (see [SRP] subsection 3.4.2.2.5.2)	Not applicable. The MNGP condensate storage tanks are not with in the scope of license renewal and are located above ground.
3.4.1-13	PWR only				

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406, 412
				Loss of Material - General Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 401, 406, 427
Filters/Housings	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
Heat Exchangers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 412

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
Instrumentation	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.3-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B
Restricting Orifices	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	C
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
		Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412, 417
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 417
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 417
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 417
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412, 417
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412, 417
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 417
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 417
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412, 417
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412, 417
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 417
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 417
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C2.3-a	3.3.1-29	D, 426

Table 3.4.2-1 Steam and Power Conversion System - Condensate Storage System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.3-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Expansion Joints	Pressure Boundary	Rubber	Plant Indoor Air (Ext)	None	None			J, 414, 427
			Treated Water (Int)	Change in Material Properties - Thermal Exposure	One-Time Inspection			J, 404
				Cracking - Thermal Exposure	One-Time Inspection			J, 404
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406, 412
				Loss of Material - General Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406, 412
				Loss of Material - General Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 401, 406, 427
			Primary Containment Air (Ext)	None	None			J, 401, 406, 427

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Stainless Steel	Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Flow Element	Flow Restriction	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Flow Restriction	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Pressure Boundary	Stainless Steel	Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
Heat Exchangers	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 412

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
Manifolds	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Piping and Fittings	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.E.1-a	3.4.1-06	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Pump Casings	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.3-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B, 412

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 409, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	D, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VII.A4.6-a	3.3.1-01	A, 426
					Plant Chemistry Program	VII.A4.6-a	3.3.1-01	B, 426
				Loss of Material - MIC	One-Time Inspection	VII.A4.6-a	3.3.1-01	A, 412, 426
					Plant Chemistry Program	VII.A4.6-a	3.3.1-01	B, 412, 426
				Loss of Material - Pitting Corrosion	One-Time Inspection	VII.A4.6-a	3.3.1-01	A, 426
					Plant Chemistry Program	VII.A4.6-a	3.3.1-01	B, 426
Restricting Orifices	Flow Restriction	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Flow Restriction	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J,427

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Tanks	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B, 412

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 409, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	D, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Valve Bodies	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.E.2-a	3.4.1-06	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.3-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-2 Steam and Power Conversion System - Condensate and Feedwater System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Condenser Complex	Plateout and holdup of radioactive material	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	None	VIII.H.1-b	3.4.1-05	E, 410, 412
				Loss of Material - General Corrosion	None	VIII.H.1-b	3.4.1-05	E, 410
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	None	VIII.E.4-a	3.4.1-02	E, 410
				Loss of Material - Erosion	None	VIII.E.4-a	3.4.1-02	E, 410, 412
				Loss of Material - Galvanic Corrosion	None	VIII.E.4-a	3.4.1-02	E, 410, 412
				Loss of Material - General Corrosion	None	VIII.E.4-a	3.4.1-02	E, 410
				Loss of Material - Pitting Corrosion	None	VIII.E.4-a	3.4.1-02	E, 410
		Stainless Steel	Treated Water or Steam (Int)	Cracking - SCC/IGA	None			J, 410
				Loss of Material - Crevice Corrosion	None	VIII.E.4-a	3.4.1-02	E, 410
				Loss of Material - Erosion	None	VIII.E.4-a	3.4.1-02	E, 410, 412
				Loss of Material - Pitting Corrosion	None	VIII.E.4-a	3.4.1-02	E, 410

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Expansion Joints	Plateout and holdup of radioactive material	Rubber	Plant Indoor Air (Ext)	Change in Material Properties - Irradiation	None			J, 410
				Change in Material Properties - Thermal Exposure	None			J, 410
				Cracking - Irradiation	None			J, 410
				Cracking - Thermal Exposure	None			J, 410
			Steam (Int)	Change in Material Properties - Irradiation	None			J, 410
				Change in Material Properties - Thermal Exposure	None			J, 410
				Cracking - Irradiation	None			J, 410
				Cracking - Thermal Exposure	None			J, 410
Fasteners/ Bolting	Plateout and holdup of radioactive material	Carbon Steel	Steam (Ext)	Loss of Material - Crevice Corrosion	None	VIII.H.2-a	3.4.1-08	E, 401, 410, 412
				Loss of Material - Erosion	None	VIII.H.2-a	3.4.1-08	E, 401, 410, 412
				Loss of Material - Galvanic Corrosion	None	VIII.H.2-a	3.4.1-08	E, 401, 410, 412

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Plateout and holdup of radioactive material	Carbon Steel	Steam (Ext)	Loss of Material - General Corrosion	None	VIII.H.2-a	3.4.1-08	E, 401, 410
				Loss of Material - Pitting Corrosion	None	VIII.H.2-a	3.4.1-08	E, 401, 410, 412
		Stainless Steel	Steam (Ext)	Cracking - SCC/IGA	None			J, 401, 410
				Loss of Material - Crevice Corrosion	None			J, 401, 410
				Loss of Material - Erosion	None			J, 401, 410
				Loss of Material - Pitting Corrosion	None			J, 401, 410
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406, 412
				Loss of Material - General Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 401, 406, 427
Filters/Strainers	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 403, 407, 426
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 403, 407, 412, 426
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 403, 407, 426
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 403, 407, 412, 426

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 403, 407, 426
Heat Exchangers	Plateout and holdup of radioactive material	Copper Alloy	Raw Water (Ext)	Loss of Material - Crevice Corrosion	None			J, 410
				Loss of Material - Erosion	None			J, 410
				Loss of Material - MIC	None			J, 410
				Loss of Material - Selective Leaching	None			J, 410
			Steam (Int)	Loss of Material - Crevice Corrosion	None			J, 410
				Loss of Material - Erosion	None			J, 410
				Loss of Material - Selective Leaching	None			J, 410
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 412

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
LP Turbine Hood	Plateout and holdup of radioactive material	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	None	VIII.H.1-b	3.4.1-05	E, 410, 412
				Loss of Material - General Corrosion	None	VIII.H.1-b	3.4.1-05	E, 410
			Steam (Int)	Loss of Material - Crevice Corrosion	None	VIII.A.1-b	3.4.1-02	E, 409, 410
				Loss of Material - Erosion	None	VIII.A.1-b	3.4.1-02	E, 409, 410, 412
				Loss of Material - Galvanic Corrosion	None	VIII.A.1-b	3.4.1-02	E, 409, 410, 412
				Loss of Material - General Corrosion	None	VIII.A.1-b	3.4.1-02	E, 409, 410
				Loss of Material - Pitting Corrosion	None	VIII.A.1-b	3.4.1-02	E, 409, 410

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 403, 407, 426
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 403, 407, 412, 426
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 403, 407, 426

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 403, 407, 412, 426
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 403, 407, 426
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Pump Casings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B, 412

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - General Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.3-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.3-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.3-a	3.4.1-02	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 403, 407, 409, 426
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 403, 407, 409, 412, 426
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 403, 407, 409, 426
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 403, 407, 409, 412, 426
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 403, 407, 409, 426

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 403, 407, 409, 426
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 403, 407, 409, 412, 426
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-03	E, 403, 407, 409, 426
				Loss of Material - MIC	One-Time Inspection	V.D2.1-e	3.2.1-03, 3.2.1-05	E, 403, 407, 409, 412, 426
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.1-e	3.2.1-05	E, 403, 407, 409, 426
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
			Wet Air/Gas (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 407, 425, 426
				Loss of Material - Galvanic Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 407, 412, 425, 426
				Loss of Material - General Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-02	A, 407, 425, 426

Table 3.4.2-3 Steam and Power Conversion System - Main Condenser System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Wet Air/Gas (Int)	Loss of Material - MIC	One-Time Inspection	V.D2.3-b	3.2.1-02, 3.2.1-04	A, 407, 412, 425, 426
				Loss of Material - Pitting Corrosion	One-Time Inspection	V.D2.3-b	3.2.1-04	A, 407, 425, 426
		Copper Alloy	Dry Air (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	None	None			J, 427

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406, 412
				Loss of Material - General Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406, 412
				Loss of Material - General Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 401, 406, 427
			Primary Containment Air (Ext)	None	None			J, 401, 406, 427
Filters/Strainers	Filtration	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Filtration	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Flow Element	Flow Restriction	Cast Austenitic Stainless Steel (CASS)	Steam (Ext)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.1-f	3.1.1-29	E, 408, 426
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 423
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 423
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 423
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 423
			Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	IV.C1.1-f	3.1.1-29	E, 408, 426
					Plant Chemistry Program	IV.C1.1-f	3.1.1-29	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 423
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 423
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 423
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 423
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.B2.1-b	3.4.1-06	A
						VIII.C.1-a	3.4.1-06	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.B2.1-b	3.4.1-06	A
						VIII.C.1-a	3.4.1-06	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
		Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	None	None			J, 427
			Primary Containment Air (Ext)	None	None			J, 427

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Restricting Orifices	Flow Restriction	Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Plant Indoor Air (Ext)	None	None			J,427
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Thermowells	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Valve Bodies	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Primary Containment Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.B2.2-a	3.4.1-06	A
						VIII.C.2-a	3.4.1-06	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.B2.2-a	3.4.1-06	A
						VIII.C.2-a	3.4.1-06	A

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B
		Copper Alloy	Gas - Instrument Air (Int)	None	None			J, 427
			Primary Containment Air (Ext)	None	None			J, 427
		Stainless Steel	Gas - Instrument Air (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	None	None			J, 427
			Primary Containment Air (Ext)	None	None			J, 427

Table 3.4.2-4 Steam and Power Conversion System - Main Steam System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.3-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Expansion Joints	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	B
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	B
Fasteners/ Bolting	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406, 412
				Loss of Material - General Corrosion	Bolting Integrity	VIII.H.2-a	3.4.1-08	A, 401, 406
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 401, 406, 427

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Housings	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Filters/Strainers	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Filters/Strainers	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Gauges (Flow, Level and Sight)	Pressure Boundary	Copper Alloy	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 404
					Plant Chemistry Program			J, 404

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Gauges (Flow, Level and Sight)	Pressure Boundary	Copper Alloy	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection			J, 404
					Plant Chemistry Program			J, 404
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 404
					Plant Chemistry Program			J, 404
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 404
Heat Exchangers	Pressure Boundary	Carbon Steel	Gas - Hydrogen (Int)	None	None			J, 427
			Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Heat Exchangers	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.4-d	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.4-d	3.4.1-02	A
					Plant Chemistry Program	VIII.E.4-d	3.4.1-02	B
		Copper Alloy	Raw Water (Int)	Loss of Material - Crevice Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A, 426
				Loss of Material - Erosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17, 3.3.1-29	A, 412, 426
				Loss of Material - MIC	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A, 426
				Loss of Material - Pitting Corrosion	Open-Cycle Cooling Water System	VII.C1.3-a	3.3.1-17	A, 426
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C1.3-a	3.3.1-29	A, 426
			Wet Air/Gas (Ext)	Loss of Material - Crevice Corrosion	System Condition Monitoring Program			J, 404
				Loss of Material - MIC	System Condition Monitoring Program			J, 404
				Loss of Material - Pitting Corrosion	System Condition Monitoring Program			J, 404
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 404

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Manifolds	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Piping and Fittings	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	B
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	B

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.C.1-a	3.4.1-06	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
		Copper Alloy	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 404
					Plant Chemistry Program			J, 404
				Loss of Material - MIC	One-Time Inspection			J, 404
					Plant Chemistry Program			J, 404
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 404
					Plant Chemistry Program			J, 404
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 404
		Stainless Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	None	None			J, 427

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Piping and Fittings	Pressure Boundary	Stainless Steel	Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Pump Casings	Pressure Boundary	Carbon Steel	Lubricating Oil (Ext)	None	None			J, 427
			Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 409, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 409, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water or Steam (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Restricting Orifices	Pressure Boundary	Stainless Steel	Treated Water or Steam (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Steam Traps	Pressure Boundary	Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412, 417
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 417
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 417
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 417
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412, 417
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412, 417
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 417
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 417
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 412, 417
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 412, 417

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Steam Traps	Pressure Boundary	Cast Iron	Treated Water or Steam (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	A, 417
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	B, 417
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 404
Tanks	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-a	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-a	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-a	3.4.1-02	B

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.C.1-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.1-b	3.4.1-02	C
					Plant Chemistry Program	VIII.C.1-b	3.4.1-02	D
		Stainless Steel	Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 409, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 409, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B, 412

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Tanks	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	B
Thermowells	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.1-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.1-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.1-b	3.4.1-02	B

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Thermowells	Pressure Boundary	Stainless Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.1-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.1-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
				Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D
Turbines	Pressure Boundary	Carbon Steel	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	C
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	D
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	D, 412

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Turbines	Pressure Boundary	Carbon Steel	Steam (Int)	Loss of Material - General Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	C
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	D
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.A.1-b	3.4.1-02	C
					Plant Chemistry Program	VIII.A.1-b	3.4.1-02	D
Valve Bodies	Pressure Boundary	Carbon Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.A.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.A.2-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.A.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.A.2-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.A.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.A.2-b	3.4.1-02	B
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.A.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.A.2-b	3.4.1-02	B

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
				Loss of Material - FAC	Flow-Accelerated Corrosion	VIII.C.2-a	3.4.1-06	A
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
				Loss of Material - MIC	One-Time Inspection	VIII.E.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.E.2-b	3.4.1-02	B
			Treated Water or Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 412
				Loss of Material - General Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Carbon Steel	Treated Water or Steam (Int)	Loss of Material - MIC	One-Time Inspection	VIII.C.2-b	3.4.1-02	A, 412
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.C.2-b	3.4.1-02	A
					Plant Chemistry Program	VIII.C.2-b	3.4.1-02	B
		Cast Iron	Plant Indoor Air (Ext)	Loss of Material - Galvanic Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 412, 417
				Loss of Material - General Corrosion	System Condition Monitoring Program	VIII.H.1-b	3.4.1-05	A, 417
			Steam (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.A.2-b	3.4.1-02	A, 417
					Plant Chemistry Program	VIII.A.2-b	3.4.1-02	B, 417
				Loss of Material - Galvanic Corrosion	One-Time Inspection	VIII.A.2-b	3.4.1-02	A, 412, 417
					Plant Chemistry Program	VIII.A.2-b	3.4.1-02	B, 412, 417
				Loss of Material - General Corrosion	One-Time Inspection	VIII.A.2-b	3.4.1-02	A, 417
					Plant Chemistry Program	VIII.A.2-b	3.4.1-02	B, 417
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.A.2-b	3.4.1-02	A, 417
					Plant Chemistry Program	VIII.A.2-b	3.4.1-02	B, 417
				Loss of Material - Selective Leaching	Selective Leaching of Materials	VII.C2.3-a	3.3.1-29	D, 412, 426

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Copper Alloy	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Loss of Material - Crevice Corrosion	One-Time Inspection			J, 404
					Plant Chemistry Program			J, 404
				Loss of Material - MIC	One-Time Inspection			J, 404
					Plant Chemistry Program			J, 404
				Loss of Material - Pitting Corrosion	One-Time Inspection			J, 404
					Plant Chemistry Program			J, 404
				Loss of Material - Selective Leaching	Selective Leaching of Materials			J, 404
		Stainless Steel	Lubricating Oil (Int)	None	None			J, 427
			Plant Indoor Air (Ext)	None	None			J, 427
			Treated Water (Int)	Cracking - SCC/IGA	One-Time Inspection	V.D2.3-c	3.2.1-16	E, 408, 426
					Plant Chemistry Program	V.D2.3-c	3.2.1-16	B, 426
				Loss of Material - Crevice Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Table 3.4.2-5 Steam and Power Conversion System - Turbine Generator System - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Valve Bodies	Pressure Boundary	Stainless Steel	Treated Water (Int)	Loss of Material - MIC	One-Time Inspection	VIII.E.5-b	3.4.1-02	C, 412
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D, 412
				Loss of Material - Pitting Corrosion	One-Time Inspection	VIII.E.5-b	3.4.1-02	C
					Plant Chemistry Program	VIII.E.5-b	3.4.1-02	D

Notes for Tables 3.4.2-1 through 3.4.2-5

A Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

B Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

C Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

D Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

E Consistent with NUREG-1801 for material, environment and aging effect, but a different aging management program is credited.

F Material not in NUREG-1801 for this component.

G Environment not in NUREG-1801 for this component and material.

H Aging effect not in NUREG-1801 for this component, material, and environment combination.

I Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.

J Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-specific notes:

401 Internal aging effects/mechanisms are not applicable. For the component type, an internal environment is not applicable (e.g. bolting, walls, clad vessels, structural steel, etc.).

402 Components with a “wet air/gas” environment are analyzed in the same manner as raw water for conservatism.

403 Plant specific program identified in NUREG-1801. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

404 Material/environment combination and/or aging effects/mechanism not identified in NUREG-1801. The aging management program(s) referenced are appropriate for the aging effects/mechanisms identified and provide assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

405 Program different than identified in NUREG-1801. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

406 There are no bolts with a specified minimum yield strength >150 ksi in this system. Therefore, SCC is not an applicable aging effect/mechanism. The Bolting Integrity Program manages loss of preload. See Table 3.1.1 line item 3.1.1-26, Table 3.2.1 line item 3.2.1-18, Table 3.3.1 line item 3.3.1-24, or Table 3.4.1 line item 3.4.1-08 as applicable to the respective system for additional information.

407 Components with a "wet air/gas" environment are analyzed in the same manner as treated water for conservatism.

408 Program different than identified in NUREG-1801. The One-Time Inspection Program is used since the BWR Stress Corrosion Cracking Program is not applicable to this component. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

409 Component is different but consistent with NUREG-1801 for material, environment and aging effect. The aging management program(s) referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

410 Aging effect/mechanism is applicable but does not require management since the intended function for this CDR component is post accident iodine plate-out and holdup. Main Condenser structural integrity is continuously demonstrated during normal plant operation thus the intended function is maintained.

411 Intentionally left blank.

412 Aging mechanism not in NUREG-1801 for this component, material and environment combination.

413 IAW the GALL, no IGSCC inspection is recommended for plants that have piping made of material that is resistant to IGSCC. Since MNGP satisfies this criterion and has satisfactorily completed all actions requested in NRC GL 89-10, the Plant Chemistry Program and the One-Time Inspection Program are used in lieu of the Reactor Water Cleanup Program to manage this potential aging effect/mechanism. These aging management programs are appropriate for the aging effects/mechanisms identified and provide assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

414 These Elastomers (neoprene, rubber, etc.) components are indoors and not subject to UV or ozone, nor are they in locations that are subject to radiation exposure. These locations are also not subject to temperatures where change in material properties or cracking could occur (>95 degrees F). Therefore no aging management is required.

415 Components that are buried in the ground are analyzed in the same manner as raw water (damp soil containing groundwater) for conservatism.

416 Intentionally left blank.

417 The material identified in this NUREG-1801 line item does not include cast iron or gray cast iron. Materials science supports the fact that the aging effects/mechanisms for cast iron are the same as those for carbon steel and low alloy steel with the exception that gray cast iron is also susceptible to selective leaching.

418 Intentionally left blank.

419 NUREG-1801, Volume 2, Chapter VII (Auxiliary Systems), Section G.6 (Fire Protection) does not address this environment for the mechanical portion of the “Fire Protection” AMP (XI.M26). The aging management program referenced is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

420 No credit is taken for protective coatings of components such as paint, galvanized pipe, etc., in mechanical aging management evaluations.

421 Intentionally left blank.

422 Intentionally left blank.

423 The material identified in this NUREG-1801 line item is stainless steel or CASS. The aging effects/mechanisms for stainless steel are the same as those for CASS for loss of material and cracking and, conversely, the aging effects/mechanisms of CASS are the same as those for stainless steel for loss of material and cracking.

424 The Fuel Oil Chemistry Program includes provisions for performing tests and inspections for detecting tank wall loss.

425 In some cases where the Plant Chemistry Program is not a viable option and aging effects/mechanisms are not expected to be significant, the One-Time Inspection Program alone is credited for managing aging effects. The One-Time Inspection Program has provisions to increase frequency of inspections based on the results of the first inspection. This aging management program is appropriate for the aging effects/mechanisms identified and provides assurance that the aging effects/mechanisms are effectively managed through the period of extended operation.

426 In some cases, an applicable Volume 2 line item may be used from a different Chapter (i.e., Auxiliary Systems, Chapter VII vice Engineering Safety Features, Chapter V) if there was no appropriate line item for this combination in the associated system Chapter. These line item numbers are annotated with this Note and additional Notes may also be used.

427 Material science evaluation for this material in this environment results in no aging effects.

3.5 Aging Management of Containments, Structures, and Component Supports

3.5.1 Introduction

This section provides the results of the aging management review for those components identified in Section 2.4, Containments, Structures, and Component Supports, as being subject to aging management review. The systems, or portions of systems, which are addressed in this section, are described in the indicated sections.

- Cranes, Heavy Loads, Rigging (Section 2.4.1)
- Diesel Fuel Oil Transfer House (Section 2.4.2)
- Emergency Diesel Generator Building (Section 2.4.3)
- Emergency Filtration Train Building (Section 2.4.4)
- Fire Protection Barriers Commodity Group (Section 2.4.5)
- Hangers and Supports Commodity Group (Section 2.4.6)
- HPCI Building (Section 2.4.7)
- Intake Structure (Section 2.4.8)
- Miscellaneous SBO Yard Structures (Section 2.4.9)
- Off Gas Stack (Section 2.4.10)
- Off Gas Storage and Compressor Building (Section 2.4.11)
- Plant Control and Cable Spreading Structure (Section 2.4.12)
- Primary Containment (Section 2.4.13)
- Radioactive Waste Building (Section 2.4.14)
- Reactor Building (Section 2.4.15)
- Structures Affecting Safety (Section 2.4.16)
- Turbine Building (Section 2.4.17)
- Underground Duct Bank (Section 2.4.18)

Table 3.5.1, Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports, provides the summary of the programs evaluated in NUREG-1801 for the Structures and Component Supports component groups that are relied on for license renewal.

This table uses the format described in Section 3.0. Note that this table only includes those component groups that are applicable to a BWR.

3.5.2 Results

The following tables summarize the results of the aging management review for systems in the Containments, Structures, and Component Supports group:

Table 3.5.2-1, Structures and Component Supports - Cranes, Heavy Loads, Rigging - Summary of Aging Management Evaluation

Table 3.5.2-2, Structures and Component Supports - Diesel Fuel Oil Transfer House - Summary of Aging Management Evaluation

Table 3.5.2-3, Structures and Component Supports - Emergency Diesel Generator Building - Summary of Aging Management Evaluation

Table 3.5.2-4, Structures and Component Supports - Emergency Filtration Train Building - Summary of Aging Management Evaluation

Table 3.5.2-5, Structures and Component Supports - Fire Protection Barriers Commodity Group - Summary of Aging Management Evaluation

Table 3.5.2-6, Structures and Component Supports - Hangers and Supports Commodity Group - Summary of Aging Management Evaluation

Table 3.5.2-7, Structures and Component Supports - HPCI Building - Summary of Aging Management Evaluation

Table 3.5.2-8, Structures and Component Supports - Intake Structure - Summary of Aging Management Evaluation

Table 3.5.2-9, Structures and Component Supports - Miscellaneous SBO Yard Structures - Summary of Aging Management Evaluation

Table 3.5.2-10, Structures and Component Supports - Off Gas Stack - Summary of Aging Management Evaluation

Table 3.5.2-11, Structures and Component Supports - Off Gas Storage and Compressor Building - Summary of Aging Management Evaluation

Table 3.5.2-12, Structures and Component Supports - Plant Control and Cable Spreading Structure - Summary of Aging Management Evaluation

Table 3.5.2-13, Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Table 3.5.2-14, Structures and Component Supports - Radioactive Waste Building - Summary of Aging Management Evaluation

Table 3.5.2-15, Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Table 3.5.2-16, Structures and Component Supports - Structures Affecting Safety - Summary of Aging Management Evaluation

Table 3.5.2-17, Structures and Component Supports - Turbine Building - Summary of Aging Management Evaluation

Table 3.5.2-18, Structures and Component Supports - Underground Duct Bank - Summary of Aging Management Evaluation

The materials that specific components are fabricated from, the environments to which components are exposed, the potential AERM, and the AMPs used to manage these aging effects are provided for each of the above systems in the following subsections of Section 3.5.2.1, Materials, Environment, Aging Effects Requiring Management and Aging Management Programs:

Section 3.5.2.1.1, Cranes, Heavy Loads, Rigging

Section 3.5.2.1.2, Diesel Fuel Oil Transfer House

Section 3.5.2.1.3, Emergency Diesel Generator Building

Section 3.5.2.1.4, Emergency Filtration Train Building

Section 3.5.2.1.5, Fire Protection Barriers Commodity Group

Section 3.5.2.1.6, Hangers and Supports Commodity Group

Section 3.5.2.1.7, HPCI Building

Section 3.5.2.1.8, Intake Structure

Section 3.5.2.1.9, Miscellaneous SBO Yard Structures

Section 3.5.2.1.10, Off Gas Stack

Section 3.5.2.1.11, Off Gas Storage and Compressor Building

Section 3.5.2.1.12, Plant Control and Cable Spreading Structure

Section 3.5.2.1.13, Primary Containment

Section 3.5.2.1.14, Radioactive Waste Building

Section 3.5.2.1.15, Reactor Building

Section 3.5.2.1.16, Structures Affecting Safety

Section 3.5.2.1.17, Turbine Building

Section 3.5.2.1.18, Underground Duct Bank

3.5.2.1 Materials, Environment, Aging Effects Requiring Management and Aging Management Programs

3.5.2.1.1 Cranes, Heavy Loads, Rigging

Materials

The materials of construction for the Cranes, Heavy Loads, Rigging components are:

- Aluminum
- Carbon steel

Environment

The Cranes, Heavy Loads, Rigging components are exposed to the following environments:

- Air/Gas
- Treated Water

Aging Effects Requiring Management

The following aging effects, associated with the Cranes, Heavy Loads, Rigging, require management:

- Cracking / Stress corrosion cracking
- Cumulative fatigue damage / Fatigue
- Loss of material / Crevice, galvanic, MIC and pitting corrosion
- Loss of material / General corrosion
- Loss of material / Wear

Aging Management Programs

The following aging management program manages the aging effects for the Cranes, Heavy Loads, Rigging components:

- Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems

3.5.2.1.2 Diesel Fuel Oil Transfer House

Materials

The materials of construction for the Diesel Fuel Oil Transfer House components are:

- Carbon steel
- Grout
- Reinforced concrete

Environment

The Diesel Fuel Oil Transfer House components are exposed to the following environments:

- Air/Gas
- Atmosphere/Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Diesel Fuel Oil Transfer House, require management:

- Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel
- Cracks, distortion, increase in component stress level / Settlement
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material / Environmental corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management program manages the aging effects for the Diesel Fuel Oil Transfer House components:

- Structures Monitoring Program

3.5.2.1.3 Emergency Diesel Generator Building

Materials

The materials of construction for the Emergency Diesel Generator Building components are:

- Carbon steel
- Concrete block
- Grout
- Reinforced concrete

Environment

The Emergency Diesel Generator Building components are exposed to the following environments:

- Air/Gas
- Atmosphere/Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Emergency Diesel Generator Building, require management:

- Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel
- Cracking / Restraint, shrinkage, creep, aggressive environment
- Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide

- Loss of material / Corrosion
- Loss of material / Corrosion of embedded steel
- Loss of material / Environmental corrosion
- Loss of material / General corrosion
- Loss of material / Wear
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management programs manage the aging effects for the Emergency Diesel Generator Building components:

- Fire Protection
- Structures Monitoring Program

3.5.2.1.4 Emergency Filtration Train Building

Materials

The materials of construction for the Emergency Filtration Train (EFT) Building components are:

- Carbon Steel
- Elastomer (rubber, neoprene, silicone, etc.)
- Grout
- Reinforced concrete

Environment

The EFT Building components are exposed to the following environments:

- Air/Gas
- Atmosphere/Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the EFT Building, require management:

- Change in material properties and cracking/ Ozone and ultraviolet radiation; thermal exposure
- Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates
- Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material / Corrosion of embedded steel
- Loss of material / Environmental corrosion
- Loss of material / General corrosion
- Loss of material / Wear
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management programs manage the aging effects for the EFT Building components:

- Fire Protection
- Structures Monitoring Program

3.5.2.1.5 Fire Protection Barriers Commodity Group

Materials

The materials of construction for the Fire Protection Barriers Commodity Group components are:

- Aluminum

- Carbon steel
- Cementitious fireproofing (thermal insulating mastic)
- Fibrous fire wraps (thermal insulating wool/fiber)
- Fire Stop Sealant (silicone, silicone foam, caulk)
- Rigid board (thermal insulating board)

Environment

The Fire Protection Barriers Commodity Group components are exposed to the following environment:

- Air/Gas

Aging Effects Requiring Management

The following aging effects, associated with the Fire Protection Barriers Commodity Group, require management:

- Cracking, delamination/ Vibration
- Increase hardness and shrinkage/ Weathering
- Loss of material / Abrasion
- Loss of material / Flaking
- Loss of material / General corrosion

Aging Management Programs

The following aging management program manages the aging effects for the Fire Protection Barriers Commodity Group components:

- Fire Protection

3.5.2.1.6 Hangers and Supports Commodity Group

Materials

The materials of construction for the Hangers and Supports Commodity Group components are:

- Aluminum
- Carbon Steel
- Elastomers (rubber, neoprene, silicone, etc.)
- Fiberglass
- Grout

- Lubrite Plate
- Plastic
- Reinforced Concrete
- Stainless Steel

Environment

The Hangers and Supports Commodity Group components are exposed to the following environments:

- Air/Gas
- Atmosphere/Weather
- Below Grade
- Embedded in Concrete
- Treated Water

Aging Effects Requiring Management

The following aging effects, associated with the Hangers and Supports Commodity Group, require management:

- Loss of material / Crevice, MIC and pitting corrosion
- Loss of material / Environmental corrosion
- Loss of material / Environmental, crevice, galvanic, MIC and pitting corrosion
- Loss of mechanical function / Corrosion
- Loss of mechanical function / Distortion; elastomer hardening
- Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms
- Reduction or loss of isolation function / Radiation hardening, temperature, humidity, sustained vibratory loading

Aging Management Programs

The following aging management programs manage the aging effects for the Hangers and Supports Commodity Group components:

- ASME Section XI, Subsection IWF
- Buried Piping & Tanks Inspection
- Primary Containment In-Service Inspection Program
- System Condition Monitoring Program

3.5.2.1.7 **HPCI Building**

Materials

The materials of construction for the HPCI Building components are:

- Aluminum
- Carbon steel
- Elastomers (rubber, neoprene, silicone, etc.)
- Grout
- Reinforced concrete

Environment

The HPCI Building components are exposed to the following environments:

- Air/Gas
- Atmosphere / Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the HPCI Building, require management:

- Change in material properties and cracking/Ultraviolet radiation and ozone, thermal exposure
- Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material / Environmental corrosion
- Loss of material / General, crevice, MIC and pitting corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management program manages the aging effects for the HPCI Building components:

- Structures Monitoring Program

3.5.2.1.8 **Intake Structure**

Materials

The materials of construction for the Intake Structure components are:

- Carbon Steel
- Concrete Block
- Grout
- Reinforced concrete

Environment

The Intake Structure components are exposed to the following environments:

- Air/Gas
- Atmosphere Weather
- Below Grade
- Raw water

Aging Effects Requiring Management

The following aging effects, associated with the Intake Structure, require management:

- Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates
- Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel
- Cracking, loss of bond, loss of material (spalling, scaling) / De-icing salts
- Cracking / Restraint; shrinkage; creep; aggressive environment
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide

- Loss of material / Abrasion
- Loss of material / Corrosion
- Loss of material / Corrosion of embedded steel
- Loss of material / Environmental corrosion
- Loss of material / Environmental, crevice, MIC and pitting corrosion
- Loss of material / General, crevice, MIC and pitting corrosion
- Loss of material (spalling, scaling) and cracking / De-icing salts
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management programs manage the aging effects for the Intake Structure components:

- Fire Protection
- Structures Monitoring Program

3.5.2.1.9 Miscellaneous SBO Yard Structures

Materials

The materials of construction for the Miscellaneous SBO Yard Structures components are:

- Carbon steel
- Concrete block
- Grout
- Reinforced concrete

Environment

The Miscellaneous SBO Yard Structures components are exposed to the following environments:

- Air/Gas
- Atmosphere/Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Miscellaneous SBO Yard Structures, require management:

- Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel
- Cracking/ Restraint, shrinkage, creep, aggressive environment
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material / Environmental corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management program manages the aging effects for the Miscellaneous SBO Yard Structures components:

- Structures Monitoring Program

3.5.2.1.10 **Off Gas Stack**

Materials

The materials of construction for the Off Gas Stack components are:

- Carbon Steel
- Concrete Block
- Grout
- Reinforced concrete
- Stainless Steel

Environment

The Off Gas Stack components are exposed to the following environments:

- Air/Gas

- Atmosphere / Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Off Gas Stack, require management:

- Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel
- Cracking / Restraint; shrinkage; creep; aggressive environment
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength/ Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material / Environmental corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management program manages the aging effects for the Off Gas Stack components:

- Structures Monitoring Program

3.5.2.1.11 **Off Gas Storage and Compressor Building**

Materials

The materials of construction for the Off Gas Storage and Compressor Building components are:

- Carbon Steel
- Grout
- Reinforced concrete

Environment

The Off Gas Storage and Compressor Building components are exposed to the following environments:

- Air/Gas
- Atmosphere/Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Off Gas Storage and Compressor Building, require management:

- Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw

Aging Management Programs

The following aging management program manages the aging effects for the Off Gas Storage and Compressor Building components:

- Structures Monitoring Program

3.5.2.1.12 **Plant Control and Cable Spreading Structure**

Materials

The materials of construction for the Plant Control and Cable Spreading Structure components are:

- Carbon Steel
- Concrete Block
- Elastomers (rubber, neoprene, silicone, etc.)
- Grout
- Reinforced concrete

Environment

The Plant Control and Cable Spreading Structure components are exposed to the following environments:

- Air/Gas
- Atmosphere/Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Plant Control and Cable Spreading Structure, require management:

- Change in material properties and cracking/ Ozone and ultraviolet radiation; thermal exposure
- Concrete cracking and spalling/ Aggressive chemical attack and reaction with aggregates
- Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel
- Cracking / Restraint; shrinkage; creep; aggressive environment
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material / Corrosion of embedded steel
- Loss of material / Environmental corrosion
- Loss of material / General corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Loss of material / Wear
- Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management programs manage the aging effects for the Plant Control and Cable Spreading Structure components:

- Fire Protection
- Structures Monitoring Program

3.5.2.1.13 Primary Containment

Materials

The materials of construction for the Primary Containment components are:

- Carbon steel
- Dissimilar metal welds
- Elastomers (rubber, neoprene, silicone, etc.)
- Grout
- Inconel
- Lubrite plate
- Reinforced concrete
- Stainless steel

Environment

The Primary Containment components are exposed to the following environments:

- Air/Gas
- Embedded in Concrete
- Treated Water

Aging Effects Requiring Management

The following aging effects, associated with the Primary Containment, require management:

- Crack initiation and growth / Stress corrosion cracking
- Cracking/ Cyclic Loading (CLB fatigue analysis does not exist)
- Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel
- Expansion and cracking / Reaction with aggregates

- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Loss of leak tightness in closed position / Mechanical wear of locks, hinges and closure mechanisms
- Loss of material / Corrosion
- Loss of material / Crevice, MIC and pitting corrosion
- Loss of material / General, crevice, galvanic, MIC and pitting corrosion
- Loss of material / Environmental corrosion
- Loss of sealing; leakage through containment / Deterioration of moisture barrier
- Loss of sealing; leakage through containment / Deterioration of seals and gaskets (caulking, flashing and other sealants)
- Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management programs manage the aging effects for the Primary Containment components:

- 10 CFR 50, Appendix J
- Plant Chemistry Program
- Primary Containment In-Service Inspection Program
- Protective Coating Monitoring & Maintenance Program
- Structures Monitoring Program

3.5.2.1.14 **Radioactive Waste Building**

Materials

The materials of construction for the Radioactive Waste Building components are:

- Built-up Roofing
- Concrete block
- Carbon steel
- Elastomers (rubber, neoprene, silicone, etc.)
- Glass

- Grout
- Reinforced concrete

Environment

The Radioactive Waste Building components are exposed to the following environments:

- Air/Gas
- Atmosphere / Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Radioactive Waste Building, require management:

- Change in material properties and cracking / Ultraviolet radiation and ozone, thermal exposure gram
- Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel
- Cracking / Restraint, shrinkage, creep, aggressive environment
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Separation, environmental degradation, water in-leakage / Weathering

Aging Management Programs

The following aging management program manages the aging effects for the Radioactive Waste Building components:

- Structures Monitoring Program

3.5.2.1.15 **Reactor Building**

Materials

The materials of construction for the Reactor Building components are:

- Aluminum
- Boral
- Carbon steel
- Concrete block
- Elastomers (rubber, neoprene, silicone, etc.)
- Elastomer Membrane Roofing
- Glass
- Grout
- Reinforced concrete
- Rigid Board (thermal insulating board)
- Stainless steel

Environment

The Reactor Building components are exposed to the following environments:

- Air/Gas
- Atmosphere / Weather
- Below Grade
- Treated Water

Aging Effects Requiring Management

The following aging effects, associated with the Reactor Building, require management:

- Change in material properties and cracking / Ultraviolet radiation and ozone, thermal exposure
- Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates
- Cracking / Stress corrosion cracking
- Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel

- Cracking / Restraint, shrinkage, creep, aggressive environment
- Crack initiation and growth / Stress corrosion cracking
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Abrasion
- Loss of material / Corrosion
- Loss of material / Corrosion of embedded steel
- Loss of material / Crevice, galvanic, MIC and pitting corrosion
- Loss of material / Crevice, MIC and pitting corrosion
- Loss of material / Environmental corrosion
- Loss of material / General corrosion
- Loss of material / General, crevice, galvanic, MIC and pitting corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Loss of material / Wear
- Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms
- Reduction of neutron-absorbing capacity and loss of material / Crevice, galvanic, MIC and pitting corrosion
- Separation, environmental degradation, water in-leakage / Weathering

Aging Management Programs

The following aging management programs manage the aging effects for the Reactor Building components:

- Fire Protection
- One-Time Inspection
- Plant Chemistry Program
- Primary Containment In-Service Inspection Program
- Structures Monitoring Program
- System Condition Monitoring Program

3.5.2.1.16 **Structures Affecting Safety**

Materials

The materials of construction for the Structures Affecting Safety components are:

- Carbon Steel
- Grout
- Reinforced concrete

Environment

The Structures Affecting Safety components are exposed to the following environments:

- Air/Gas
- Atmosphere/Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Structures Affecting Safety, require management:

- Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling)/ Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material / General corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Loss of material / Wear

Aging Management Programs

The following aging management program manages the aging effects for the Structures Affecting Safety components:

- Fire Protection

- Structures Monitoring Program

3.5.2.1.17 **Turbine Building**

Materials

The materials of construction for the Turbine Building components are:

- Carbon steel
- Cementitious Fireproofing (thermal insulating mastic)
- Concrete block
- Grout
- Reinforced concrete
- Rigid Board (thermal insulating board)

Environment

The Turbine Building components are exposed to the following environments:

- Air/Gas
- Atmosphere / Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Turbine Building, require management:

- Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates
- Cracking and spalling / Fatigue due to low level repeated load
- Cracking and spalling / Minor settlement of the adjacent structure
- Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel
- Cracking / Restraint, shrinkage, creep, aggressive environment
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide

- Loss of material / Abrasion
- Loss of material / Corrosion
- Loss of material / Corrosion of embedded steel
- Loss of material / Environmental corrosion
- Loss of material / General corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Loss of material / Wear
- Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management programs manage the aging effects for the Turbine Building components:

- Fire Protection
- Structures Monitoring Program

3.5.2.1.18 **Underground Duct Bank**

Materials

The materials of construction for the Underground Duct Bank Structure components are:

- Carbon steel
- Grout
- Reinforced concrete

Environment

The Underground Duct Bank components are exposed to the following environments:

- Air/Gas
- Atmosphere / Weather
- Below Grade

Aging Effects Requiring Management

The following aging effects, associated with the Underground Duct Bank, require management:

- Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel
- Expansion and cracking / Reaction with aggregates
- Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack
- Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide
- Loss of material / Corrosion
- Loss of material / Environmental corrosion
- Loss of material / General and crevice corrosion
- Loss of material (spalling, scaling) and cracking / Freeze-thaw
- Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms

Aging Management Programs

The following aging management program manages the aging effects for the Underground Duct Bank components:

- Structures Monitoring Program

3.5.2.2 Further Evaluation of Aging Management as Recommended by NUREG-1801

NUREG-1801 Volume 1 Tables provide the basis for identifying those programs that warrant further evaluation by the reviewer in the license renewal application. For the Containments, Structures, and Component Supports, those programs are addressed in the following sections.

3.5.2.2.1 PWR and BWR Containments

3.5.2.2.1.1 Aging of Inaccessible Concrete Areas

Not applicable for a Mark I Containment.

3.5.2.2.1.2 Cracking, Distortion, and Increase in Component Stress Level due to Settlement; Reduction of Foundation Strength due to Erosion of Porous Concrete Subfoundations, if Not Covered by Structures Monitoring Program

This subsection discusses aging effects due to settlement. This subsection specifically discusses whether there is a need to manage the aging effects/mechanisms based on a plant specific review of the conditional requirements outlined in NUREG-1801.

The concern of this subsection is mainly with PWR and BWR Mark II and III concrete containments. However, the settlement criteria presented in this section is applicable to all concrete foundations.

The plant initial Licensing Basis did not include a program to monitor settlement. With the exception of the Diesel Fuel Oil Transfer House, no significant settlement has been observed on any major structure and de-watering systems are not used. This satisfies NUREG-1801 condition requirements on concrete settlement, and therefore, with the exception of the Diesel Fuel Oil Transfer House, cracks, distortion, and increase in component stress levels due to settlement do not require aging management.

The Diesel Fuel Oil Transfer House is a moderate weight structure exerting a mean bearing pressure of about 1,100 lb. / ft.^{2} on the underlying foundation material. The foundation material is compacted granular backfill underlain by stiff clay lenses and sandstone bedrock, and should not be susceptible to settlement under the load imposed. However the Diesel Fuel Oil Transfer House has undergone significant differential settlement.

Based on plant records and settlement data, settlement of the Diesel Fuel Oil Transfer House occurred rather rapidly following construction and was probably due to washout after a rainstorm and was long ago effectively complete. Settlement data recorded annually since 1992 continues to show no significant settlement of the structure.

The Structures Monitoring Program manages the aging effects for the Diesel Fuel Oil Transfer House. As part of the Structures Monitoring Program, an annual inspection of the Diesel Fuel Oil Transfer House for settlement is performed to manage the aging effects of cracks, distortion, and increase in component stress level due to settlement.

Implementation of this program to manage aging effects/mechanism provides added assurance that the aging effects are not occurring; or that the aging effects are progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

This subsection also discusses the aging effects of all types of PWR and BWR containments due to erosion of porous concrete subfoundations. This subsection specifically discusses whether there is a need to manage the aging effects/mechanisms based on a plant specific review of the conditional requirements outlined in NUREG-1801.

MNGP's response to erosion of cement from porous concrete subfoundations described in Information Notices 97-11 and 98-26 concluded that foundation materials do not contain any porous layers. The concrete base or lean concrete fill material used beneath major building foundations did not include high-alumina cement. MNGP does not rely on a de-watering system to lower site ground water.

NUREG-1801 condition requirements are satisfied for porous concrete subfoundations, and therefore the aging effects due to erosion of porous concrete subfoundations do not require aging management.

3.5.2.2.1.3 Reduction of Strength and Modulus of Concrete Structures due to Elevated Temperature

This subsection discusses aging effects due to elevated temperatures of concrete. This subsection specifically discusses whether there is a need to manage the aging effects/ mechanisms based on a plant specific review of the conditional requirements outlined in NUREG-1801.

The concern of this subsection is mainly with PWR and BWR Mark II and III concrete containments. However, the temperature criteria presented in this section is applicable to all concrete.

Plant documents confirm that concrete elements are not subject to elevated temperatures in excess of 150° F general area and 200° F local area. Plant areas that bound high temperature considerations are the drywell general area and biological shield wall piping penetration local area, which experience temperatures of 135° F and 179° F respectively.

This satisfies NUREG-1801 condition requirements on elevated temperatures, and therefore reduction of strength and modulus due to elevated temperatures do not require aging management.

3.5.2.2.1.4 Loss of Material due to Corrosion in Inaccessible Areas of Steel Containment Shell or Liner Plate

This subsection discusses loss of material due to corrosion for the drywell shell and the drywell support skirt in inaccessible areas (i.e. embedded in concrete). This subsection specifically discusses whether there is a need to manage the aging effects/mechanisms based on a plant specific review of the conditional requirements outlined in NUREG-1801.

The requirements specified in NUREG-1801 for concrete quality, inspections and housekeeping are satisfied. Therefore, a plant specific aging management program for loss of material due to corrosion of steel elements in inaccessible areas is not required.

The Protective Coating Monitoring & Maintenance Program is not credited for managing loss of material due to corrosion but is credited for preventing the degradation of coatings that could lead to the clogging of ECCS suppression pool suction strainers.

Implementation of these programs to manage the aging effect/mechanism provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.5.2.2.1.5 Loss of Prestress due to Relaxation, Shrinkage, Creep, and Elevated Temperature

Not applicable for a Mark I Containment.

3.5.2.2.1.6 Cumulative Fatigue Damage

This subsection lists components associated with primary containment that require TLAA evaluations for cumulative fatigue damage due to fatigue. This determination is based on components with existing CLB fatigue analyses. Specifically, components requiring TLAA evaluations include the vent lines, vent line bellows, vent header, torus, downcomers, torus penetrations, drywell penetration bellows, and refueling bellows skirt (the limiting condition for the drywell to Reactor Building refueling seal and RPV

to drywell refueling seal). See Section 4.3 and Section 4.6 for the TLAA evaluations.

Note: Licensing and design basis documents do not reflect the existence of any fatigue analysis for the drywell shell plates, drywell penetrations, and drywell penetration sleeves. These components and associated dissimilar metal welds are designed to stress levels without requiring a fatigue analysis. In addition, these components were not evaluated for fatigue in the original design, and the Plant Unique Analysis (PUA) did not reevaluate them for fatigue.

3.5.2.2.1.7 Cracking due to Cyclic Loading and SCC

This subsection lists components associated with primary containment that require aging management for cracking due to cyclic loading given that CLB fatigue analyses were not part of their original design bases. Specifically, components requiring aging management for cracking due to cyclic loading include drywell penetrations, drywell penetration sleeves and associated dissimilar metal welds. These components are designed to stress levels without requiring fatigue analyses and thus fine cracks are unlikely to occur. Therefore existing requirements for leak rate testing per the 10 CFR 50, Appendix J Program and surface inspections per the Primary Containment In-Service Inspection Program are adequate to detect cracking due to cyclic loading.

Note: See 3.5.1-01 for components of the primary containment that require TLAA evaluations based on existing CLB fatigue analyses.

This subsection also lists components associated with primary containment that require aging management for crack initiation and growth due to stress corrosion cracking (SCC), specifically the stainless steel vent line bellows and drywell penetration bellows.

NUREG-1801 states that weld Exam Categories E-B (pressure retaining welds, visual VT-1 examination method) and E-F (dissimilar pressure retaining welds, surface examination method) for vent line bellows assemblies and other penetration bellows assemblies are warranted for the extended period of operations.

MNGP operating history on bellows replacements is limited to bellows X-16B. Leakage was identified during LLRT testing and not a result of cracks observed during a visual examination. The leakage was identified at the outer most bellows from a small failure underneath the outer most collar

of the expansion joint. No cracks in the weld metal were identified. Industry operating history has identified cracks of the bellows but none in the weld metal.

Welds for bellows assemblies are in a sheltered, non-corrosive environment. Additionally, bellows assemblies are located outside primary containment in an air/gas environment where temperatures are not expected to exceed threshold limits for stress corrosion cracking. In light of the non-aggressive environmental exposures, plant specific and industry operating histories, weld examinations utilizing optional Examination Categories E-B and E-F are not warranted. Existing requirements for visual examinations, in accordance with ASME Section XI, Subsection IWE, Examination Category E-A, and Appendix J leak rate testing, Examination Category E-P, should be sufficient to detect cracking of the bellows assemblies.

Exceptions apply to NUREG-1801 recommendations for 10 CFR 50 Appendix J Program implementation.

Implementation of these programs to manage aging effects/mechanisms provides added assurance that the aging effects are not occurring; or that the aging effects are progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.5.2.2.2 **Class 1 Structures**

3.5.2.2.2.1 **Aging of Structures Not Covered by Structures Monitoring Program**

This subsection discusses various aging effects for concrete and carbon steel components. MNGP does not have any group 7 or 8 structures, therefore, discussion of the aging effects for these structures is not required. This subsection specifically discusses whether there is a need to manage the aging effects/mechanisms based on a plant specific review of the conditional requirements outlined in NUREG-1801.

In accordance with NUREG-1801 for carbon steel in accessible areas, loss of material due to corrosion requires aging management. Aging management of carbon steel in accessible areas is performed within the Structures Monitoring Program. Through general visual inspections, the Structures Monitoring Program identifies and evaluates general corrosion of

carbon steel components. Protective coatings, including galvanization, are not relied upon to manage the effects of aging.

The Underground Duct Bank and intake structures include below grade steel components. Since the below grade side of the carbon steel components are not accessible, the condition of the accessible sides of the carbon steel components, located in an atmosphere/weather, air/gas or raw water environment, will be used to evaluate the condition of the inaccessible sides of the carbon steel components.

In accordance with NUREG-1801 and ISG-03, concrete in accessible areas requires aging management for the following aging mechanisms: freeze-thaw, leaching of calcium hydroxide, reaction with aggregates, corrosion of embedded steel and aggressive chemical attack. Aging management of concrete in accessible areas is performed through general visual inspections within the Structures Monitoring Program.

Concrete in inaccessible areas does not require aging management at MNGP. Justification is provided in the following paragraphs.

MNGP is located in a severe weathering region according to Figure 1 of ASTM C33-90, and therefore a freeze-thaw evaluation is required. Plant documents confirm that the concrete has an air content between 3 and 6%, and subsequent inspections performed on concrete in accessible areas did not exhibit degradation related to freeze-thaw. This evaluation satisfies NUREG-1801 and ISG-03 condition requirements for concrete in inaccessible areas, and therefore loss of material and cracking due to freeze-thaw do not require aging management.

Plant documents confirm that the concrete was constructed in accordance with the recommendations in ACI 201.2R-77 for durability. Additionally, there is no flowing water acting on any below-grade concrete basemat or concrete wall. Building foundations may or may not fall below the ground water table. For those below the ground water table, evaluation shows that ground water flow velocity is well below the threshold at which any significant erosion or leaching of calcium hydroxide is possible. This evaluation satisfies NUREG-1801 and ISG-03 condition requirements for concrete in inaccessible areas, and therefore increase in porosity and permeability and loss of strength due to leaching of calcium hydroxide do not require aging management.

Tests and petrographic examinations performed according to ASTM C289-64 and ASTM C295 verified that aggregates used are not reactive. This satisfies NUREG-1801 and ISG-03 condition requirements for concrete in inaccessible areas, and therefore expansion and cracking due to reaction with aggregates do not require aging management.

NUREG-1801 and ISG-03's description of an aggressive environment is pH < 5.5, chlorides >500 ppm, or sulfates > 1500 ppm. Plant documents confirm that the below-grade environment is not aggressive (MNGP data indicates that the ph is > 7.0, the chlorides are < 100 ppm and the sulfates are < 100 ppm). The Structures Monitoring Program includes examinations of below grade concrete when excavated for any reason. To ensure the below grade environment remains non-aggressive, ground water chemistry is monitored periodically for the above parameters as part of the Structures Monitoring Program. This satisfies NUREG-1801 and ISG-03 condition requirements for concrete in inaccessible areas, and therefore cracking, loss of bond, and loss of material due to corrosion of embedded steel do not require aging management. Based on the above rationale, increase in porosity and permeability, cracking, and loss of material due to aggressive chemical attack do not require aging management.

Implementation of this program to manage aging effects/mechanisms provides added assurance that the aging effects are not occurring; or that the aging effects are progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.5.2.2.2.2 Aging Management of Inaccessible Areas

This subsection discusses various aging effects for inaccessible concrete components. MNGP doesn't have any group 7 or 8 structures, therefore, discussion of the aging effects for these structures is not required. This subsection specifically discusses whether there is a need to manage the aging effects/mechanisms based on a plant specific review of the conditional requirements outlined in NUREG-1801.

Concrete in inaccessible areas does not require aging management for corrosion of embedded steel and aggressive chemical attack at MNGP. Justification is provided in Section 3.5.2.2.2.1.

3.5.2.2.3 **Component Supports**

3.5.2.2.3.1 **Aging of Supports Not Covered by Structures Monitoring Program**

This subsection discusses aging of component supports. This subsection specifically discusses whether there is a need to manage the aging effects/mechanisms based on a plant specific review of the conditional requirements outlined in NUREG-1801.

Component supports include those structural elements that are connected to the building or its structures and which extend to a system or system component for the purpose of providing support or restraint. Component supports include support members, anchor bolts, welds, bolted connections, grout pads and building concrete at locations of expansion and grouted anchors. Inclusive in this boundary definition are any vibration isolation elements. Spray or drip shields for equipment are included with component supports. In addition, electrical and instrumentation racks, electrical panels, cabinets and enclosures, lighting fixtures, tube track, conduit and cable trays provide support and thus are included with component supports.

Miscellaneous steel structures such as platforms, stairs, whip restraints and masonry wall supports are part of the structure in which they are located.

The aging effect requiring management for carbon steel components is Loss of Material. Per EPRI 1002950 Guidelines, only general corrosion is an aging mechanism applicable to loss of material for carbon steel in air/gas or atmosphere/weather environments. The EPRI guidelines also indicate that general, crevice, MIC and pitting corrosion are applicable aging mechanisms applicable to loss of material for carbon steel in treated water and below grade environments. Therefore, management of this aging effect is required.

The aging effect requiring management for reinforced concrete and grout components is reduction in concrete anchor capacity due to local concrete degradation. The only mechanism applicable to this aging effect is service induced cracking or other concrete aging mechanism. Operating experience has shown that service induced cracking can occur in concrete and grouted foundations. Concrete expansion bolts (anchors) can lose anchor capacity due to concrete or grout degradation. Therefore, management of this aging effect is required.

The aging effect requiring management for elastomers (rubber, neoprene, silicone, etc.) is reduction or loss of isolation function. The aging mechanisms applicable to this aging effect are radiation hardening, temperature, humidity and sustained vibratory loading. Operating experience has also shown that elastomer materials can degrade over time. Therefore, management of this aging effect is required.

The System Condition Monitoring Program is used to identify and correct aging concerns for component supports in an air/gas or atmosphere/weather environment. Through general visual inspections, the System Condition Monitoring Program identifies and evaluates general corrosion of carbon steel components, service-induced cracking of grout and concrete local to support anchorage as well as degradation due to radiation hardening, temperature, humidity and sustained vibratory loading of vibration isolation elements.

The Structures Monitoring Program is used to identify and correct aging concerns with miscellaneous steel components in an air/gas environment. Through general visual inspections, the Structures Monitoring Program identifies and evaluates general corrosion of carbon steel components as well as service-induced cracking and degradation of grout and concrete local to the anchorage.

The Buried Piping & Tanks Inspection Program is used to identify loss of material for carbon steel conduit and the Diesel Fuel Oil Storage Tank Flood Tie-Downs in a below grade environment through internal inspections of buried tanks, system functional testing and periodic inspections of buried pipe. A condition assessment evaluation is made of the buried conduit and the Diesel Fuel Oil Storage Tank Flood Tie-Downs such that repairs can be made, if necessary, prior to loss of intended function.

Access to the components inside the torus is limited. Since the Primary Containment In-Service Inspection Program inspects components inside the torus when available, it is relied upon to manage the aging effects of the miscellaneous steel components, support members, welds, and bolted connections located inside the torus. Through general visual inspections, the Primary Containment In-Service Inspection Program identifies and evaluates general (environmental), crevice, galvanic, MIC and pitting corrosion of carbon steel components in treated water and general corrosion in air/gas.

Implementation of these programs to manage aging effects/mechanisms provides added assurance that the aging effects are not occurring; or that the aging effects are progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

3.5.2.2.3.2 Cumulative Fatigue Damage due to Cyclic Loading

This subsection discusses fatigue of component support members, anchor bolts and welds. A TLAA does not exist for Groups B1.1, B1.2, and B1.3 support members, anchor bolts, bolted connections and welds.

Generally, steel support components are not prone to fatigue. Loads for the most part are applied gradually and remain constant. Members subjected to fatigue loading conditions are accounted for by Code in their design.

MNGP piping and component supports were designed to ASME Section III and ANSI/USAS B31.1. None of these codes required formal fatigue analysis of supports or design of supports for fatigue effects. The Class MC support components were designed to ASME Section III. ASME Section III doesn't require a formal fatigue analysis of Class MC supports. In addition, Class MC supports were not the subject of a fatigue analysis in support of the Plant Unique Analysis (PUA).

3.5.2.3 Time-Limited Aging Analysis

The time-limited aging analyses (TLAA) identified below are associated with the Containments, Structures, and Component Supports components:

- Section 4.3, Metal Fatigue of the RPV and Internals, and Reactor Coolant Pressure Boundary Piping and Components
- Section 4.6, Fatigue Analyses of the Primary Containment, Attached Piping, and Components
- Section 4.9, Reactor Building Crane Load Cycles
- Section 4.10, Fatigue Analyses of HPCI & RCIC Turbine Exhaust Penetrations

3.5.3 Conclusion

The Containments, Structures, and Component Supports components that are subject to aging management review have been identified in accordance with the requirements of 10 CFR 54.4. The aging management programs selected to manage aging effects for the

Containments, Structures, and Component Supports components are identified in the summaries in Section 3.5.2.1 above.

A description of these aging management programs is provided in Appendix B, along with the demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the demonstrations provided in Appendix B, the effects of aging associated with the Containments, Structures, and Component Supports components will be adequately managed so that there is reasonable assurance that the intended function(s) will be maintained consistent with the current licensing basis during the period of extended operation.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
Common Components of All Types of PWR and BWR Containment					
3.5.1-01	Penetration sleeves, penetration bellows, and dissimilar metal welds	Cumulative fatigue damage (CLB fatigue analysis exists)	TLAA evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA (see [SRP] subsection 3.5.2.2.1.6)	Further evaluation documented in Section 3.5.2.2.1.6.
3.5.1-02	Penetration sleeves, bellows, and dissimilar metal welds.	Cracking due to cyclic loading, or crack initiation and growth due to SCC	Containment ISI and Containment leak rate test	Yes, detection of aging effects is to be evaluated (see [SRP] subsection 3.5.2.2.1.7)	Further evaluation documented in Section 3.5.2.2.1.7.
3.5.1-03	Penetration sleeves, penetration bellows, and dissimilar metal welds	Loss of material due to corrosion	Containment ISI and Containment leak rate test	No	The Primary Containment In-Service Inspection Program and the 10 CFR 50, Appendix J Program are credited with managing this aging effect for the penetration sleeves, bellows and dissimilar metal welds. Exceptions apply to NUREG-1801 recommendations for 10 CFR 50 Appendix J Program implementation. NUREG-1801, line II.B4.1-a includes “Coatings Program” if credited. The Protective Coating Monitoring & Maintenance Program is not credited for managing loss of material due to corrosion but is credited for preventing the degradation of coatings that could lead to the clogging of ECCS suppression pool suction strainers.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-04	Personnel airlock and equipment hatch	Loss of material due to corrosion	Containment ISI and Containment leak rate test	No	The Primary Containment In-Service Inspection Program and the 10 CFR 50, Appendix J Program are credited with managing this aging effect for the personnel airlock, equipment hatch and CRD hatch. Exceptions apply to NUREG-1801 recommendations for 10 CFR 50 Appendix J Program implementation. NUREG-1801, line II.B4.2-a includes "Coatings Program" if credited. The Protective Coating Monitoring & Maintenance Program is not credited for managing loss of material due to corrosion but is credited for preventing the degradation of coatings that could lead to the clogging of ECCS suppression pool suction strainers.
3.5.1-05	Personnel airlock and equipment hatch	Loss of leak tightness in closed position due to mechanical wear of locks, hinges and closure mechanism	Containment leak rate test and Plant Technical Specifications	No	The 10 CFR 50, Appendix J Program is credited with managing this aging effect for the personnel airlock, equipment hatch and CRD hatch. Consistent with the plant technical specifications, the 10 CFR 50 Appendix J Program specifies tests that monitor leakage through the overall pressure retaining boundary as well as through individual penetration isolation barriers such as the personnel airlock. Exceptions apply to NUREG-1801 recommendations for 10 CFR 50 Appendix J Program implementation.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-06	Seals, gaskets, and moisture barriers	Loss of sealant and leakage through containment due to deterioration of joint seals, gaskets, and moisture barriers	Containment ISI and Containment leak rate test	No	The Primary Containment In-Service Inspection Program is credited with managing these aging effects for the seals, gaskets and moisture barriers. The 10 CFR 50, Appendix J Program monitors leak tightness of the pressure boundary, seals and gaskets (including O-rings). Exceptions apply to NUREG-1801 recommendations for 10 CFR 50 Appendix J Program implementation.
PWR Concrete (Reinforced and Prestressed) and Steel Containment **BWR Concrete (Mark II and III) and Steel (Mark I, II, and III) Containment**					
3.5.1-07	Concrete elements: foundation, walls, dome.	Aging of accessible and inaccessible concrete areas due to leaching of calcium hydroxide, aggressive chemical attack, and corrosion of embedded steel	Containment ISI	Yes, if aging mechanism is significant for inaccessible areas (see [SRP] subsection 3.5.2.2.1.1)	This item is not applicable to Mark I Containments. Therefore, [SRP] subsection 3.5.2.2.1.1 does not apply.
3.5.1-08	Concrete elements: foundation	Cracks, distortion, and increases in component stress level due to settlement	Structures Monitoring	No, if within the scope of the applicant's structures monitoring program (see [SRP] subsection 3.5.2.2.1.2)	This item is not applicable to Mark I Containments.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-09	Concrete elements: foundation	Reduction in foundation strength due to erosion of porous concrete subfoundation	Structures Monitoring	No, if within the scope of the applicant's structures monitoring program (see [SRP] subsection 3.5.2.2.1.2)	This item is not applicable to Mark I Containments.
3.5.1-10	Concrete elements: foundation, dome, and wall	Reduction of strength and modulus due to elevated temperature	Plant specific	Yes, for any portions of concrete containment that exceed specified temperature limits (see [SRP] subsection 3.5.2.2.1.3)	This item is not applicable to Mark I Containments.
3.5.1-11	Prestressed containment: tendons and anchorage components	Loss of prestress due to relaxation, shrinkage, creep, and elevated temperature	TLAA evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA (see [SRP] subsection 3.5.2.2.1.5)	This item is not applicable to Mark I Containments. Therefore, [SRP] subsection 3.5.2.2.1.5 does not apply.
3.5.1-12	Steel elements: liner plate, containment shell	Loss of material due to corrosion in accessible and inaccessible areas	Containment ISI and Containment leak rate test	Yes, if corrosion is significant for inaccessible areas (see [SRP] subsection 3.5.2.2.1.4)	The Primary Containment In-Service Inspection Program and the 10 CFR 50, Appendix J Program are credited with managing this aging effect for the steel elements in accessible areas. Exceptions apply to NUREG-1801 recommendations for 10 CFR 50 Appendix J Program implementation. See Section 3.5.2.2.1.4 for further discussion on steel containment components in inaccessible areas.
3.5.1-13	Steel elements: vent header, drywell head, torus, downcomers, pool shell	Cumulative fatigue damage (CLB fatigue analysis exists)	TLAA evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA (see [SRP] subsection 3.5.2.2.1.6)	Further evaluation documented in Section 3.5.2.2.1.6.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-14	Steel elements: protected by coating	Loss of material due to corrosion in accessible areas only	Protective coating monitoring and maintenance	No	The Protective Coating Monitoring & Maintenance Program is not credited for managing loss of material due to corrosion but is credited for preventing the degradation of coatings that could lead to the clogging of ECCS suppression pool suction strainers. The Primary Containment In-Service Inspection Program and the 10 CFR 50, Appendix J Program are credited with managing this aging effect for the steel elements in accessible areas. Exceptions apply to NUREG-1801 recommendations for 10 CFR 50 Appendix J Program implementation. Implementation of these programs to manage aging effects/mechanism provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the component's intended function will be maintained during the period of extended operation.
3.5.1-15	Prestressed containment: tendons and anchorage components	Loss of material due to corrosion of prestressing tendons and anchorage components	Containment ISI	No	Not applicable for a Mark I Containment.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-16	Concrete elements: foundation, dome, and wall	Scaling, cracking, and spalling due to freeze-thaw; expansion and cracking due to reaction with aggregate	Containment ISI	No	Not applicable for a Mark I Containment.
3.5.1-17	Steel elements: vent line bellows, vent headers, downcomers	Cracking due to cyclic loads or Crack initiation and growth due to SCC	Containment ISI and Containment leak rate test	Yes, detection of aging effects is to be evaluated (see [SRP] subsection 3.5.2.2.1.7)	Further evaluation documented in Section 3.5.2.2.1.7.
3.5.1-18	Steel elements: Suppression chamber liner	Crack initiation and growth due to SCC	Containment ISI and Containment leak rate test	No	Not applicable for a Mark I Containment.
3.5.1-19	Steel elements: drywell head and downcomer pipes	Fretting and lock up due to wear	Containment ISI	No	Aging management is not applicable for these aging effects based on the following: • The drywell head does not experience a relative motion environment that would cause wear or fretting. • Wear of bolting components during boltup or bolt removal is prevented by proper maintenance practices, thus it is not an aging issue. • Downcomer pipes are not subject to relative motion that would cause wear or fretting.
Class 1 Structures					

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-20	All Groups except Group 6: accessible interior/exterior concrete & steel components	All types of aging effects	Structures Monitoring	No, if within the scope of the applicant's structures monitoring program (see [SRP] subsection 3.5.2.2.2.1) ISG-03 correspondence has clarified the above wording as follows: No, if within the scope of the applicant's structures monitoring program and a plant-specific aging management program is required for inaccessible areas as stated (see [SRP] subsection 3.5.2.2.2.1)	Further evaluation documented in Section 3.5.2.2.2.1.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-21	Groups 1-3, 5, 7-9: inaccessible concrete components, such as exterior walls below grade and foundation	Aging of inaccessible concrete areas due to aggressive chemical attack, and corrosion of embedded steel	Plant-specific	Yes, if an aggressive below-grade environment exists (see [SRP] subsection 3.5.2.2.2.2) ISG-03 correspondence has clarified the above wording as follows: Yes, a plant-specific aging management program is required for inaccessible areas as stated (see [SRP] subsection 3.5.2.2.2.2)	Further evaluation documented in Section 3.5.2.2.2.2.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-22	Group 6: all accessible/ inaccessible concrete, steel, and earthen components	All types of aging effects, including loss of material due to abrasion, cavitation, and corrosion	Inspection of Water-Control Structures or FERC/US Army Corps of Engineers dam inspections and maintenance	No	The only water control structure within the scope for license renewal is the intake structure. All structural inspections are performed as part of the Structures Monitoring Program. The Structures Monitoring Program incorporates the requirements of the RG1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants into its inspections of the intake structure. The Structures Monitoring Program is consistent with NUREG-1801. See Section 3.5.2.2.2.1 for the aging management evaluation of carbon steel for loss of material due to corrosion and for the aging management evaluation of concrete for the following aging mechanisms: Freeze-Thaw, Leaching Of Calcium Hydroxide, Reaction With Aggregate, Corrosion Of Embedded Steel and Aggressive Chemical Attack. See Section 3.5.2.2.1.2 for the aging management evaluation of concrete for the settlement aging mechanism. Flow velocities in the intake structure are less than the values at which cavitation may occur. Flow velocities, however, may approach values such that erosion/abrasion may occur. On the basis of the above discussions, it is concluded that loss of concrete material due to erosion / abrasion is an aging effect requiring management in the raw water environment. The principal tool for managing this effect is diver examinations performed as required by the Structures Monitoring Program. Implementation of this program to manage aging effects/mechanisms provides added

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-22 (con't)					assurance that the aging effects are not occurring; or that the aging effects are progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-23	Group 5: liners	Crack initiation and growth from SCC and loss of material due to crevice corrosion	Water Chemistry Program and Monitoring of spent fuel pool water level	No	The Plant Chemistry Program is credited with managing the aging effects loss of material and crack initiation and growth for the spent fuel pool liner. The dryer/separator storage pool liner, the reactor well liner and the drywell to reactor building refueling seal bellows are normally in an air/gas environment. There are no aging effects for stainless steel liners in an air/gas environment. However, since the dryer/ separator storage pool liner, the reactor well liner and the drywell to reactor building refueling seal bellows are periodically wetted, the aging effects loss of material and crack initiation and growth may be applicable to these components. Therefore, as with the spent fuel pool liner, the Plant Chemistry Program is credited with managing these aging effects. The System Condition Monitoring Program provides monitoring and control of the spent fuel pool water level and spent fuel pool leakage. The Primary Containment In-Service Inspection Program is credited with managing the aging effects loss of material and crack initiation and growth for the drywell to reactor building refueling seal bellows through activities that monitor for leaks past the bellows during refueling. Implementation of these programs to manage aging effects/mechanism provides added assurance that the aging effect is not occurring; or that the aging effect is progressing very slowly such that the

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-23 (con't)					component's intended function will be maintained during the period of extended operation. Exceptions apply to NUREG-1801 recommendations for the Plant Chemistry Program implementation.
3.5.1-24	Groups 1-3, 5, 6: all masonry block walls	Cracking due to restraint, shrinkage, creep, and aggressive environment	Masonry Wall	No	NUREG-1801 indicates that the Masonry Wall Program is to be used to manage the aging effect cracking for concrete block, however, MNGP credits a different aging management program. The Structures Monitoring Program, which incorporates all of the requirements of the Masonry Wall Program, manages the aging effect for concrete block. Through general visual inspections, the Structures Monitoring Program identifies and evaluates general cracking of concrete block. In addition, masonry walls are relied upon as fire barriers. Therefore visual inspections as part of the Fire Protection Program, used to ensure that the block wall is able to perform its fire protection intended function, also manage the aging effect for concrete block. Implementation of this program to manage aging effects/mechanisms provides added assurance that the aging effects are not occurring; or that the aging effects are progressing very slowly such that the component's intended function will be maintained during the period of extended operation.

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-25	Groups 1-3, 5, 7-9: foundation	Cracks, distortion, and increases in component stress level due to settlement	Structures Monitoring	No, if within the scope of the applicant's structures monitoring program (see [SRP] subsection 3.5.2.2.1.2)	Further evaluation documented in Section 3.5.2.2.1.2.
3.5.1-26	Groups 1-3, 5-9: foundation	Reduction in foundation strength due to erosion of porous concrete subfoundation	Structures Monitoring	No, if within the scope of the applicant's structures monitoring program (see [SRP] subsection 3.5.2.2.1.2)	Further evaluation documented in Section 3.5.2.2.1.2.
3.5.1-27	Groups 1-5: concrete	Reduction of strength and modulus due to elevated temperature	Plant-specific	Yes, for any portions of concrete that exceed specified temperature limits (see [SRP] subsection 3.5.2.2.1.3)	Further evaluation documented in Section 3.5.2.2.1.3.
3.5.1-28	Groups 7, 8: liners	Crack Initiation and growth due to SCC; Loss of material due to crevice corrosion	Plant-specific	Yes	MNGP has no Group 7 and 8 structural components.
Component Supports					

Table 3.5.1 Summary of Aging Management Evaluations in Chapters II and III of NUREG-1801 for Structures and Component Supports

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.5.1-29	All Groups: support members: anchor bolts, concrete surrounding anchor bolts, welds, grout pad, bolted connections, etc.	Aging of component supports	Structures Monitoring	No, if within the scope of the applicant's structures monitoring program (see [SRP] subsection 3.5.2.2.3.1)	Further evaluation documented in Section 3.5.2.2.3.1.
3.5.1-30	Groups B1.1, B1.2, and B1.3: support members: anchor bolts, welds	Cumulative fatigue damage (CLB fatigue analysis exists)	TLAA evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA (see [SRP] subsection 3.5.2.2.3.2)	Further evaluation documented in Section 3.5.2.2.3.2.
3.5.1-31	PWR only				
3.5.1-32	Groups B1.1, B1.2, and B1.3: support members: anchor bolts, welds, spring hangers, guides, stops, and vibration isolators	Loss of material due to environmental corrosion; loss of mechanical function due to corrosion, distortion, dirt, overload, etc.	ISI	No	The ASME Section XI, Subsection IWF Program is credited with managing the aging effects loss of material and loss of mechanical function for support members, anchor bolts, bolted connections, welds, spring hangers, guides, stops and vibration isolators in an air/gas or treated water environment.
3.5.1-33	Group B1.1: high strength low-alloy bolts	Crack initiation and growth due to SCC	Bolting integrity	No	There are no high strength low-alloy bolts in use at MNGP.

Table 3.5.2-1 Structures and Component Supports–Cranes, Heavy Loads, Rigging–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Aluminum in Air/Gas (Fuel Prep Machine Aluminum Frame)	Non-Safety Support	Aluminum	Air/Gas	None	None			J, 517
Aluminum in Treated Water (Fuel Prep Machine Aluminum Frame)	Non-Safety Support	Aluminum	Treated Water	Cracking/Stress corrosion cracking	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems			J
				Loss of material / Crevice, galvanic, MIC and pitting corrosion	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems			J
Carbon Steel, Low Alloy Steel in Air/Gas (Reactor Building Crane rails, Turbine Building Crane rails, Refueling Platform rails)	Non-Safety Support	Carbon steel	Air/Gas	Loss of material / Wear	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	VII.B.2-a	3.3.1-16	A

Table 3.5.2-1 Structures and Component Supports–Cranes, Heavy Loads, Rigging–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Reactor Building Crane, Turbine Building Crane, Refueling Platform, Reactor Vessel Head Lifting Device, Dryer and Steam Separator Sling Lifting Device and Hook Box)	Non-Safety Support	Carbon steel	Air/Gas	Loss of material / General corrosion	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	VII.B.1-b	3.3.1-16	A, 569
Carbon Steel, Low Alloy Steel in Air/Gas (Turbine Building Crane, Refueling Platform, Reactor Vessel Head Lifting Device, Dryer and Steam Separator Sling Lifting Device and Hook Box)	Non-Safety Support	Carbon steel	Air/Gas	Cumulative fatigue damage / Fatigue	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems			J, 513, 569

Table 3.5.2-2 Structures and Component Supports–Diesel Fuel Oil Transfer House–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, Steel Embeds, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519
Carbon Steel, Low Alloy Steel in Atmosphere / Weather (Door)	Shelter/ Protection	Carbon steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511

Table 3.5.2-2 Structures and Component Supports–Diesel Fuel Oil Transfer House–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slabs)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
Concrete in Air/Gas (Foundation, Walls, Slab, Grout)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				None	None	III.A3.1-j	3.5.1-27	I, 508
	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-2 Structures and Component Supports–Diesel Fuel Oil Transfer House–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere / Weather (Walls, Slab)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A3.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A3.1-a	3.5.1-20	A, 501

Table 3.5.2-2 Structures and Component Supports–Diesel Fuel Oil Transfer House–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Below Grade (Foundation, Walls)	Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	Cracks, distortion, increase in component stress level / Settlement	Structures Monitoring Program	III.A3.1-h	3.5.1-25	A, 518
				None	None	III.A3.1-a	3.5.1-20	A, 501
						III.A3.1-b	3.5.1-20	A, 502
						III.A3.1-c	3.5.1-20	A, 503
						III.A3.1-e	3.5.1-21	A, 504
						III.A3.1-g	3.5.1-21	A, 505
						III.A3.1-i	3.5.1-26	I, 507

Table 3.5.2-3 Structures and Component Supports–Emergency Diesel Generator Building–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Fire Rated Doors)	Fire Barrier	Carbon steel	Air/Gas	Loss of material/ General corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 521
				Loss of material / Wear	Fire Protection	VII.G.4-d	3.3.1-20	B
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, Steel Embeds, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519

Table 3.5.2-3 Structures and Component Supports–Emergency Diesel Generator Building–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Atmosphere/ Weather (Doors, Ventilation Assemblies)	Non-Safety Support Shelter/ Protection	Carbon steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Concrete in Air/Gas (Foundation, Walls, Slabs)	Fire Barrier Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504

Table 3.5.2-3 Structures and Component Supports–Emergency Diesel Generator Building–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slabs, Grout)	Fire Barrier Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				None	None	III.A3.1-j	3.5.1-27	I, 508
	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-3 Structures and Component Supports–Emergency Diesel Generator Building–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Walls, Slabs)	Fire Barrier	Reinforced concrete	Air/Gas	Loss of material / Corrosion of embedded steel	Fire Protection	VII.G.4-c	3.3.1-30	B, 504, 520
					Structures Monitoring Program	VII.G.4-c	3.3.1-30	A, 504, 520
		Reinforced concrete, Grout	Air/Gas	Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates	Fire Protection	VII.G.4-b	3.3.1-30	B, 503, 505, 520
					Structures Monitoring Program	VII.G.4-b	3.3.1-30	A, 503, 505, 520
Concrete in Atmosphere/ Weather (Walls, Slab)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling)/ Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505

Table 3.5.2-3 Structures and Component Supports–Emergency Diesel Generator Building–Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Walls, Slab)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A3.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A3.1-a	3.5.1-20	A, 501
Concrete in Below Grade (Foundation, Walls)	Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	None	None	III.A3.1-a	3.5.1-20	A, 501
						III.A3.1-b	3.5.1-20	A, 502
						III.A3.1-c	3.5.1-20	A, 503
						III.A3.1-e	3.5.1-21	A, 504
						III.A3.1-g	3.5.1-21	A, 505
						III.A3.1-h	3.5.1-25	I, 506
						III.A3.1-i	3.5.1-26	I, 507
Masonry Walls in Air/Gas	Fire Barrier Non-Safety Support Safety Related Support	Concrete block	Air/Gas	Cracking / Restraint, shrinkage, creep, aggressive environment	Fire Protection	III.A3.3-a	3.5.1-24	E, 510
					Structures Monitoring Program	III.A3.3-a	3.5.1-24	E, 509

Table 3.5.2-4 Structures and Component Supports - Emergency Filtration Train Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Fire Rated Doors)	Fire Barrier	Carbon Steel	Air/Gas	Loss of material / General corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 521
				Loss of material / Wear	Fire Protection	VII.G.3-d	3.3.1-20	B
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, Steel Embeds, etc.)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, etc.)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519

Table 3.5.2-4 Structures and Component Supports - Emergency Filtration Train Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slabs)	Fire Barrier Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
Concrete in Air/Gas (Foundation, Walls, Slabs, Grout)	Fire Barrier Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				None	None	III.A3.1-j	3.5.1-27	I, 508
	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-4 Structures and Component Supports - Emergency Filtration Train Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Walls, Slabs)	Fire Barrier	Reinforced concrete	Air/Gas	Loss of material / Corrosion of embedded steel	Fire Protection	VII.G.3-c	3.3.1-30	B, 504
					Structures Monitoring Program	VII.G.3-c	3.3.1-30	A, 504
		Reinforced concrete, Grout	Air/Gas	Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates	Fire Protection	VII.G.3-b	3.3.1-30	B, 503, 505
					Structures Monitoring Program	VII.G.3-b	3.3.1-30	A, 503, 505
Concrete in Atmosphere/ Weather (Walls, Slab)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504

Table 3.5.2-4 Structures and Component Supports - Emergency Filtration Train Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Walls, Slab)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A3.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A3.1-a	3.5.1-20	A, 501
	Non-Safety Support Safety Related Support	Reinforced concrete	Atmosphere/ Weather	Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-4 Structures and Component Supports - Emergency Filtration Train Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Below Grade (Foundation, Walls)	Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	None	None	III.A3.1-a	3.5.1-20	A, 501
						III.A3.1-b	3.5.1-20	A, 502
						III.A3.1-c	3.5.1-20	A, 503
						III.A3.1-e	3.5.1-21	A, 504
						III.A3.1-g	3.5.1-21	A, 505
						III.A3.1-h	3.5.1-25	I, 506
						III.A3.1-i	3.5.1-26	I, 507
Elastomer sealants (rubber, neoprene, silicone, etc.) in Air/Gas (EFT control volume seals)	Safety Related Support	Elastomer (rubber, neoprene, silicone, etc.)	Air/Gas	Change in material properties and cracking / Ozone and ultraviolet radiation; thermal exposure	Structures Monitoring Program			J

Table 3.5.2-5 Structures and Component Supports - Fire Protection Barrier - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Aluminum in Air/Gas (Cable Tray Cover)	Fire Barrier	Aluminum	Air/Gas	None	None			J, 517
Carbon steel, low-alloy steel in Air/Gas (Access Tunnel Fire Protection Guard Pipe, Fire Damper Housings)	Fire Barrier	Carbon steel	Air/Gas	Loss of material / General corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 521
Non-Metallic Fire Proofing in Air/Gas (Cementitious fireproofing for coating structural steel and miscellaneous components)	Fire Barrier	Cementitious fireproofing (Thermal insulating mastic)	Air/Gas	Cracking, delamination / Vibration	Fire Protection			J, 522, 524
Non-Metallic Fire Proofing in Air/Gas (Fibrous fire wraps, cementitious fireproofing (i.e., pyrocrete, etc.))	Fire Barrier	Fibrous fire wraps (Thermal Insulating wool/fiber), Cementitious fireproofing (Thermal insulating mastic)	Air/Gas	Loss of material / Flaking	Fire Protection			J, 522, 523

Table 3.5.2-5 Structures and Component Supports - Fire Protection Barrier - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Non-Metallic Fire Proofing in Air/Gas (Fibrous fire wraps, cementitious fireproofing (i.e., pyrocrete, etc.), rigid board (i.e., gypsum board, etc.))	Fire Barrier	Fibrous fire wraps (Thermal Insulating wool/fiber), Cementitious fireproofing (Thermal insulating mastic), Rigid board (Thermal insulating board)	Air/Gas	Loss of material / Abrasion	Fire Protection			J, 522, 525
Non-metallic Fire Stop Sealants in Air/Gas (Fire stop sealants for Emergency Diesel Generator Building)	Fire Barrier	Fire Stop Sealant (silicone, silicone foam, caulk)	Air/Gas	Increase hardness and shrinkage / Weathering	Fire Protection	VII.G.4-a	3.3.1-20	B
Non-metallic Fire Stop Sealants in Air/Gas (Fire stop sealants for Intake Structure)	Fire Barrier	Fire Stop Sealant (silicone, silicone foam, caulk)	Air/Gas	Increase hardness and shrinkage / Weathering	Fire Protection	VII.G.1-a	3.3.1-20	B

Table 3.5.2-5 Structures and Component Supports - Fire Protection Barrier - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Non-metallic Fire Stop Sealants in Air/Gas (Fire stop sealants for Reactor Building, Emergency Filtration Train Building, Plant Control and Cable Spreading Structure)	Fire Barrier	Fire Stop Sealant (silicone, silicone foam, caulk)	Air/Gas	Increase hardness and shrinkage / Weathering	Fire Protection	VII.G.3-a	3.3.1-20	B
Non-metallic Fire Stop Sealants in Air/Gas (Fire stop sealants for Turbine Building)	Fire Barrier	Fire Stop Sealant (silicone, silicone foam, caulk)	Air/Gas	Increase hardness and shrinkage / Weathering	Fire Protection	VII.G.2-a	3.3.1-20	B

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Aluminum in Air/Gas (Electrical Junction Boxes)	Non-Safety Support Safety Related Support	Aluminum	Air/Gas	None	None			J, 517
Carbon Steel, Low Alloy Steel in Air/gas (Anchorages of Lighting Fixtures and Junction Boxes inside Torus, includes support members, welds, bolted connections)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	Primary Containment In-Service Inspection Program	III.B3.1-a	3.5.1-29	E, 566

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Anchorages of Racks, Panels, Cabinets and Enclosures for Electrical Equipment and Instrumentation; Includes Lighting Fixtures, Junction Boxes, Racks, Panels, and Cabinets outside Torus, includes support members, welds, bolted connections and support anchorage)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	System Condition Monitoring Program	III.B3.1-a	3.5.1-29	E
Carbon Steel, Low Alloy Steel in Air/Gas (Cable Trays, Conduit, Tube Track outside Torus)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	System Condition Monitoring Program	III.B2.1-a	3.5.1-29	E

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/gas (Conduit, located inside the Torus)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	Primary Containment In-Service Inspection Program	III.B2.1-a	3.5.1-29	E, 566
Carbon Steel, Low Alloy Steel in Air/gas (Lighting Fixtures and Junction Boxes inside Torus)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	Primary Containment In-Service Inspection Program	III.B3.1-a	3.5.1-29	E, 566
Carbon Steel, Low Alloy Steel in Air/Gas (Racks, Panels, Cabinets, Lighting Fixtures, Junction Boxes outside Torus)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	System Condition Monitoring Program	III.B3.1-a	3.5.1-29	E

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for ASME Class 1 Piping and Components including RPV Stabilizers, i.e. constant and variable spring hangers, guides, stops, etc.)	Safety Related Support	Carbon Steel	Air/Gas	Loss of mechanical function / Corrosion	ASME Section XI, Subsection IWF	III.B1.1.3-a	3.5.1-32	A, 514
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for ASME Class 1 Piping and Components including RPV Stabilizers, includes support members, welds, bolted connections and support anchorage)	Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	ASME Section XI, Subsection IWF	III.B1.1.1-a	3.5.1-32	A

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for ASME Class 2 and 3 Piping and Components, i.e. constant and variable spring hangers, guides, stops, etc.)	Safety Related Support	Carbon Steel	Air/Gas	Loss of mechanical function / Corrosion	ASME Section XI, Subsection IWF	III.B1.2.2-a	3.5.1-32	A, 514
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for ASME Class 2 and 3 Piping and Components, includes support members, welds, bolted connections and support anchorage)	Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	ASME Section XI, Subsection IWF	III.B1.2.1-a	3.5.1-32	A

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for ASME Class MC Components, includes torus seismic restraints, drywell male and female stabilizers, shield stabilizers, torus columns, torus saddles, vent system supports, downcomer bracing, includes support members, welds, bolted connections and anchorages)	Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	ASME Section XI, Subsection IWF	III.B1.3.1-a	3.5.1-32	A

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Cable Trays, Conduit, HVAC Ducts, Tube Track, Instrument Tubing and Non-ASME Piping outside Torus, includes support members, welds, bolted connections and support anchorage)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	System Condition Monitoring Program	III.B2.1-a	3.5.1-29	E

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Mechanical Equipment such as the EDG, HVAC components, pumps, fans, motors, turbines, etc., includes the splash hoods for the ESW pumps and the gas bottle racks, includes support members, welds, bolted connections and support anchorage)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	System Condition Monitoring Program	III.B4.1-a	3.5.1-29	E

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/gas (Supports for Non-ASME piping, conduit and components located inside the Torus, includes supports members, welds, bolted connections)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	Primary Containment In-Service Inspection Program	III.B2.1-a	3.5.1-29	E, 566
Carbon Steel, Low Alloy Steel in Atmosphere/ Weather (Conduit for Miscellaneous SBO Yard Structures, etc.)	Non-Safety Support	Carbon Steel	Atmosphere/ Weather	Loss of material / Environmental corrosion	System Condition Monitoring Program	III.B2.1-a	3.5.1-29	E, 552

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Atmosphere/ Weather (Supports for Conduit for Miscellaneous SBO Yard Structures, etc., includes support members, welds, bolted connections and support anchorage)	Non-Safety Support	Carbon Steel	Atmosphere/ Weather	Loss of material / Environmental corrosion	System Condition Monitoring Program	III.B2.1-a	3.5.1-29	E, 552
Carbon Steel, Low Alloy Steel in Atmosphere/ Weather (Supports for EFT Tornado Dampers and other Miscellaneous Mechanical Equipment, includes support members, welds, bolted connections and anchorage)	Non-Safety Support Safety Related Support	Carbon Steel	Atmosphere/ Weather	Loss of Material / Environmental Corrosion	System Condition Monitoring Program	III.B4.1-a	3.5.1-29	E, 552

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Atmosphere/ Weather (Supports for Non-ASME Piping, includes support members, welds, bolted connections and support anchorage)	Non-Safety Support Safety Related Support	Carbon Steel	Atmosphere/ Weather	Loss of material / Environmental corrosion	System Condition Monitoring Program	III.B2.1-a	3.5.1-29	E, 552
Carbon Steel, Low Alloy Steel in Below Grade (Conduit for Miscellaneous SBO Yard Structures, etc.)	Non-Safety Support	Carbon Steel	Below Grade	Loss of material / Environmental, crevice, galvanic, MIC and pitting corrosion	Buried Piping & Tanks Inspection	III.B2.1-a	3.5.1-29	E, 552
Carbon Steel, Low Alloy Steel in Below Grade (Diesel Fuel Oil Storage Tank Flood Tie-Downs)	Safety Related Support	Carbon Steel	Below Grade	Loss of material / Environmental, crevice, galvanic, MIC and pitting corrosion	Buried Piping & Tanks Inspection	III.B4.1-a	3.5.1-29	E, 552

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel Embedded in Concrete (Drywell Support Skirt Anchorage, RPV female stabilizers)	Safety Related Support	Carbon Steel	Embedded in Concrete	None	None			J, 549
Carbon Steel, Low Alloy Steel Embedded in Concrete (Embedded Conduit)	Non-Safety Support Safety Related Support	Carbon Steel	Embedded in Concrete	None	None			J, 549
Carbon Steel, Low Alloy Steel in Treated Water (Supports for ASME Class MC Components, i.e. vent system supports, downcomer bracing, includes support members, welds)	Safety Related Support	Carbon Steel	Treated Water	Loss of material / Environmental, crevice, galvanic, MIC and pitting corrosion	ASME Section XI, Subsection IWF	III.B1.3.1-a	3.5.1-32	A, 561

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Treated Water (Supports for Non-ASME Piping and Components, i.e. HPC, RCI Sparger Supports, SRV T-Quencher Support, ECCS Suction Strainer Supports, etc., includes support members, welds, bolted connections)	Safety Related Support	Carbon Steel	Treated Water	Loss of material / Environmental, crevice, galvanic, MIC and pitting corrosion	Primary Containment In-Service Inspection Program	III.B2.1-a	3.5.1-29	E, 561, 566
Concrete in Air/Gas (Anchorage of racks, panels, cabinets and enclosures for electrical equipment and instrumentation; building concrete, grout pads)	Non-Safety Support Safety Related Support	Reinforced Concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	System Condition Monitoring Program	III.B3.2-a	3.5.1-29	E, 515

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Supports for ASME Class 1 Piping and Components; building concrete and grout pads)	Safety Related Support	Reinforced Concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	System Condition Monitoring Program	III.B1.1.4-a	3.5.1-29	E, 515
Concrete in Air/Gas (Supports for ASME Class 2 and 3 piping and components; building concrete, grout pads)	Safety Related Support	Reinforced Concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	System Condition Monitoring Program	III.B1.2.3-a	3.5.1-29	E, 515
Concrete in Air/Gas (Supports for ASME Class MC Components; building concrete, grout pads)	Safety Related Support	Reinforced Concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	System Condition Monitoring Program	III.B1.3.3-a	3.5.1-29	E, 515

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Supports for cable trays, conduit, HVAC ducts, tube track, instrument tubing, non-ASME piping and components; building concrete, grout pads)	Non-Safety Support Safety Related Support	Reinforced Concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	System Condition Monitoring Program	III.B2.2-a	3.5.1-29	E, 515
Concrete in Air/Gas (Supports for EDG, HVAC System components and other miscellaneous mechanical equipment; building concrete, grout pads)	Non-Safety Support Safety Related Support	Reinforced Concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	System Condition Monitoring Program	III.B4.3-a	3.5.1-29	E, 515

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Supports for conduit for Miscellaneous SBO Yard Structures, etc.; building concrete, grout pads)	Non-Safety Support	Reinforced Concrete, Grout	Atmosphere/ Weather	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	System Condition Monitoring Program	III.B2.2-a	3.5.1-29	E, 515, 552
Concrete in Atmosphere/ Weather (Supports for EFT Tornado Dampers and other Miscellaneous Mechanical Equipment; building concrete, grout pads)	Non-Safety Support Safety Related Support	Reinforced Concrete, Grout	Atmosphere/ Weather	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	System Condition Monitoring Program	III.B4.3-a	3.5.1-29	E, 515, 552

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Supports for Non-ASME piping and components; building concrete, grout pads)	Non-Safety Support Safety Related Support	Reinforced Concrete, Grout	Atmosphere/ Weather	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	System Condition Monitoring Program	III.B2.2-a	3.5.1-29	E, 515, 552
Concrete in Below Grade (Diesel Fuel Oil Storage Tank Deadmen)	Safety Related Support	Reinforced Concrete	Below Grade	None	None	III.A3.1-a	3.5.1-20	A, 501, 527
						III.A3.1-b	3.5.1-20	A, 502, 527
						III.A3.1-c	3.5.1-20	A, 503, 527
						III.A3.1-e	3.5.1-21	A, 504, 527
						III.A3.1-g	3.5.1-21	A, 505, 527
						III.A3.1-h	3.5.1-25	I, 506, 527
						III.A3.1-i	3.5.1-26	I, 507, 527
						III.B4.3-a	3.5.1-29	I, 552

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Air/Gas (Vibration Isolation Elements for ASME Class 1 piping and components)	Safety Related Support	Elastomers (rubber, neoprene, silicone)	Air/Gas	Loss of mechanical function / Distortion; elastomer hardening	ASME Section XI, Subsection IWF	III.B1.1.3-a	3.5.1-32	A
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Air/Gas (Vibration Isolation Elements for ASME Class 2 and 3 piping and components)	Safety Related Support	Elastomers (rubber, neoprene, silicone)	Air/Gas	Loss of mechanical function / Distortion; elastomer hardening	ASME Section XI, Subsection IWF	III.B1.2.2-a	3.5.1-32	A

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Air/Gas (Vibration Isolation Elements for ASME Class MC components)	Safety Related Support	Elastomers (rubber, neoprene, silicone, etc.)	Air/Gas	Loss of mechanical function / Distortion; elastomer hardening	ASME Section XI, Subsection IWF	III.B1.3.2-a	3.5.1-32	A
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Air/Gas (Vibration Isolation Elements for EDG, HVAC system components and other miscellaneous mechanical equipment)	Non-Safety Support Safety Related Support	Elastomers (rubber, neoprene, silicone, etc.)	Air/Gas	Reduction or loss of isolation function / Radiation hardening, temperature, humidity, sustained vibratory loading	System Condition Monitoring Program	III.B4.2-a	3.5.1-29	E
Fiberglass in Air/Gas (Electrical Junction Boxes)	Non-Safety Support Safety Related Support	Fiberglass	Air/Gas	None	None			J, 517

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Lubrite in Air/Gas (Sliding Surfaces for ASME Class 1 Piping and Components)	Safety Related Support	Lubrite Plate	Air/Gas	None	None	III.B1.1.3-a	3.5.1-32	I, 559
Lubrite in Air/Gas (Sliding Surfaces for ASME Class 2 and 3 Piping and Components)	Safety Related Support	Lubrite Plate	Air/Gas	None	None	III.B1.2.2-a	3.5.1-32	I, 559
Lubrite in Air/Gas (Sliding Surfaces for torus saddles)	Safety Related Support	Lubrite Plate	Air/Gas	None	None	III.B1.3.2-a	3.5.1-32	I, 559
Plastic in Air/Gas (Electrical Junction Boxes)	Non-Safety Support Safety Related Support	Plastic	Air/Gas	None	None			J, 517

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Stainless Steel in Air/Gas (Supports for ASME Class 1 Piping and Components including RPV Stabilizers, clamps etc.)	Safety Related Support	Stainless Steel	Air/Gas	None	None			J, 517
Stainless Steel in Air/Gas (Supports for ASME Class 2 and 3 Piping and Components, clamps etc.)	Safety Related Support	Stainless Steel	Air/Gas	None	None			J, 517
Stainless Steel in Air/Gas (Supports for ASME Class MC Components, i.e. Vent Header Column Support Pins)	Safety Related Support	Stainless Steel	Air/Gas	None	None			J, 517

Table 3.5.2-6 Structures and Component Supports - Hangers and Supports - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Stainless Steel in Air/Gas (Supports for tube track, instrument tubing, non-ASME piping and components; clamps etc.)	Non-Safety Support Safety Related Support	Stainless Steel	Air/Gas	None	None			J, 517
Stainless Steel in Treated Water (Supports for ASME Class MC Components, i.e. Vent Header Column Support Pins)	Safety Related Support	Stainless Steel	Treated Water	Loss of material / Crevice, MIC and pitting corrosion	ASME Section XI, Subsection IWF			J, 564

Table 3.5.2-7 Structures and Component Supports - HPCI Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Aluminum in Air/Gas (Platforms)	Non-Safety Support	Aluminum	Air/Gas	None	None			J, 517
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, Steel Embeds, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A2.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519
Carbon Steel, Low Alloy Steel in Atmosphere/ Weather (Roof Hatch)	Flood Barrier Non-Safety Support Radiation Shielding Safety Related Support	Carbon steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A2.2-a	3.5.1-20	A, 511

Table 3.5.2-7 Structures and Component Supports - HPCI Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Below Grade (Piping Penetration Seal Plates)	Flood Barrier Pressure Boundary Shelter/ Protection	Carbon steel	Below Grade	Loss of material / General, crevice, MIC and pitting corrosion	Structures Monitoring Program	III.A2.2-a	3.5.1-20	A, 554
Concrete in Air/Gas (Foundation, Walls, Slab)	Flood Barrier Missile Barrier Non-Safety Support Pressure Boundary Radiation Shielding Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A2.1-d	3.5.1-20	A, 504

Table 3.5.2-7 Structures and Component Supports - HPCI Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slab, Grout)	Flood Barrier Missile Barrier Non-Safety Support Pressure Boundary Radiation Shielding Safety Related Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A2.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A2.1-f	3.5.1-20	A, 505
				None	None	III.A2.1-j	3.5.1-27	I, 508
	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation/ Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-7 Structures and Component Supports - HPCI Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Slab, Roof Hatch)	Flood Barrier Missile Barrier Non-Safety Support Pressure Boundary Radiation Shielding Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A2.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A2.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A2.1-f	3.5.1-20	A, 505
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A2.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A2.1-a	3.5.1-20	A, 501

Table 3.5.2-7 Structures and Component Supports - HPCI Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Below Grade (Foundation, Walls)	Flood Barrier Non-Safety Support Pressure Boundary Radiation Shielding Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	None	None	III.A2.1-a	3.5.1-20	A, 501
						III.A2.1-b	3.5.1-20	A, 502
						III.A2.1-c	3.5.1-20	A, 503
						III.A2.1-e	3.5.1-21	A, 504
						III.A2.1-g	3.5.1-21	A, 505
						III.A2.1-h	3.5.1-25	I, 506
						III.A2.1-i	3.5.1-26	I, 507
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Air/Gas (Roof Hatch Seals)	Flood Barrier Pressure Boundary Radiation Shielding Shelter/ Protection	Elastomers (rubber, neoprene, silicone, etc.)	Air/Gas	Change in material properties and cracking/Ultraviolet radiation and ozone, thermal exposure	Structures Monitoring Program			J, 528
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Atmosphere/ Weather (Roof Hatch Seals)	Flood Barrier Pressure Boundary Radiation Shielding Shelter/ Protection	Elastomers (rubber, neoprene, silicone, etc.)	Atmosphere/ Weather	Change in material properties and cracking/Ultraviolet radiation and ozone, thermal exposure	Structures Monitoring Program			J, 528

Table 3.5.2-8 Structures and Component Supports - Intake Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Doors, Structural Steel, Steel Embeds, etc.)	Flood Barrier Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A6.2-a	3.5.1-22	E, 511, 512
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, etc.)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519
Carbon Steel, Low Alloy Steel in Atmosphere/ Weather (Structural Steel, Sheet Piles, Ventilation Assemblies)	Cooling Water Source Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Carbon Steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A6.2-a	3.5.1-22	E, 511, 512

Table 3.5.2-8 Structures and Component Supports - Intake Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Below Grade (Sheet Piles)	Cooling Water Source Non-Safety Support Safety Related Support	Carbon Steel	Below Grade	Loss of material / General, crevice, MIC and pitting corrosion	Structures Monitoring Program	III.A6.2-a	3.5.1-22	E, 512, 530, 531
Carbon Steel, Low Alloy Steel in Raw Water (Structural Steel, Sheet Piles)	Cooling Water Source Non-Safety Support Safety Related Support	Carbon Steel	Raw water	Loss of material / General, crevice, MIC and pitting corrosion	Structures Monitoring Program	III.A6.2-a	3.5.1-22	E, 511, 512, 531
Carbon Steel, Low Alloy Steel in Raw Water (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, etc.)	Non-Safety Support Safety Related Support	Carbon Steel	Raw water	Loss of material / Environmental, crevice, MIC and pitting corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 531

Table 3.5.2-8 Structures and Component Supports - Intake Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slabs)	Cooling Water Source Fire Barrier Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A6.1-d	3.5.1-22	E, 504, 512
Concrete in Air/Gas (Foundation, Walls, Slabs, Grout)	Cooling Water Source Fire Barrier Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A6.1-c	3.5.1-22	E, 503, 512
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A6.1-e	3.5.1-22	E, 505, 512
	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-8 Structures and Component Supports - Intake Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Walls, Slabs)	Fire Barrier	Reinforced concrete, Grout	Air/Gas	Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates	Fire Protection	VII.G.1-b	3.3.1-30	B, 503, 505
					Structures Monitoring Program	VII.G.1-b	3.3.1-30	A, 503, 505
		Reinforced concrete	Air/Gas	Loss of material / Corrosion of embedded steel	Fire Protection	VII.G.1-c	3.3.1-30	B, 504
					Structures Monitoring Program	VII.G.1-c	3.3.1-30	A, 504
Concrete in Atmosphere/ Weather (Intake Structure and Access Tunnel Roof Slabs)	Cooling Water Source Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / De-icing salts	Structures Monitoring Program	III.A6.1-d	3.5.1-22	E, 512, 568
				Loss of material (spalling, scaling) and cracking / De-icing salts	Structures Monitoring Program	III.A6.1-a	3.5.1-22	E, 501, 512, 568

Table 3.5.2-8 Structures and Component Supports - Intake Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Walls, Slabs)	Cooling Water Source Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A6.1-d	3.5.1-22	E, 504, 512
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A6.1-c	3.5.1-22	E, 503, 512
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A6.1-e	3.5.1-22	E, 505, 512
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A6.1-b	3.5.1-22	E, 502, 512
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A6.1-a	3.5.1-22	E, 501, 512

Table 3.5.2-8 Structures and Component Supports - Intake Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Walls, Slabs)	Non-Safety Support Safety Related Support	Reinforced concrete	Atmosphere/ Weather	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519
Concrete in Below Grade (Foundation, Walls, Lean Concrete)	Cooling Water Source Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	None	None	III.A6.1-a	3.5.1-22	A, 501
						III.A6.1-b	3.5.1-22	A, 502
						III.A6.1-c	3.5.1-22	A, 503
						III.A6.1-d	3.5.1-22	A, 504
						III.A6.1-e	3.5.1-22	A, 505
						III.A6.1-f	3.5.1-22	I, 506
						III.A6.1-g	3.5.1-26	I, 507

Table 3.5.2-8 Structures and Component Supports - Intake Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Raw Water (Foundation, Walls, Slabs)	Cooling Water Source Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Raw Water	Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A6.1-a	3.5.1-22	E, 501, 512
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A6.1-b	3.5.1-22	E, 502, 512
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A6.1-c	3.5.1-22	E, 503, 512
				Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A6.1-d	3.5.1-22	E, 504, 512
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A6.1-e	3.5.1-22	E, 505, 512
				Loss of material / Abrasion	Structures Monitoring Program	III.A6.1-h	3.5.1-22	E, 512, 529

Table 3.5.2-8 Structures and Component Supports - Intake Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Raw Water (Foundation, Walls, Slabs)	Non-Safety Support Safety Related Support	Reinforced concrete	Raw Water	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519
Masonry Walls in Air/Gas	Non-Safety Support Safety Related Support	Concrete Block	Air/Gas	Cracking/ Restraint; shrinkage; creep; aggressive environment	Structures Monitoring Program	III.A6.3-a	3.5.1-24	E, 509, 516
Masonry Walls in Atmosphere/ Weather	Non-Safety Support	Concrete Block	Atmosphere/ Weather	Cracking/ Restraint; shrinkage; creep; aggressive environment	Structures Monitoring Program	III.A6.3-a	3.5.1-24	E, 509

Table 3.5.2-9 Structures and Component Supports - Miscellaneous SBO Yard Structures - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (345 kV House Structural Steel)	Non-Safety Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for 345 kV House Miscellaneous Steel, i.e. members, welds, bolted connections, support anchorage)	Non-Safety Support	Carbon steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519
Carbon Steel, Low Alloy Steel in Atmosphere/ Weather (Anchorages)	Non-Safety Support	Carbon steel	Atmosphere/ Weather	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519

Table 3.5.2-9 Structures and Component Supports - Miscellaneous SBO Yard Structures - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low-Alloy Steel in Atmosphere/ Weather (Structural steel for 345 kV House, Switchyard and Transmission Towers, etc.)	Non-Safety Support	Carbon steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Concrete in Air/Gas (345 kV House concrete)	Non-Safety Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503

Table 3.5.2-9 Structures and Component Supports - Miscellaneous SBO Yard Structures - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (345 kV House concrete)	Non-Safety Support	Reinforced concrete	Air/Gas	Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				None	None	III.A3.1-j	3.5.1-27	I, 508
				Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519
Concrete in Atmosphere / Weather (345 kV House concrete, Foundations)	Non-Safety Support	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
Concrete in Atmosphere / Weather (345 kV House, Foundations, trenches, duct bank, Grout)	Non-Safety Support	Reinforced concrete, Grout	Atmosphere/ Weather	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503

Table 3.5.2-9 Structures and Component Supports - Miscellaneous SBO Yard Structures - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere / Weather (345 kV House, Foundations, trenches, duct bank, Grout)	Non-Safety Support	Reinforced concrete, Grout	Atmosphere/ Weather	Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A3.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A3.1-a	3.5.1-20	A, 501
				Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-9 Structures and Component Supports - Miscellaneous SBO Yard Structures - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Below Grade (345kV House, Foundations, trenches, duct bank)	Non-Safety Support	Reinforced concrete	Below Grade	None	None	III.A3.1-a	3.5.1-20	A, 501
						III.A3.1-b	3.5.1-20	A, 502
						III.A3.1-c	3.5.1-20	A, 503
						III.A3.1-e	3.5.1-21	A, 504
						III.A3.1-g	3.5.1-21	A, 505
						III.A3.1-h	3.5.1-25	I, 506
						III.A3.1-i	3.5.1-26	I, 507
Masonry Walls in Atmosphere/ Weather	Non-Safety Support	Concrete block	Atmosphere/ Weather	Cracking/ Restraint, shrinkage, creep, aggressive environment	Structures Monitoring Program	III.A6.3-a	3.5.1-24	E, 509

Table 3.5.2-10 Structures and Component Supports - Off Gas Stack - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, Steel Embeds, etc.)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511, 532
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, etc.)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519
Carbon Steel, Low Alloy Steel in Atmosphere/ Weather (Doors)	Shelter/ Protection	Carbon Steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511, 532

Table 3.5.2-10 Structures and Component Supports - Off Gas Stack - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Pedestal, Walls, Slabs)	Flood Barrier Gaseous Discharge Non-Safety Support Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A9.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A9.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A9.1-f	3.5.1-20	A, 505
Concrete in Air/Gas (Pedestal, Walls, Slabs, Grout)	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-10 Structures and Component Supports - Off Gas Stack - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Pedestal, Walls)	Flood Barrier Gaseous Discharge Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A9.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A9.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A9.1-f	3.5.1-20	A, 505
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A9.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A9.1-a	3.5.1-20	A, 501

Table 3.5.2-10 Structures and Component Supports - Off Gas Stack - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Below Grade (Pedestal)	Flood Barrier Gaseous Discharge Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	None	None	III.A9.1-a	3.5.1-20	A, 501
						III.A9.1-b	3.5.1-20	A, 502
						III.A9.1-c	3.5.1-20	A, 503
						III.A9.1-e	3.5.1-21	A, 504
						III.A9.1-g	3.5.1-21	A, 505
						III.A9.1-h	3.5.1-25	I, 506
						III.A9.1-i	3.5.1-26	I, 507
Masonry Walls in Air/Gas	Non-Safety Support Radiation Shielding Safety Related Support	Concrete Block	Air/Gas	Cracking / Restraint; shrinkage; creep; aggressive environment	Structures Monitoring Program	III.A3.3-a	3.5.1-24	E, 509, 532
Stainless Steel in Air/Gas (Cap)	Gaseous Discharge Non-Safety Support Safety Related Support	Stainless Steel	Air/Gas	None	None			J, 517

Table 3.5.2-10 Structures and Component Supports - Off Gas Stack - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Stainless Steel in Atmosphere/ Weather (Cap)	Gaseous Discharge Non-Safety Support Safety Related Support Shelter/ Protection	Stainless Steel	Atmosphere/ Weather	None	None			J, 517

Table 3.5.2-11 Structures and Component Supports - Off Gas Storage and Compressor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Concrete in Air/Gas (Foundation, Walls, Slabs)	Non-Safety Support Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
Concrete in Air/Gas (Foundation, Walls, Slabs, Grout)	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				None	None	III.A3.1-j	3.5.1-27	I, 508

Table 3.5.2-11 Structures and Component Supports - Off Gas Storage and Compressor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Walls, Slabs)	Non-Safety Support Safety Related Support	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A3.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A3.1-a	3.5.1-20	A, 501

Table 3.5.2-11 Structures and Component Supports - Off Gas Storage and Compressor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Below Grade (Foundation, Walls)	Non-Safety Support Safety Related Support	Reinforced concrete	Below Grade	None	None	III.A3.1-a	3.5.1-20	A, 501
						III.A3.1-b	3.5.1-20	A, 502
						III.A3.1-c	3.5.1-20	A, 503
						III.A3.1-e	3.5.1-21	A, 504
						III.A3.1-g	3.5.1-21	A, 505
						III.A3.1-h	3.5.1-25	I, 506
						III.A3.1-i	3.5.1-26	I, 507

Table 3.5.2-12 Structures and Component Supports - Plant Control and Cable Spreading Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Fire Rated Doors)	Fire Barrier	Carbon Steel	Air/Gas	Loss of material / General corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 521
				Loss of material / Wear	Fire Protection	VII.G.3-d	3.3.1-20	B
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, Steel Embeds, etc.)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A1.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, etc.)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519

Table 3.5.2-12 Structures and Component Supports - Plant Control and Cable Spreading Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slabs)	Fire Barrier Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A1.1-d	3.5.1-20	A, 504
Concrete in Air/Gas (Foundation, Walls, Slabs, Grout)	Fire Barrier Flood Barrier Missile Barrier Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A1.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A1.1-f	3.5.1-20	A, 505
				None	None	III.A1.1-j	3.5.1-27	I, 508
	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-12 Structures and Component Supports - Plant Control and Cable Spreading Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Walls, Slabs)	Fire Barrier	Reinforced concrete	Air/Gas	Loss of material / Corrosion of embedded steel	Fire Protection	VII.G.3-c	3.3.1-30	B, 504
					Structures Monitoring Program	VII.G.3-c	3.3.1-30	A, 504
		Reinforced concrete, Grout	Air/Gas	Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates	Fire Protection	VII.G.3-b	3.3.1-30	B, 503, 505
					Structures Monitoring Program	VII.G.3-b	3.3.1-30	A, 503, 505
Concrete in Atmosphere/ Weather (Walls, Slabs)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A1.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A1.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A1.1-f	3.5.1-20	A, 505

Table 3.5.2-12 Structures and Component Supports - Plant Control and Cable Spreading Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Walls, Slabs)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A1.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A1.1-a	3.5.1-20	A, 501
Concrete in Below Grade (Foundation, Walls)	Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	None	None	III.A1.1-a	3.5.1-20	A, 501
						III.A1.1-b	3.5.1-20	A, 502
						III.A1.1-c	3.5.1-20	A, 503
						III.A1.1-e	3.5.1-21	A, 504
						III.A1.1-g	3.5.1-21	A, 505
						III.A1.1-h	3.5.1-25	I, 506
						III.A1.1-i	3.5.1-26	I, 507
Elastomer sealants (rubber, neoprene, silicone, etc.) in Air/Gas (Control Room Seals)	Safety Related Support	Elastomers (rubber, neoprene, silicone, etc.)	Air/Gas	Change in material properties and cracking / Ozone and ultraviolet radiation; thermal exposure	Structures Monitoring Program			J

Table 3.5.2-12 Structures and Component Supports - Plant Control and Cable Spreading Structure - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Masonry Walls in Air/Gas	Fire Barrier Flood Barrier Non-Safety Support Safety Related Support	Concrete Block	Air/Gas	Cracking / Restraint; shrinkage; creep; aggressive environment	Fire Protection	III.A1.3-a	3.5.1-24	E, 510
					Structures Monitoring Program	III.A1.3-a	3.5.1-24	E, 509

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Drywell Penetration Sleeves, Drywell Penetration Bellows Assemblies, Drywell Penetrations, Torus Penetrations)	Flood Barrier HELB Barrier Missile Barrier Pressure Boundary	Carbon steel, Dissimilar metal welds	Air/Gas	Loss of material / Corrosion	10 CFR 50, Appendix J	II.B4.1-a	3.5.1-03	B, 555
					Primary Containment In-Service Inspection Program	II.B4.1-a	3.5.1-03	A, 555
Carbon Steel, Low Alloy Steel in Air/Gas (Drywell, torus, drywell head, drywell head bolts, torus ring girder, downcomers, vent lines, vent header, bellows assemblies, ECCS suction header)	Cooling Water Source Flood Barrier Heat Sink HELB Barrier Missile Barrier Non-Safety Support Pressure Boundary Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	10 CFR 50, Appendix J	II.B1.1.1-a	3.5.1-12, 3.5.1-14	B, 555

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Drywell, torus, drywell head, drywell head bolts, torus ring girder, downcomers, vent lines, vent header, vent header deflectors, bellows assemblies, ECCS suction header)	Cooling Water Source Flood Barrier Heat Sink HELB Barrier Missile Barrier Non-Safety Support Pressure Boundary Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Primary Containment In-Service Inspection Program	II.B1.1.1-a	3.5.1-12, 3.5.1-14	A, 555
Carbon Steel, Low Alloy Steel in Air/Gas (Personnel airlock, equipment hatch, CRD hatch, Seismic Restraint Inspection Ports)	Flood Barrier HELB Barrier Missile Barrier Pressure Boundary	Carbon steel	Air/Gas	Loss of Material / Corrosion	10 CFR 50, Appendix J	II.B4.2-a	3.5.1-04	B, 555
					Primary Containment In-Service Inspection Program	II.B4.2-a	3.5.1-04	A, 555

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Personnel airlock, equipment hatch, CRD hatch, Seismic Restraint Inspection Ports, including locks, hinges and closure mechanisms)	Flood Barrier HELB Barrier Missile Barrier Pressure Boundary	Carbon steel	Air/Gas	Loss of leak tightness in closed position / Mechanical wear of locks, hinges and closure mechanisms	10 CFR 50, Appendix J	II.B4.2-b	3.5.1-05	B, 545
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, i.e. Torus External Catwalk, drywell Interior Platforms, Bioshield Wall Liners, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A4.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel Inside Torus, i.e. Torus Internal Catwalk, etc.)	Non-Safety Support Safety Related Support	Carbon Steel	Air/Gas	Loss of material / Corrosion	Primary Containment In-Service Inspection Program	II.B1.1.1-a	3.5.1-12, 3.5.1-14	D, 566

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures including platforms, stairs, whip restraints, etc., i.e., members, welds, bolted connections, support anchorage to building structure)	Non-Safety Support Safety Related Support Whip Restraint	Carbon steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519
Carbon Steel, Low Alloy Steel Embedded in Concrete (Drywell support skirt, Embedded shell)	Non-Safety Support Safety Related Support	Carbon steel	Embedded in Concrete	None	None	II.B1.1.1-a	3.5.1-12	A, 549
Carbon Steel, Low Alloy Steel in Treated Water (Structural Steel)	Non-Safety Support Safety Related Support	Carbon steel	Treated Water	Loss of material / General, crevice, galvanic, MIC and pitting corrosion	Plant Chemistry Program	II.B1.1.1-a	3.5.1-12, 3.5.1-14	D, 555, 561, 563, 568
					Primary Containment In-Service Inspection Program	II.B1.1.1-a	3.5.1-12, 3.5.1-14	D, 555, 561, 566, 568

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Treated Water (Support members, welds, bolted connections, i.e. Torus Internal Catwalk Support Columns)	Non-Safety Support Safety Related Support	Carbon steel	Treated Water	Loss of material / General, crevice, galvanic, MIC and pitting corrosion	Plant Chemistry Program	II.B1.1.1-a	3.5.1-12, 3.5.1-14	D, 555, 561, 563, 568
					Primary Containment In-Service Inspection Program	II.B1.1.1-a	3.5.1-12, 3.5.1-14	D, 555, 561, 566, 568
Carbon Steel, Low Alloy Steel in Treated Water (Torus Penetrations)	Flood Barrier Pressure Boundary	Carbon steel, Dissimilar metal welds	Treated Water	Loss of material / General, crevice, galvanic, MIC and pitting corrosion	10 CFR 50, Appendix J	II.B4.1-a	3.5.1-03	B, 555, 561, 568
					Plant Chemistry Program	II.B4.1-a	3.5.1-03	E, 555, 561, 563, 568
					Primary Containment In-Service Inspection Program	II.B4.1-a	3.5.1-03	A, 555, 561, 568

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Treated Water (Torus, torus ring girder, downcomers, ECCS Suction header)	Cooling Water Source Flood Barrier Heat Sink Missile Barrier Non-Safety Support Pressure Boundary Safety Related Support	Carbon steel	Treated Water	Loss of material / General, crevice, galvanic, MIC and pitting corrosion	10 CFR 50, Appendix J	II.B1.1.1-a	3.5.1-12, 3.5.1-14	B, 555, 561, 568
					Plant Chemistry Program	II.B1.1.1-a	3.5.1-12, 3.5.1-14	E, 555, 561, 563, 568
					Primary Containment In-Service Inspection Program	II.B1.1.1-a	3.5.1-12, 3.5.1-14	A, 555, 561, 568
Carbon Steel, Low Alloy Steel, Stainless Steel in Air/Gas (Drywell penetration sleeves, drywell penetrations)	Flood Barrier HELB Barrier Missile Barrier Pressure Boundary	Carbon steel, Stainless steel, Dissimilar metal welds	Air/Gas	Cracking / Cyclic Loading (CLB fatigue analysis does not exist)	10 CFR 50, Appendix J	II.B4.1-c	3.5.1-02	B
					Primary Containment In-Service Inspection Program	II.B4.1-c	3.5.1-02	A

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Bioshield Wall, Drywell Equipment Foundation, RPV Pedestal)	Non-Safety Support Radiation Shielding Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A4.1-d	3.5.1-20	A, 504
		Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A4.1-b	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A4.1-a	3.5.1-20	A, 505
				None	None	III.A4.1-c	3.5.1-27	I, 508
				Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Air/Gas (Seals and gaskets)	HELB Barrier Pressure Boundary	Elastomers (rubber, neoprene, silicone, etc.)	Air/Gas	Loss of sealing; leakage through containment / Deterioration of seals and gaskets (caulking, flashing and other sealants)	10 CFR 50, Appendix J	II.B4.3-a	3.5.1-06	B, 547
					Primary Containment In-Service Inspection Program	II.B4.3-a	3.5.1-06	A, 548
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Air/Gas (Moisture barrier)	Pressure Boundary	Elastomers (rubber, neoprene, silicone, etc.)	Air/Gas	Loss of sealing; leakage through containment / Deterioration of moisture barrier	Primary Containment In-Service Inspection Program	II.B4.3-a	3.5.1-06	A, 548
Inconel in Air/Gas (Drywell Penetration X-16B Bellows)	HELB Barrier Pressure Boundary	Inconel, Dissimilar metal welds	Air/Gas	Crack initiation and growth / Stress corrosion cracking	10 CFR 50, Appendix J			J, 550
					Primary Containment In-Service Inspection Program			J, 550
Lubrite in Air/Gas (Drywell Head, Downcomers)	HELB Barrier Missile Barrier Pressure Boundary Safety Related Support	Lubrite plate	Air/Gas	None	None	II.B1.1.1-e	3.5.1-19	I, 556

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Lubrite in Air/Gas (Drywell Interior Platform Sliding Plates)	Safety Related Support	Lubrite plate	Air/Gas	None	None	III.A4.2-b	3.5.1-20	I, 559
Lubrite in Treated Water (Downcomers)	Safety Related Support	Lubrite Plate	Treated Water	None	None	II.B1.1.1-e	3.5.1-19	I, 556
Stainless Steel in Air/Gas (Drywell Penetration Sleeves, Drywell Penetration Bellows)	Flood Barrier HELB Barrier Pressure Boundary Safety Related Support	Stainless steel, Dissimilar metal welds	Air/Gas	Crack initiation and growth / Stress corrosion cracking	10 CFR 50, Appendix J	II.B4.1-d	3.5.1-02	B
					Primary Containment In-Service Inspection Program	II.B4.1-d	3.5.1-02	A, 553
Stainless Steel in Air/Gas (RPV to Drywell Refueling Seal)	Non-Safety Support	Stainless Steel	Air/Gas	None	None			J, 544
Stainless steel in Air/Gas (Vent Line Bellows)	Flood Barrier Pressure Boundary Safety Related Support	Stainless steel, Dissimilar metal welds	Air/Gas	Crack initiation and growth / Stress corrosion cracking	10 CFR 50, Appendix J	II.B1.1.1-d	3.5.1-17	B
					Primary Containment In-Service Inspection Program	II.B1.1.1-d	3.5.1-17	A, 553

Table 3.5.2-13 Structures and Component Supports - Primary Containment - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Stainless Steel in Treated Water (Thermowells)	Flood Barrier Pressure Boundary Safety Related Support	Stainless steel	Treated Water	Loss of material / Crevice, MIC and pitting corrosion	10 CFR 50, Appendix J			J, 564
					Plant Chemistry Program			J, 563, 564
					Primary Containment In-Service Inspection Program			J, 564

Table 3.5.2-14 Structures and Component Supports - Radioactive Waste Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Air Lock and Railroad Doors)	HELB Barrier Pressure Boundary Shelter/ Protection	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel)	Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Atmosphere / Weather (Railroad Door)	HELB Barrier Pressure Boundary Shelter/ Protection	Carbon steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Concrete in Air/Gas (Foundation, Walls, Slabs)	Non-Safety Support Pressure Boundary Radiation Shielding Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504

Table 3.5.2-14 Structures and Component Supports - Radioactive Waste Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slabs, Grout)	Non-Safety Support Pressure Boundary Radiation Shielding Safety Related Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				None	None	III.A3.1-j	3.5.1-27	I, 508
Concrete in Atmosphere / Weather (Walls, Slabs)	Flood Barrier Non-Safety Support Radiation Shielding Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505

Table 3.5.2-14 Structures and Component Supports - Radioactive Waste Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere / Weather (Walls, Slabs)	Flood Barrier Non-Safety Support Radiation Shielding Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A3.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A3.1-a	3.5.1-20	A, 501
Concrete in Below Grade (Foundation, Walls)	Flood Barrier Non-Safety Support Radiation Shielding Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	None	None	III.A3.1-a	3.5.1-20	A, 501
						III.A3.1-b	3.5.1-20	A, 502
						III.A3.1-c	3.5.1-20	A, 503
						III.A3.1-e	3.5.1-21	A, 504
						III.A3.1-g	3.5.1-21	A, 505
						III.A3.1-h	3.5.1-25	I, 506
						III.A3.1-i	3.5.1-26	I, 507
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Air/Gas (Secondary Containment Seals)	Pressure Boundary	Elastomers (rubber, neoprene, silicone, etc.)	Air /Gas	Change in material properties and cracking / Ultraviolet radiation and ozone, thermal exposure	Structures Monitoring Program			J, 533

Table 3.5.2-14 Structures and Component Supports - Radioactive Waste Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Atmosphere/ Weather (Secondary Containment Seals)	Pressure Boundary	Elastomers (rubber, neoprene, silicone, etc.)	Atmosphere / Weather	Change in material properties and cracking / Ultraviolet radiation and ozone, thermal exposure	Structures Monitoring Program			J, 533
Glass in Air/Gas (Railroad Bay Door View Port)	Pressure Boundary	Glass	Air/Gas	None	None			J, 517
Glass in Atmosphere/ Weather (Railroad Bay Door View Port)	Pressure Boundary Shelter/ Protection	Glass	Atmosphere / Weather	None	None			J, 517
Masonry Walls in Air/Gas	Non-Safety Support Pressure Boundary Safety Related Support	Concrete block	Air/Gas	Cracking / Restraint, shrinkage, creep, aggressive environment	Structures Monitoring Program	III.A3.3-a	3.5.1-24	E, 509

Table 3.5.2-14 Structures and Component Supports - Radioactive Waste Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Roofing in Atmosphere/ Weather (Railroad Bay Built-up Roofing)	Pressure Boundary Shelter/ Protection	Built-up Roofing	Atmosphere / Weather	Separation, environmental degradation, water in-leakage / Weathering	Structures Monitoring Program			J, 537

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Aluminum in Air/ Gas (New Fuel Storage Racks)	Non-Safety Support Safety Related Support	Aluminum	Air /Gas	None	None			J, 517
Aluminum in Air/ Gas (Siding)	Pressure Boundary	Aluminum	Air /Gas	None	None			J, 517
Aluminum in Atmosphere/ Weather (Siding, Ventilation Assemblies)	Non-Safety Support Pressure Boundary Shelter/ Protection	Aluminum	Atmosphere/ Weather	None	None			J, 517
Aluminum in Treated Water (Spent Fuel Storage Racks)	Radiation Shielding Safety Related Support	Aluminum	Treated Water	Crack initiation and growth / Stress corrosion cracking	Plant Chemistry Program			J, 571
				Loss of material / Crevice, galvanic, MIC and pitting corrosion	Plant Chemistry Program			J, 571

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Boral in Treated Water (Spent Fuel Storage Racks Neutron-Absorbing Sheets)	Absorb Neutrons Radiation Shielding Safety Related Support	Boral	Treated Water	Reduction of neutron-absorbing capacity and loss of material / Crevice, galvanic, MIC and pitting corrosion	One-Time Inspection	VII.A2.1-b	3.3.1-10	E, 535, 568
					Plant Chemistry Program	VII.A2.1-b	3.3.1-10	E, 535, 568
				Cracking / Stress corrosion cracking	One-Time Inspection			H, 535, 568
					Plant Chemistry Program			H, 535, 568
Carbon Steel, Low Alloy Steel in Air/Gas (Drywell to Reactor Building Refueling Seal Plates)	Non-Safety Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A2.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Fire Rated Doors)	Fire Barrier	Carbon steel	Air/Gas	Loss of material / General corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 521
				Loss of material / Wear	Fire Protection	VII.G.3-d	3.3.1-20	B
Carbon Steel, Low Alloy Steel in Air/Gas (Fire Rated, HELB and Secondary Containment Doors)	Fire Barrier Flood Barrier HELB Barrier Pressure Boundary	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A2.2-a	3.5.1-20	A, 511

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, Steel Embeds, Blowout Panels, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A2.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, Whip Restraints, Masonry Wall Supports, etc.)	Non-Safety Support Safety Related Support Whip Restraint	Carbon steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519
Carbon Steel, Low Alloy Steel in Atmosphere / Weather (Structural Steel, Ventilation Assemblies)	Non-Safety Support Safety Related Support	Carbon steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A2.2-a	3.5.1-20	A, 511

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Treated Water (Drywell to Reactor Building Refueling Seal Plates)	Non-Safety Support	Carbon Steel	Treated Water	Loss of material / General, crevice, galvanic, MIC and pitting corrosion	Plant Chemistry Program			J, 561
					Primary Containment In-Service Inspection Program			J, 561
					Structures Monitoring Program			J, 561
Concrete in Air/Gas (Foundation, Walls, Slabs)	Flood Barrier HELB Barrier Missile Barrier Non-Safety Support Pressure Boundary Radiation Shielding Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A2.1-d	3.5.1-20	A, 504

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slabs, Grout)	Flood Barrier HELB Barrier Missile Barrier Non-Safety Support Pressure Boundary Radiation Shielding Safety Related Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A2.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A2.1-f	3.5.1-20	A, 505
				None	None	III.A2.1-j	3.5.1-27	I, 508
	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Walls, Slabs)	Fire Barrier	Reinforced concrete, Grout	Air/Gas	Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates	Fire Protection	VII.G.3-b	3.3.1-30	B, 503, 505
					Structures Monitoring Program	VII.G.3-b	3.3.1-30	A, 503, 505
		Reinforced concrete	Air/Gas	Loss of material / Corrosion of embedded steel	Fire Protection	VII.G.3-c	3.3.1-30	B, 504
					Structures Monitoring Program	VII.G.3-c	3.3.1-30	A, 504
Concrete in Atmosphere / Weather (Walls, Slabs)	Flood Barrier Missile Barrier Non-Safety Support Pressure Boundary Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A2.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A2.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A2.1-f	3.5.1-20	A, 505

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere / Weather (Walls, Slabs)	Flood Barrier Missile Barrier Non-Safety Support Pressure Boundary Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A2.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A2.1-a	3.5.1-20	A, 501
Concrete in Below Grade (Foundation, Walls)	Flood Barrier Non-Safety Support Pressure Boundary Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	None	None	III.A2.1-a	3.5.1-20	A, 501
						III.A2.1-b	3.5.1-20	A, 502
						III.A2.1-c	3.5.1-20	A, 503
						III.A2.1-e	3.5.1-21	A, 504
						III.A2.1-g	3.5.1-21	A, 505
						III.A2.1-h	3.5.1-25	I, 506
						III.A2.1-i	3.5.1-26	I, 507

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Air/ Gas (Secondary Containment Seals, Spent Fuel Pool Gate Seals and Hatch Seals)	Flood Barrier Pressure Boundary Shelter/ Protection	Elastomers (rubber, neoprene, silicone, etc.)	Air /Gas	Change in material properties and cracking / Ultraviolet radiation and ozone, thermal exposure	Structures Monitoring Program			J, 534
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Atmosphere/ Weather (Secondary Containment Seals)	Pressure Boundary Shelter/ Protection	Elastomers (rubber, neoprene, silicone, etc.)	Atmosphere/ Weather	Change in material properties and cracking / Ultraviolet radiation and ozone, thermal exposure	Structures Monitoring Program			J, 533
Elastomer Sealants (rubber, neoprene, silicone, etc.) in Treated Water (Spent Fuel Pool Gate Seals)	Flood Barrier	Elastomers (rubber, neoprene, silicone, etc.)	Treated Water	Change in material properties and cracking / Ultraviolet radiation and ozone, thermal exposure	Structures Monitoring Program			J, 534

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Glass in Air/Gas (Railroad Door View Port)	Pressure Boundary	Glass	Air /Gas	None	None			J, 517
Masonry Walls in Air/Gas	Fire Barrier	Concrete block	Air/Gas	Cracking / Restraint, shrinkage, creep, aggressive environment	Fire Protection	III.A2.3-a	3.5.1-24	E, 510
Masonry Walls in Air/Gas	Fire Barrier Flood Barrier HELB Barrier Non-Safety Support Pressure Boundary Radiation Shielding Safety Related Support	Concrete block	Air/Gas	Cracking / Restraint, shrinkage, creep, aggressive environment	Structures Monitoring Program	III.A2.3-a	3.5.1-24	E, 509
Non-Metallic Fire Proofing in Air/Gas (Gypsum Board Walls)	Fire Barrier HELB Barrier	Rigid Board (thermal insulating board)	Air/Gas	Loss of material / Abrasion	Fire Protection			J, 522, 525
					Structures Monitoring Program			J, 522, 525

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Roofing in Atmosphere/ Weather	Pressure Boundary Shelter/ Protection	Elastomer Membrane Roofing	Atmosphere/ Weather	Separation, environmental degradation, water in-leakage / Weathering	Structures Monitoring Program			J, 537
Stainless Steel in Air/Gas (Metal Siding Screws, Upper Portion of Spent Fuel Pool, Dryer/ Separator Storage Pool, Reactor Well Liners and Drywell to Reactor Building Refueling Seal Bellows)	Flood Barrier Non-Safety Support Pressure Boundary Safety Related Support Shelter/ Protection	Stainless steel	Air/Gas	None	None			J, 517
Stainless Steel in Atmosphere/ Weather (Metal Siding Screws)	Pressure Boundary Shelter/ Protection	Stainless steel	Atmosphere/ Weather	None	None			J, 517
Stainless Steel in Treated Water (Dryer/ Separator Storage Pool and Reactor Well Liners)	Flood Barrier Non-Safety Support Safety Related Support	Stainless steel	Treated Water	Crack Initiation and Growth / Stress corrosion cracking	Structures Monitoring Program	III.A5.2-b	3.5.1-23	E, 536
				Loss of material / Crevice, MIC and pitting corrosion	Structures Monitoring Program	III.A5.2-b	3.5.1-23	E, 536, 568

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Stainless Steel in Treated Water (Drywell to Reactor Building Refueling Seal Bellows)	Flood Barrier Non-Safety Support	Stainless steel	Treated Water	Crack Initiation and Growth / Stress corrosion cracking	Plant Chemistry Program	III.A5.2-b	3.5.1-23	D, 536
					Primary Containment In-Service Inspection Program	III.A5.2-b	3.5.1-23	E, 536, 570
					Structures Monitoring Program	III.A5.2-b	3.5.1-23	E, 536
				Loss of material / Crevice, MIC and pitting corrosion	Plant Chemistry Program	III.A5.2-b	3.5.1-23	D, 536, 568
					Primary Containment In-Service Inspection Program	III.A5.2-b	3.5.1-23	E, 536, 568, 570
					Structures Monitoring Program	III.A5.2-b	3.5.1-23	E, 536, 568
Stainless Steel in Treated Water (Spent Fuel Pool, Dryer/ Separator Storage Pool and Reactor Well Liners)	Flood Barrier Non-Safety Support Safety Related Support	Stainless steel	Treated Water	Crack Initiation and Growth / Stress corrosion cracking	Plant Chemistry Program	III.A5.2-b	3.5.1-23	B, 536
				Loss of material / Crevice, MIC and pitting corrosion	Plant Chemistry Program	III.A5.2-b	3.5.1-23	B, 536, 568
Stainless Steel in Treated Water (Spent Fuel Pool Liner)	Flood Barrier Non-Safety Support Safety Related Support	Stainless steel	Treated Water	Crack Initiation and Growth / Stress corrosion cracking	System Condition Monitoring Program	III.A5.2-b	3.5.1-23	E, 536, 539
				Loss of material / Crevice, MIC and pitting corrosion	System Condition Monitoring Program	III.A5.2-b	3.5.1-23	E, 536, 539, 568

Table 3.5.2-15 Structures and Component Supports - Reactor Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Stainless Steel in Treated Water (Spent Fuel Storage Racks)	Radiation Shielding Safety Related Support	Stainless steel	Treated Water	Crack Initiation and Growth / Stress corrosion cracking	Plant Chemistry Program	VII.A2.1-c	3.3.1-13	B
				Loss of material / Crevice, MIC and pitting corrosion	Plant Chemistry Program	VII.A2.1-c	3.3.1-13	B, 538

Table 3.5.2-16 Structures and Component Supports - Structures Affecting Safety - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Fire Rated Doors)	Fire Barrier	Carbon Steel	Air/Gas	Loss of material / General corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 521
				Loss of material / Wear	Fire Protection	VII.G.3-d	3.3.1-20	B
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel)	Non-Safety Support	Carbon Steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Concrete in Air/Gas (Foundations, Walls, Slabs)	Non-Safety Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
Concrete in Air/Gas (Foundations, Walls, Slabs, Grout)	Non-Safety Support	Reinforced concrete, Grout	Air/Gas	Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				None	None	III.A3.1-j	3.5.1-27	I, 508

Table 3.5.2-16 Structures and Component Supports - Structures Affecting Safety - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere/ Weather (Foundations, Walls, Slabs)	Non-Safety Support	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A3.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A3.1-a	3.5.1-20	A, 501

Table 3.5.2-16 Structures and Component Supports - Structures Affecting Safety - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Below Grade (Foundations, Walls)	Non-Safety Support	Reinforced concrete	Below Grade	None	None	III.A3.1-a	3.5.1-20	A, 501
						III.A3.1-b	3.5.1-20	A, 502
						III.A3.1-c	3.5.1-20	A, 503
						III.A3.1-e	3.5.1-21	A, 504
						III.A3.1-g	3.5.1-21	A, 505
						III.A3.1-h	3.5.1-25	I, 506
						III.A3.1-i	3.5.1-26	I, 507

Table 3.5.2-17 Structures and Component Supports - Turbine Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Fire Rated Doors)	Fire Barrier	Carbon steel	Air/Gas	Loss of material / General corrosion	Fire Protection	VII.I.1-b	3.3.1-05	E, 521
				Loss of material / Wear	Fire Protection	VII.G.2-d	3.3.1-20	B
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, Steel Embeds, Doors, etc.)	Fire Barrier Flood Barrier HELB Barrier Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, Whip restraints, Masonry Wall Supports, etc.)	Non-Safety Support Safety Related Support Whip Restraint	Carbon steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519

Table 3.5.2-17 Structures and Component Supports - Turbine Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Atmosphere / Weather (Doors)	Shelter/ Protection	Carbon steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Concrete in Air/Gas (Foundation, Walls, Slabs)	Fire Barrier Flood Barrier HELB Barrier Missile Barrier Non-Safety Support Radiation Shielding Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504

Table 3.5.2-17 Structures and Component Supports - Turbine Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slabs, Grout)	Fire Barrier Flood Barrier HELB Barrier Missile Barrier Non-Safety Support Radiation Shielding Safety Related Support	Reinforced concrete, Grout	Air/Gas	Cracking and spalling / Fatigue due to low level repeated load	Structures Monitoring Program			J, 541
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				None	None	III.A3.1-j	3.5.1-27	I, 508
	Non-Safety Support Safety Related Support	Reinforced concrete, Grout	Air/Gas	Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519, 541

Table 3.5.2-17 Structures and Component Supports - Turbine Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Walls, Slabs)	Fire Barrier	Reinforced concrete, Grout	Air/Gas	Concrete cracking and spalling / Aggressive chemical attack and reaction with aggregates	Fire Protection	VII.G.2-b	3.3.1-30	B, 503, 505
					Structures Monitoring Program	VII.G.2-b	3.3.1-30	A, 503, 505
		Reinforced concrete	Air/Gas	Loss of material / Corrosion of embedded steel	Fire Protection	VII.G.2-c	3.3.1-30	B, 504
					Structures Monitoring Program	VII.G.2-c	3.3.1-30	A, 504
Concrete in Atmosphere / Weather (Walls Near Recombiner Building)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking and spalling / Minor settlement of the adjacent structure	Structures Monitoring Program			J, 540
Concrete in Atmosphere / Weather (Walls, Slabs)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503

Table 3.5.2-17 Structures and Component Supports - Turbine Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere / Weather (Walls, Slabs)	Flood Barrier Missile Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Atmosphere/ Weather	Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A3.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A3.1-a	3.5.1-20	A, 501
Concrete in Below Grade (Foundation, Walls)	Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete	Below Grade	None	None	III.A3.1-a	3.5.1-20	A, 501
						III.A3.1-b	3.5.1-20	A, 502
						III.A3.1-c	3.5.1-20	A, 503
						III.A3.1-e	3.5.1-21	A, 504
						III.A3.1-g	3.5.1-21	A, 505
						III.A3.1-h	3.5.1-25	I, 506
						III.A3.1-i	3.5.1-26	I, 507

Table 3.5.2-17 Structures and Component Supports - Turbine Building - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Masonry Walls in Air/Gas	Fire Barrier	Concrete block	Air/Gas	Cracking / Restraint, shrinkage, creep, aggressive environment	Fire Protection	III.A3.3-a	3.5.1-24	E, 510
	Fire Barrier Flood Barrier HELB Barrier Missile Barrier Non-Safety Support Radiation Shielding Safety Related Support	Concrete block	Air/Gas	Cracking / Restraint, shrinkage, creep, aggressive environment	Structures Monitoring Program	III.A3.3-a	3.5.1-24	E, 509
Non-Metallic Fireproofing in Air/Gas (Cementitious Fireproofing, Pyrocrete Walls)	Fire Barrier HELB Barrier	Cementitious Fireproofing (thermal insulating mastic)	Air/Gas	Loss of material / Abrasion	Fire Protection			J, 522, 525
Non-Metallic Fireproofing in Air/Gas (Gypsum Board Walls)	Fire Barrier HELB Barrier	Rigid Board (thermal insulating board)	Air/Gas	Loss of material / Abrasion	Fire Protection			J, 522, 525
					Structures Monitoring Program			J, 522, 525

Table 3.5.2-18 Structures and Component Supports - Underground Duct Bank - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Air/Gas (Structural Steel, Steel Embeds, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511
Carbon Steel, Low Alloy Steel in Air/Gas (Supports for Miscellaneous Structures, i.e. members, welds, bolted connections, support anchorage for Platforms, Stairs, etc.)	Non-Safety Support Safety Related Support	Carbon steel	Air/Gas	Loss of material / Environmental corrosion	Structures Monitoring Program	III.B5.1-a	3.5.1-29	A, 519
Carbon Steel, Low Alloy Steel in Atmosphere / Weather (Manhole covers/ supports)	Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Carbon steel	Atmosphere/ Weather	Loss of material / Corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 511

Table 3.5.2-18 Structures and Component Supports - Underground Duct Bank - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Carbon Steel, Low Alloy Steel in Below Grade (Manhole covers/ supports)	Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Carbon steel	Below Grade	Loss of material / General and crevice corrosion	Structures Monitoring Program	III.A3.2-a	3.5.1-20	A, 543, 511

Table 3.5.2-18 Structures and Component Supports - Underground Duct Bank - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Air/Gas (Foundation, Walls, Slabs)	Non-Safety Support Safety Related Support	Reinforced concrete	Air/Gas	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				None	None	III.A3.1-j	3.5.1-27	I, 508
				Reduction in concrete anchor capacity due to local concrete degradation / Service-induced cracking or other concrete aging mechanisms	Structures Monitoring Program	III.B5.2-a	3.5.1-29	A, 519

Table 3.5.2-18 Structures and Component Supports - Underground Duct Bank - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Atmosphere / Weather (Walls, Slabs)	Flood Barrier Non-Safety Support Safety Related Support Shelter / Protection	Reinforced concrete	Atmosphere/ Weather	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	Structures Monitoring Program	III.A3.1-d	3.5.1-20	A, 504
				Expansion and cracking / Reaction with aggregates	Structures Monitoring Program	III.A3.1-c	3.5.1-20	A, 503
				Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	Structures Monitoring Program	III.A3.1-f	3.5.1-20	A, 505
				Increase in porosity and permeability, loss of strength / Leaching of calcium hydroxide	Structures Monitoring Program	III.A3.1-b	3.5.1-20	A, 502
				Loss of material (spalling, scaling) and cracking / Freeze-thaw	Structures Monitoring Program	III.A3.1-a	3.5.1-20	A, 501

Table 3.5.2-18 Structures and Component Supports - Underground Duct Bank - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Concrete in Below Grade (Foundation, Walls, Slabs, Grout)	Flood Barrier Non-Safety Support Safety Related Support Shelter/ Protection	Reinforced concrete, Grout	Below Grade	None	None	III.A3.1-a	3.5.1-20	A, 501
						III.A3.1-b	3.5.1-20	A, 502
						III.A3.1-c	3.5.1-20	A, 503
						III.A3.1-e	3.5.1-21	A, 504
						III.A3.1-g	3.5.1-21	A, 505
						III.A3.1-h	3.5.1-25	I, 506
						III.A3.1-i	3.5.1-26	I, 507

Notes for Tables 3.5.2-1 through 3.5.2-18

A Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

B Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

C Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

D Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

E Consistent with NUREG-1801 for material, environment and aging effect, but a different aging management program is credited.

F Material not in NUREG-1801 for this component.

G Environment not in NUREG-1801 for this component and material.

H Aging effect not in NUREG-1801 for this component, material, and environment combination.

I Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.

J Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-specific notes:

501 In accordance with NUREG-1801 and ISG-03 for concrete in accessible areas, loss of material and cracking due to freeze-thaw require aging management.

MNGP is located in a severe weathering region according to Figure 1 of ASTM C33-90, and therefore freeze-thaw evaluation is required. Plant documents confirm that the concrete had an air content between 3 and 6%, and subsequent inspections performed on concrete in accessible areas did not exhibit degradation related to freeze-thaw. This evaluation satisfies NUREG-1801 and ISG-03 condition requirements for concrete in inaccessible areas, and therefore loss of material and cracking due to freeze-thaw do not require aging management.

502 In accordance with NUREG-1801 and ISG-03 for concrete in accessible areas, increase in porosity and permeability and loss of strength due to leaching of calcium hydroxide require aging management.

Plant documents confirm that the concrete was constructed in accordance with the recommendations in ACI 201.2R-77 for durability. Additionally, there is no flowing water acting on any below-grade concrete basemat or concrete wall. Building foundations may or may not fall below the ground water table. For those below the ground water table, evaluation shows that ground water flow velocity is well below the threshold at which any significant erosion or leaching of calcium hydroxide is possible. This evaluation satisfies NUREG-1801 and ISG-03 condition requirements for concrete in inaccessible areas, and therefore increase in porosity and permeability and loss of strength due to leaching of calcium hydroxide do not require aging management.

503 In accordance with NUREG-1801 and ISG-03 for concrete in accessible areas, expansion and cracking due to reaction with aggregates requires aging management.

Tests and petrographic examinations performed according to ASTM C289-64 and ASTM C295 verified that aggregates used are not reactive. This satisfies NUREG-1801 and ISG-03 condition requirements for concrete in inaccessible areas, and therefore expansion and cracking due to reaction with aggregates do not require aging management.

504 In accordance with NUREG-1801 and ISG-03 for concrete in accessible areas, cracking, loss of bond, and loss of material due to corrosion of embedded steel require aging management.

NUREG-1801 and ISG-03's description of an aggressive environment is pH < 5.5, chlorides > 500 ppm, or sulfates > 1500 ppm. Plant documents confirm that the below-grade environment is not aggressive. MNGP data indicates that the pH > 7, chlorides < 100 ppm, and the sulfates < 100 ppm. The Structures Monitoring Program includes examinations of below grade concrete when excavated for any reason. To ensure the below grade environment remains non-aggressive, ground water chemistry is monitored periodically for the above parameters as part of the Structures Monitoring Program. This satisfies NUREG-1801 and ISG-03 condition requirements for concrete in inaccessible areas, and therefore cracking, loss of bond, and loss of material due to corrosion of embedded steel do not require aging management.

505 In accordance with NUREG-1801 and ISG-03 for concrete in accessible areas, increase in porosity and permeability, cracking, and loss of material due to aggressive chemical attack require aging management.

NUREG-1801 and ISG-03's description of an aggressive environment is pH < 5.5, chlorides > 500 ppm, or sulfates > 1500 ppm. Plant documents confirm that the below-grade environment is not aggressive (pH > 7, chlorides < 100 ppm, sulfates < 100 ppm). The Structures Monitoring Program includes examinations of below grade concrete when excavated for any reason. To ensure the below grade environment remains non-aggressive,

ground water chemistry is monitored periodically for the above parameters as part of the Structures Monitoring Program. This satisfies NUREG-1801 and ISG-03 condition requirements for concrete in inaccessible areas, and therefore increase in porosity and permeability, cracking, and loss of material due to aggressive chemical attack do not require aging management.

506 The plant initial Licensing Basis did not include a program to monitor settlement. No significant settlement has been observed on any major structure and de-watering systems are not used. This satisfies NUREG-1801 condition requirements on concrete settlement, and therefore cracks, distortion, and increase in component stress levels due to settlement do not require aging management.

507 MNGP's response to erosion of cement from porous concrete subfoundations described in Information Notices 97-11 and 98-26 concluded that foundation materials do not contain any porous layers. The concrete base or lean concrete fill material used beneath major building foundations did not include high-alumina cement. MNGP doesn't rely on a de-watering system to lower site groundwater. NUREG-1801 condition requirements are satisfied for porous concrete subfoundations, and therefore the aging effects due to erosion of porous concrete subfoundation do not require aging management.

508 Plant documents confirm that concrete elements are not subject to elevated temperatures in excess of 150 degrees F general area and 200 degrees F local area. Plant areas that bound high temperature considerations are the drywell general area and bioshield wall piping penetration local area, which experience temperatures of 135 degrees F and 179 degrees F, respectively. This satisfies NUREG-1801 condition requirements on elevated temperatures, and therefore reduction of strength and modulus due to elevated temperatures do not require aging management.

509 In accordance with NUREG-1801 for concrete block, cracking due to restraint, shrinkage, creep and aggressive environment requires aging management.

NUREG-1801 indicates that the Masonry Wall Program is to be used to manage the aging effect for concrete block, however, MNGP credits a different aging management program. The Structures Monitoring Program, which incorporates all of the requirements of the Masonry Wall Program, manages the aging effect for concrete block through the use of visual inspections.

510 In accordance with NUREG-1801 for concrete block, cracking due to restraint, shrinkage, creep and aggressive environment requires aging management.

NUREG-1801 indicates that the Masonry Wall Program is to be used to manage the aging effect for concrete block, however, MNGP credits a different aging management program. Masonry walls are relied upon as fire barriers, and therefore, visual inspections as part of

the Fire Protection Program are used to ensure that the block wall performs its fire protection intended function.

511 In accordance with NUREG-1801 for steel in accessible areas, loss of material due to corrosion requires aging management.

512 NUREG-1801 indicates that the RG1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants Program is to be used to manage the aging effect. However, a different aging management program is credited. The Structures Monitoring Program, which incorporates all the requirements of the RG1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants Program, manages the aging effect.

513 These load handling systems/devices did not fall within the scope of 10 CFR 54 for a TLAA but may be subjected to stress concentrations and occasional impact loads that could eventually lead to cumulative fatigue damage of load bearing pins, major welds, and structural elements. Their structural members are designed for a static load safety factor of 5 and corresponding maximum design stresses are less that 50% of the material endurance limit. Component design therefore should preclude fatigue failure. To ensure against cumulative fatigue damage, these load handling systems/devices are managed for aging degradation.

514 Component supports are designed to prevent overload and fatigue due to vibratory and cyclic thermal loads. Therefore, these aging mechanisms are not applicable.

515 Concrete is inspected as part of the Structures Monitoring Program. In addition, since the System Condition Monitoring Program performs support inspections, the concrete surrounding the support baseplates and anchor bolts is also inspected as part of the System Condition Monitoring Program. Therefore, both the Structures Monitoring Program and the System Condition Monitoring Program identify and evaluate cracking and other concrete aging mechanisms.

516 The interior of the Diesel Fire Pump House masonry block walls are covered with insulation. The Structures Monitoring Program will require that the interior surfaces of the walls will be examined if exterior wall surfaces show evidence of significant aging effects.

517 An MNGP plant specific evaluation does not identify any aging effect or mechanism for this material/environment combination.

518 Based on plant records and settlement data, settlement of the Diesel Fuel Oil Transfer House occurred rather rapidly following construction and was probably due to washout after a rainstorm. Settlement data recorded annually since 1992 continues to show no significant settlement of the structure.

The Structures Monitoring Program manages aging effects for the Diesel Fuel Oil Transfer House. As part of the Structures Monitoring Program, an annual inspection of the Diesel Fuel Oil Transfer House for settlement is performed to manage the aging effects of cracks, distortion, and increase in component stress level due to settlement.

519 Miscellaneous steel support members, welds, bolted connections and support anchorage to the building structure, are within the scope of the Structures Monitoring Program for the aging effect loss of material due to environmental corrosion (general corrosion).

Building concrete at locations of expansion and grouted anchors and grout pads for miscellaneous steel support base plates is within the scope of the Structures Monitoring Program for the aging effect reduction in concrete anchor capacity due to local concrete degradation due to service-induced cracking or other concrete aging mechanisms.

520 Concrete curbs in the EDG Building are credited in the Fire Protection Program.

521 The Fire Protection Program is the plant specific AMP credited for managing loss of material due to general corrosion for external surfaces of carbon steel components used in fire protection.

522 Aging Effects for Non-NUREG-1801 line items, are provided in EPRI 1002950 (Structural Tools).

523 Loss of material due to flaking is applicable to fireproofing constructed of fibrous fire wrap with rough finish or non-hard finish, or to cementitious fireproofing which has been sprayed on.

524 Cracking, Delamination due to vibration is applicable to cementitious fireproofing which has been sprayed on a vibrating/moving component.

525 Fibrous fire wraps, cementitious fireproofing, and rigid board are susceptible to abrasion when in contact with a vibrating/moving component, or when attached to a vibrating/moving component.

526 Intentionally left blank.

527 The Hangers and Supports System is a NUREG-1801, Chapter III, Section B item. This material, environment, aging effect/mechanism, aging management program combination is not listed in Chapter III, Section B. To show consistency with NUREG-1801, an applicable Group 3 line item number was designated instead.

528 The HPCI Building roof access hatch is sealed with elastomers to ensure that it is watertight and that it will maintain secondary containment.

529 Flowing water can erode concrete surfaces; particulates moving with the water can cause abrasion. In addition, water flowing at high velocities can cavitate with resulting damage to concrete surfaces.

Flow velocities in the intake structure are less than the values at which cavitation may occur. Flow velocities, however, may approach values such that erosion/abrasion may occur.

On the basis of the above discussions, it is concluded that loss of concrete material due to erosion / abrasion is an aging effect requiring management in the raw water environment. The principal tool for managing this effect is diver examinations performed as required by the Structures Monitoring Program.

530 Since below grade carbon steel components are not accessible, the condition of the accessible carbon steel components in an atmosphere/weather and/or raw water environment will be used to evaluate the condition of the inaccessible components.

531 Aging effect and mechanisms are taken from EPRI Report TR-1002950. Galvanic corrosion is not applicable since intake structure carbon steel is not in contact with stainless steel.

532 The Off-Gas Stack is a Group 9 structure. This material, environment, aging effect/mechanism, aging management program combination is not listed in Group 9. To show consistency with NUREG-1801, an applicable Group 3 line item number was designated instead.

533 Elastomer sealants are used to maintain secondary containment leak tight integrity.

534 Elastomer sealants are used as the spent fuel pool gate seal and secondary containment seals.

535 The Plant Chemistry Program is used to manage the aging effects due to crevice corrosion, galvanic corrosion, stress corrosion cracking, pitting corrosion, and MIC of boral in treated water by ensuring that corrosive ion concentrations do not exceed acceptable limits, and by limiting the amount of impurities in the water. Note: General corrosion is not applicable since boral/aluminum develops a strongly bonded oxide film with excellent corrosion resistance.

The One-Time Inspection Program will verify the effectiveness of the Plant Chemistry Program by confirming the absence of aging effects on Boral coupon samples stored in the spent fuel pool. Aging effects that could affect rack integrity or neutron attenuation characteristics are not expected since none have been observed during coupon sample evaluations conducted over the past 20 years. The absence of significant aging effects will demonstrate that the Plant Chemistry Program effectively manages reduction of neutron-absorbing capacity, loss of material and cracking for the Boral spent fuel storage racks.

536 This NUREG-1801 Group 5 Structure is evaluated with the NUREG-1801 Group 2 Structure, Reactor Building.

537 Aging effects for Non-NUREG-1801 line items are provided in ACI 349.3R, “Evaluation of Existing Nuclear Safety-Related Concrete Structures.”

538 Aging effect loss of material is not identified in NUREG-1801 for this component. Loss of material is identified in NUREG-1801 item III.A5.2-b for the same material and environment combination.

Spent fuel pool stainless steel storage racks in treated water may also be used to store new fuel.

539 The System Condition Monitoring Program is credited for monitoring the spent fuel pool water level and spent fuel pool leakage.

540 The Recombiner Building, adjacent to the Turbine Building, has experienced minor settlement causing a crack to develop on the exterior wall of the Turbine Building. The crack is relatively shallow and was determined to have no structural significance. The Structures Monitoring Program is used to manage the aging effects cracking and spalling due to minor settlement of the adjacent structure (i.e. Recombiner Building).

541 The Turbine Building has an operating history of measurable vibrations and transient loads generated by piping and machinery. These loads are transmitted to the base plate grout and potentially underlying reinforced concrete. If vibrations are high due to temporary machine imbalance and / or large transient loads are frequent, grout may crack and spall over time. While most pedestals are unlikely to be affected by these forces, it is possible that vibratory motion of the turbine pedestal could cause gradual weakening and spalling of concrete in stress concentration areas such at the column to foundation slab juncture. The Structures Monitoring Program is used to manage reinforced concrete and grout for the aging effects cracking and spalling due to fatigue due to low level repeated load, and reduction in concrete anchor capacity due to local concrete degradation due to service-induced cracking or other concrete aging mechanisms.

542 Intentionally left blank.

543 Carbon steel components below grade (potentially in ground water/raw water) are susceptible to general, pitting, crevice, MIC, and galvanic corrosions. Since the duct bank is well above the ground water table, pitting corrosion and MIC are not applicable, as the environment does not include flowing water. Galvanic corrosion is not applicable since Underground Duct Bank carbon steel is not in contact with stainless steel. Crevice corrosion requires oxygen and moisture, which are present on an intermittent basis. General corrosion is always possible. Since below grade carbon steel components are not accessible, the

condition of the accessible carbon steel components in an atmosphere/weather environment will be used to evaluate the condition of the inaccessible components.

544 Potential leakage of water past the RPV to drywell refueling seal can only occur when the reactor is in cold shutdown with the reactor cavity flooded to support refueling operations. Leakage would be cold demineralized water entering the drywell. Leakage cannot result in failure of any SR equipment since there is no equipment inside drywell whose SR function is credited in supporting refueling. The drywell contains a drainage system for removing leakage that may result from refueling or from spillage of water inside drywell. The drywell includes a sump drain system as well. In addition, the frequent personnel entry into the drywell that occurs during most refueling outages would result in any substantial leakage past the RPV to drywell refueling seal being noticed and corrective action taken. Plant procedure stations personnel to check for leaks prior to flooding the reactor well.

Drywell shell ultrasonic wall thickness measurements were taken in February 1988. Concrete was removed at the concrete-to-shell interface. UT measurements ranged from 1.072" to 1.107". The minimum design thickness for this area is 1.0 inch. Corrosion monitoring of the drywell shell is included in the Primary Containment In-Service Inspection activities. Activities also include inspections of the moisture barrier located at the concrete-to-shell interface. The moisture barrier acts as a seal against water intrusion between the shell and concrete floor.

MNGP operating history shows no evidence of RPV to drywell refueling seal leakage. Plant engineering and maintenance personnel confirmed the absence of observed leakage inside drywell during refueling activities. The lack of observed leakage, the ongoing inspection and monitoring activities, and plant features than monitor for leakage assure that any leaks detected will be corrected in a timely manner.

TLAA evaluation on fatigue of the RPV to drywell refueling seal can be found in LRA Section 4.3.

545 The 10 CFR 50, Appendix J Program specifies tests that monitor leakage through the overall pressure retaining boundary, as well as individual penetration isolation barriers such as the personnel airlock consistent with the plant Technical Specifications.

546 Intentionally left blank.

547 MNGP leak tightness for pressure boundary seals, gaskets, and O-rings of the personnel airlock, CRD hatch, equipment hatches, seismic restraint inspection ports, instrument drywell penetrations, and traversing in-core probe are monitored in accordance with 10 CFR 50, Appendix J Program.

548 The Primary Containment In-Service Inspection Program inspections include seals and gaskets for the personnel airlock, equipment hatches, and CRD hatch and the moisture barrier.

549 Requirements specified in NUREG-1801 for concrete quality, inspections and housekeeping are satisfied for steel elements in inaccessible areas (i.e. embedded in concrete, sand pocket region). Therefore, a plant specific aging management program for loss of material due to corrosion of steel elements in inaccessible areas is not required.

550 Penetration bellows material inconel (NiCrMoCb) is very similar to stainless steel. Its use is limited to penetration number X-16B.

551 Intentionally left blank.

552 NUREG-1801 lists inside or outside containment as the environment. Consider that this environment includes atmosphere/weather and below grade.

553 NUREG-1801, Items II.B1.1.1-d and II.B4.1-d, states that weld Exam Categories E-B (pressure retaining welds, visual VT-1 examination method) and E-F (dissimilar pressure retaining welds, surface examination method) for vent line bellows assemblies and other penetration bellows assemblies are warranted for the extended period of operations.

MNGP operating history on bellow replacements is limited to bellows X-16B. Leakage was identified during LLRT testing and not a result of cracks observed during a visual examination. Plant modification identified leakage at the outer most bellows from a small failure underneath the outer most collar of the expansion joint. No cracks in the weld metal were identified. Industry operating history has identified cracks of the bellows but none in the weld metal.

Welds for bellows assemblies are in a sheltered, non-corrosive environment. Additionally, welds are located outside primary containment in an air/gas environment where temperatures are not expected to exceed threshold limits for stress corrosion cracking.

In light of the non-aggressive environmental exposures and plant specific and industry operating histories, weld examinations utilizing optional Examination Categories E-B and E-F is not warranted. Existing requirements for visual examinations, in accordance with ASME Section XI, Subsection IWE, Examination Category E-A, and Appendix J leak rate testing, Examination Category E-P, should be sufficient to detect cracking of the welds for bellows assemblies.

554 The Structures Monitoring Program manages loss of material for piping penetration seal plates. Inspections are performed inside the HPCI Building for evidence of water flow and rust streaking at the inside ends of the penetrations.

555 The Protective Coating Monitoring & Maintenance Program is not credited for managing loss of material due to corrosion but is credited for preventing the degradation of coatings that could lead to the clogging of ECCS suppression pool suction strainers. When a steel coating is found degraded it is evaluated and repaired in accordance with station procedures.

MNGP recognizes the benefits derived from protective coatings. However coatings, in and of themselves, do not perform License Renewal intended functions. That notwithstanding, the Structures Monitoring Program, the Primary Containment In-Service Inspection Program, the 10 CFR 50, Appendix J Program, and the Plant Chemistry Program manage steel elements in containment for corrosion.

556 The drywell head and downcomer pipes are carbon steel material. Graphite plate material is not used for these components and therefore the aging effect is not applicable.

557 Intentionally left blank.

558 Intentionally left blank.

559 A Lubrite beam seat consists of a carbon steel plate over a bronze plate lubricated with graphite packed into trepanned depressions. The upper plate completely covers the lower, which protects the bearing surface from particulate contamination but, at the same time, prevents examination of this surface. In accordance with EPRI 1002950 (Structural Tools), Lubrite bearings are not subject to corrosion that could cause lock-up. Therefore, aging management of Lubrite bearing surface is not required.

560 Intentionally left blank.

561 Per EPRI Report TR-1002950 and a plant specific evaluation, carbon steel components in treated water are susceptible to loss of material due to general, crevice, galvanic, MIC and pitting corrosion.

562 Intentionally left blank.

563 The Plant Chemistry Program is used to manage these aging effects by ensuring that corrosive ion concentrations do not exceed acceptance limits and that pH remains within an acceptable range.

564 Per EPRI Report TR-1002950 and a plant specific evaluation, stainless steel components in treated water are susceptible to loss of material due to crevice, MIC, and pitting corrosions.

565 Intentionally left blank.

566 Access to components inside the torus is limited. Since the Primary Containment In-Service Inspection Program inspects components inside the torus, it is relied upon to manage the

aging effects of the miscellaneous steel components, support members, welds and bolted connections located in the torus.

567 Intentionally left blank.

568 Aging mechanism(s) not in NUREG-1801.

569 Structural components susceptible to cumulative fatigue damage include all stationary load bearing elements including girder flanges, webs, stiffeners, load carrying connections (welds, bolts, clip angles, etc.), and miscellaneous structural components that comprise the bridge and trolley support system. Structural components susceptible to loss of material due to corrosion include all components listed above in addition to platforms, railings, catwalks, ladders, equipment supports and housings and other fixed attachments, the failure of which could result in damage to Category 1 items.

570 By monitoring for blockage and leakage in the drywell air gap and sand pocket drain outlets during each outage when the refueling cavity is flooded, the Primary Containment In-Service Inspection Program is credited with managing the aging effects loss of material and crack initiation and growth for the drywell to reactor building refueling seal bellows.

571 Spent fuel aluminum storage racks in treated water may also be used to store new fuel.

3.6 Aging Management of Electrical and Instrumentation and Controls

3.6.1 Introduction

This section provides the results of the aging management review for those components identified in Section 2.5, Scoping and Screening Results: Electrical and Instrumentation and Controls. As indicated in Section 2.5, electrical components that are subject to an aging management review are evaluated in Section 2.5.2, Electrical Commodities. The commodities, which are addressed in this section, are described in the indicated sections.

- Electrical Penetrations Commodity Group (Section 2.5.2.1)
- Fuse Holders Commodity Group (Section 2.5.2.2)
- Non-EQ Cables and Connections Commodity Group (Section 2.5.2.3)
- Off Site Power/SBO Recovery Path Commodity Group (Section 2.5.2.4)

As indicated in Section 2.1.5.3, cables, connections, and electrical penetrations associated with the 10 CFR 50.49 program (EQ) are defined as short lived (i.e., subject to replacement based on qualified life) and are addressed by Time-Limited Aging Analyses (TLAAs). Therefore, these cables, connections, and electrical penetrations are not included in the set of electrical components requiring aging management review.

Table 3.6.1, Summary of Aging Management Evaluations in Chapter VI of NUREG-1801 for Electrical Components, provides the summary of the programs evaluated in NUREG-1801 for the Electrical Component groups that are relied on for license renewal.

This table uses the format described in Section 3.0. Note that this table only includes those component groups that are applicable to a BWR.

3.6.2 Results

The following tables summarize the results of the aging management review for the commodities in the Electrical and I&C group.

Table 3.6.2-1, Electrical Components - Electrical Penetrations Commodity Group - Summary of Aging Management Evaluation

Table 3.6.2-2, Electrical Components - Fuse Holders Commodity Group - Summary of Aging Management Evaluation

Table 3.6.2-3, Electrical Components - Non-EQ Cables and Connections Commodity Group - Summary of Aging Management Evaluation

Table 3.6.2-4, Electrical Components - Off Site Power/SBO Recovery Path Commodity Group - Summary of Aging Management Evaluation

The materials from which specific components are fabricated, the environments to which components are exposed, the aging effects requiring management, and the aging management programs used to manage these aging effects are provided for each of the above commodities in the following subsections of Section 3.6.2.1, Materials, Environments, Aging Effects Requiring Management, and Aging Management Programs:

Section 3.6.2.1.1, Electrical Penetrations Commodity Group

Section 3.6.2.1.2, Fuse Holders Commodity Group

Section 3.6.2.1.3, Non-EQ Cables and Connections Commodity Group

Section 3.6.2.1.4, Off Site Power/SBO Recovery Path Commodity Group

3.6.2.1 Materials, Environment, Aging Effects Requiring Management, and Aging Management Programs

3.6.2.1.1 Electrical Penetrations Commodity Group

Materials

The materials of construction for the Electrical Penetrations Commodity Group components are:

- Various organic polymers
- Various materials such as epoxy, fiberglass, hypalon paint

Environment

The Electrical Penetrations Commodity Group components are exposed to the following environments:

- Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen

Aging Effects Requiring Management

The following aging effects, associated with the Electrical Penetrations Commodity Group, require management:

- Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance, electrical failure

Aging Management Programs

The following aging management programs manage the aging effects for the Electrical Penetrations Commodity Group components:

- Electrical Cables & Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program
- Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits

3.6.2.1.2 Fuse Holders Commodity Group

Materials

The materials of construction for the Fuse Holders Commodity Group components are:

- Insulating Material - Various materials such as Phenolic or Melamine
- Metallic Clamp - Copper, Brass, Steel

Environment

The Fuse Holders Commodity Group components are exposed to the following environments:

- Corrosion, Chemical Contamination, Oxidation
- Electrical Transients
- Heat or radiation
- Mechanical Stresses
- Thermal Cycling (power applications only)
- Vibration (non-bolted clip fuse holders only)

Aging Effects Requiring Management

There are no aging effects which require management for the Fuse Holders Commodity Group.

- No electrical transients
- Ambient temperature and radiation levels are less than the insulating material 60-year service-limiting temperature and radiation dose
- Fuse holders operated below the design current rating
- Fuses not frequently removed and inserted

- Protected from exposure to external sources of moisture and chemical contamination

Aging Management Programs

There are no aging management programs required to manage the aging effects for the Fuse Holders Commodity Group.

3.6.2.1.3 Non-EQ Cables and Connections Commodity Group

Materials

The materials of construction for the Non-EQ Cables and Connections Commodity Group components are:

- Various organic polymers
- Various metals

Environment

The Non-EQ Cables and Connections Commodity Group components are exposed to the following environments:

- Adverse localized environment caused by heat, radiation, or moisture in the presence oxygen.
- Adverse localized environment caused by moisture and voltage
- Adverse localized environment caused by thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation

Aging Effects Requiring Management

The following aging effects, associated with the Non-EQ Cables and Connections Commodity Group, require management:

- Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance, electrical failure
- Formation of water trees, localized damage leading to electrical failure (breakdown of insulation) caused by moisture intrusion and voltage stress

Aging Management Programs

The following aging management programs manage the aging effects for the Non-EQ Cables and Connections Commodity Group components:

- Electrical Cables & Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program
- Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits
- Inaccessible Medium Voltage (2kV to 34.5kV) Cables Not Subject to 10 CFR 50.49 EQ Requirements

3.6.2.1.4 Off Site Power/SBO Recovery Path Commodity Group

Materials

The materials of construction for the Off Site Power/SBO Recovery Path Commodity Group components are:

- Aluminum, Steel
- Porcelain, Cement, Metal
- Various Metals
- Various Metals and Organic Polymers, Porcelain, Fiberglass, Silicon Rubber
- Various Organic Polymers

Environment

The Off Site Power/SBO Recovery Path Commodity Group components are exposed to the following environments:

- Adverse localized environment caused by heat and radiation in the presence of oxygen
- Air-Outdoor
- Air-Indoor
- Adverse localized environment caused by moisture and voltage
- Adverse localized environment caused by thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation

Aging Effects Requiring Management

The following aging effects, associated with the Off Site Power/SBO Recovery Path Commodity Group, require management:

- Embrittlement, Cracking, Discoloration, Oxidation, Loosening of bolted connections
- Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance, electrical failure caused by thermal/thermoxidative degradation of organics; radiolysis and photolysis (ultraviolet {UV} sensitive materials only); radiation-induced oxidation; moisture intrusion
- Formation of water trees, localized damage leading to electrical failure (breakdown of insulation) caused by moisture intrusion and voltage stress

Aging Management Programs

The following aging management programs manage the aging effects for the Off Site Power/SBO Recovery Path Commodity Group components:

- Electrical Cables & Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program
- Bus Duct Inspection Program
- Inaccessible Medium Voltage (2kV to 34.5kV) Cables Not Subject to 10 CFR 50.49 EQ Requirements

3.6.2.2 Further Evaluation of Aging Management as Recommended by NUREG-1801

NUREG-1801 Volume 1 Tables provide the basis for identifying those programs that warrant further evaluation by the reviewer in the license renewal application. For the Electrical and Instrumentation and Controls, those programs are addressed in the following sections.

3.6.2.2.1 Electrical Equipment Subject to Environmental Qualification

Environmental qualification is a TLAA as defined in 10 CFR 54.3. TLAAs are required to be evaluated in accordance with 10 CFR 54.21(c)(1). The evaluation of this TLAA is addressed separately in Section 4.7.

3.6.2.3 Time-Limited Aging Analysis

The time-limited aging analyses (TLAA) identified below are associated with the Electrical and Instrumentation and Controls components:

- Section 4.7, Environmental Qualification of Electrical Equipment (EQ)

3.6.3 Conclusion

The Electrical and Instrumentation and Controls components that are subject to aging management review have been identified in accordance with the requirements of 10 CFR 54.4. The aging management programs selected to manage aging effects for the Electrical and Instrumentation and Controls components are identified in the summaries in Section 3.6.2.1 above.

A description of these aging management programs is provided in Appendix B, along with the demonstration that the identified aging effects will be managed for the period of extended operation.

Therefore, based on the demonstrations provided in Appendix B, the effects of aging associated with the Electrical and Instrumentation and Controls components will be adequately managed so that there is reasonable assurance that the intended function(s) will be maintained consistent with the current licensing basis during the period of extended operation.

Table 3.6.1 Summary of Aging Management Evaluations in Chapter VI of NUREG-1801 for Electrical Components

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.6.1-01	Electrical equipment subject to 10 CFR 50.49 environmental qualification (EQ) requirements	Degradation due to various aging mechanisms	Environmental qualification of electric components	Yes, TLAA (see [SRP] subsection 3.6.2.2.1)	Further evaluation documented in Section 3.6.2.2.1.
3.6.1-02	Electrical cables and connections not subject to 10 CFR 50.49 EQ requirements	Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance (IR); electrical failure caused by thermal / thermoxidative degradation of organics; radiolysis and photolysis (ultraviolet [UV] sensitive materials only) of organics; radiation-induced oxidation; moisture intrusion	Aging management program for electrical cables and connections not subject to 10 CFR 50.49 EQ requirements	No	Consistent with NUREG-1801. Management of aging effects provided by the Electrical Cables & Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program Program.

Table 3.6.1 Summary of Aging Management Evaluations in Chapter VI of NUREG-1801 for Electrical Components

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.6.1-03	Electrical cables used in instrumentation circuits not subject to 10 CFR 50.49 EQ requirements that are sensitive to reduction in conductor insulation resistance (IR)	Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced IR; electrical failure caused by thermal / thermoxidative degradation of organics; radiation-induced oxidation; moisture intrusion	Aging management program for electrical cables used in instrumentation circuits not subject to 10 CFR 50.49 EQ requirements	No	Management of aging effects to be provided by the Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program, which includes exceptions to NUREG-1801, but is consistent with agreements reached with NRC staff during the March 13, 2003 meeting regarding NUREG-1801, Section X1.E2
3.6.1-04	Inaccessible medium-voltage (2K VAC to 15K VAC) cables (e.g., installed in conduit or direct buried) not subject to 10 CFR 50.49 EQ requirements	Formation of water trees, localized damage leading to electrical failure (breakdown of insulation); caused by moisture intrusion and water trees	Aging management program for inaccessible medium-voltage cables not subject to 10 CFR 50.49 EQ requirements	No	Consistent with NUREG-1801. Ranges of voltages included in this item expands from 4.16kV to 34.5kV. Management of aging effects will be provided by the Inaccessible Medium Voltage (2kV to 34.5kV) Cables Not Subject to 10 CFR 50.49 EQ Requirements Program.

Table 3.6.2-1 Electrical Components - Electrical Penetrations Commodity Group - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Electrical cables and connections not subject to 10 CFR 50.49 EQ requirements	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current or signals.	Various organic polymers	Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen	Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance, electrical failure	Electrical Cables & Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program	VI.A.1-a	3.6.1-02	A, 601
Non-EQ Electrical and I&C penetration assemblies except cable and connections (Electrical components only - potting compound, vapor barrier, and support))	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals	Various materials such as epoxy, fiberglass, hypalon paint	Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen.	None	None	None	None	J, 602

Table 3.6.2-1 Electrical Components - Electrical Penetrations Commodity Group - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Non-EQ electrical cables used in instrumentation circuits not subject to 10 CFR 50.49 EQ requirements that are sensitive to reduction in conductor insulation resistance	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals	Insulation material Polyethylene (PE)	Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen.	Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance, electrical failure	Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits	VI.A.1-b	3.6.1-03	B

Table 3.6.2-2 Electrical Components - Fuse Holders Commodity Group - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Fuse Holders	To provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.	Insulating Material - Various materials such as Phenolic or Melamine	Heat or radiation	None-Ambient temperature and radiation levels are less than the insulating material 60-year service-limiting temperature and radiation dose	None	None	None	J, 603
		Metallic Clamp - Copper, Brass, Steel	Thermal Cycling (power applications only)	None-Fuse holder is operated below the design current rating	None	None	None	J, 603
			Vibration (non-bolted clip fuse holders only)	None Mounted on non-vibrating equipment	None	None	None	J, 603
			Electrical Transients	None-No Electrical Transients	None	None	None	J, 603
			Mechanical Stresses	None-Fuse not frequently removed and inserted	None	None	None	J, 603
			Corrosion, Chemical Contamination, Oxidation	None-Protected from exposure to external sources of moisture and chemical contamination	None	None	None	J, 603

Table 3.6.2-3 Electrical Components - Non-EQ Cables and Connections Commodity Group - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Electrical cables and connections not subject to 10 CFR 50.49 EQ requirements	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.	Various organic polymers	Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen	Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance, electrical failure	Electrical Cables & Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program	VI.A.1-a	3.6.1-02	A
		Various metals	Adverse localized environment caused by thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation.	None	None			J, 609
Electrical cables used in instrumentation circuits not subject to 10 CFR 50.49 EQ requirements that are sensitive to reduction in conductor insulation resistance	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.	Various organic polymers	Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen	Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance, electrical failure	Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits	VI.A.1-b	3.6.1-03	B

Table 3.6.2-3 Electrical Components - Non-EQ Cables and Connections Commodity Group - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Inaccessible medium voltage (2 kV to 34.5 kV) cable and connections (e.g. installed in conduit or direct buried) not subject to 10 CFR 50.49 EQ requirements	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.	Various organic polymers	Adverse localized environment caused by moisture and voltage	Formation of water trees, localized damage leading to electrical failure (breakdown of insulation) caused by moisture intrusion and voltage stress.	Inaccessible Medium Voltage (2kV to 34.5kV) Cables Not Subject to 10 CFR 50.49 EQ Requirements	VI.A.1-c	3.6.1-04	A

Table 3.6.2-4 Electrical Components - Off Site Power/SBO Recovery Path Commodity Group - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Non-Segregated Phase Bus	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals	Various Metals and organic polymers, Porcelain, Fiberglass, Silicon Rubber	Air-Outdoor / Indoor	Embrittlement, Cracking, Discoloration, Oxidation, Loosening of bolted connections	Bus Duct Inspection Program	None	None	J
High-Voltage Insulators	Insulate and support an electrical conductor	Porcelain, Cement, Metal	Air-Outdoor	None	None	None	None	J, 604, 605, 606
High-Voltage Switchyard Bus	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals	Aluminum, Steel	Air-Outdoor	None	None	None	None	J, 607

Table 3.6.2-4 Electrical Components - Off Site Power/SBO Recovery Path Commodity Group - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
High-Voltage Transmission Conductors	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals	Aluminum, Steel	Air-Outdoor	None	None Required	None	None	J, 608

Table 3.6.2-4 Electrical Components - Off Site Power/SBO Recovery Path Commodity Group - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Electrical cables and connections not subject to 10 CFR 50.49 EQ requirements	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.	Various organic polymers	Adverse localized environment caused by heat and radiation in the presence of oxygen	Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance, electrical failure caused by thermal/thermoxidative degradation of organics; radiolysis and photolysis (ultraviolet {UV} sensitive materials only); radiation-induced oxidation; moisture intrusion	Electrical Cables & Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program	VI.A.1-a	3.6.1-02	A
		Various metals used for electrical contacts	Adverse localized environment caused by thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation.	None	None			J, 609

Table 3.6.2-4 Electrical Components - Off Site Power/SBO Recovery Path Commodity Group - Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG -1801 Volume 2 Line Item	Table 1 Item	Notes
Inaccessible medium voltage (2kV to 34.5kV) cable and connections (e.g. installed in conduit or direct buried) not subject to 10 CFR 50.49 EQ requirements	Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals	Various organic polymers	Adverse localized environment caused by moisture and voltage	Formation of water trees, localized damage leading to electrical failure (breakdown of insulation) caused by moisture intrusion and voltage stress	Inaccessible Medium Voltage (2kV to 34.5kV) Cables Not Subject to 10 CFR 50.49 EQ Requirements	VI.A.1-c	3.6.1-04	A

Notes for Tables 3.6.2-1 through 3.6.2-4

A Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

B Consistent with NUREG-1801 item for component, material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

C Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP is consistent with NUREG-1801 AMP.

D Component is different, but consistent with NUREG-1801 item for material, environment and aging effect. AMP takes some exceptions to NUREG-1801 AMP.

E Consistent with NUREG-1801 for material, environment and aging effect, but a different aging management program is credited.

F Material not in NUREG-1801 for this component.

G Environment not in NUREG-1801 for this component and material.

H Aging effect not in NUREG-1801 for this component, material, and environment combination.

I Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.

J Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-specific notes:

601 This program does include the Drywell High Radiation Monitor cables external to the drywell in the population of cables within the program.

602 There are no aging effects requiring management for the penetration materials except for the polyethylene-insulated (PE) cables.

603 No aging effects requiring management were identified for fuse holders that meet the screening criteria defined in Interim Staff Guidance ISG-05. Therefore, no aging management program for fuse holders is required.

604 Various airborne materials such as dust, salt and industrial effluents can contaminate insulator surfaces. Surface contamination can be a problem in areas where there are greater concentrations of airborne particulates due to the proximity to facilities that discharge airborne contaminates or proximity to the ocean where salt spray is prevalent. The buildup of surface contamination is typically a slow gradual process and is normally washed away by local rainfall. The glazed surface, of the high-voltage insulators, aids in the

removal of this contamination. In those areas where contamination buildup is more accelerated or there is insufficient rainfall, regularly scheduled maintenance removes unwanted contamination. MNGP is located in a rural area and is not in proximity to saltwater environments. Since the plant began operation in 1971, there has not been any regularly scheduled maintenance to remove surface contamination from the switchyard or transmission line insulators. Additionally, from a review of operating experience, there is no indication that surface contamination has caused any age related degradation of the high voltage insulators. Therefore, there are no aging effects requiring management related to high voltage insulator surface contamination for the period of extended operation.

605 Porcelain is essentially a hardened, opaque glass. As with any glass, if subjected to enough force it will crack or break. The most common cause for an insulator to crack or break is to be struck by an object (e.g., a rock or bullet). Cracking and breaking caused by physical damage is an event (not age-related) and is not subject to an AMR. Cracks have also been known to occur in insulators used in strain applications when the cement that binds the parts together expands enough to crack the porcelain. This phenomenon, know as cement growth, is caused by improper manufacturing process or materials which make the cement more susceptible to moisture penetration. Porcelain cracking caused by cement growth has occurred only in isolated bad batches of insulators used in strain applications. Therefore, there are no aging effects requiring management related to high voltage insulator cracking for the period of extended operation.

606 Loss of material due to mechanical wear is an aging effect for strain and suspension insulators if they are subject to significant movement. Movement of the insulators can be caused by wind blowing the supported transmission conductor, causing it to swing from side to side. If this swinging is frequent enough, it could cause wear in the metal contact points of the insulator string and between an insulator and the supporting hardware. Although this mechanism is possible, experience has shown that the transmission conductors do not normally swing and when they do, because of strong winds, they dampen quickly once the wind has subsided. Wear has not been identified during routine inspections of MNGP high-voltage insulators. Therefore, there are no aging effects requiring management for high-voltage insulators for loss of material due to wear for the period of extended operation.

607 Switchyard buses are connected to flexible conductors that do not normally vibrate and are supported by insulators and ultimately by static, structural components such as concrete footings and structural steel. With no connections to moving or vibrating equipment, vibration is not an applicable stressor for switchyard bus. All switchyard bus connections within the Offsite Power / SBO Recovery Path boundaries are bolted, welded or for jumper cables, crimped aluminum connections. Aluminum bus, solid and flexible connectors and ground straps are highly conductive but do not make good contact surface since aluminum

exposed to air forms aluminum oxide on the surface, which is non-conductive. To prevent formation of aluminum oxide on the connection surfaces, the connections are cleaned with a wire brush (to remove existing aluminum oxide) and covered with a No-Ox grease to prevent air from contacting the aluminum surface. After the connection is completed, additional compound is applied and forced into every irregularity and opening in order to completely seal the joint against moisture and corrosion. The grease precludes oxidation of the aluminum surface thereby maintaining good conductivity at the bus connections. The grease is a consumable that is replaced, during bus routine maintenance. Substation connections, which include the SBO recovery path equipment connections, are monitored by routine maintenance thermography inspections on a semi annual basis. These inspections identify connections where conditions exist which have resulted in increased resistance and a subsequent rise in temperature. The inspections are scheduled in the work control process and are performed on a repetitive basis as part of routine maintenance. These routine maintenance inspections have proven to be effective in identifying conditions prior to any loss of intended function of the component. Therefore, there are no aging effects requiring management for switchyard bus and connector vibration, surface oxidation and corrosion for the period of extended operation.

608 For ACSR transmission conductors, degradation begins as a loss of zinc from the galvanized steel core wires. Corrosion rates depend largely on air quality, which includes suspended particles chemistry, SO_2 concentration in air, precipitation, fog chemistry and meteorological conditions. Corrosion of ACSR transmission conductors is a very slow process that is even slower for rural areas with generally less suspended particles and SO_2 concentrations in the air than urban areas. MNGP is located in a rural area where airborne particle concentrations and SO_2 concentrations are low. The National Electrical Safety Code (NESC) requires that tension on installed conductors be a maximum of 60% of the ultimate conductor strength. The NESC also sets the maximum tension a conductor must be designed to withstand under heavy load requirements, which includes consideration of ice, wind, and temperature. Wind loading is considered in the initial design and field installation of transmission conductors and high-voltage insulators throughout the transmission and distribution network. Loss of material (wear) and fatigue that could be caused by transmission conductor vibration or sway are not considered applicable aging effects due to the lack of significant failures of this type experienced throughout the industry. Based on the preceding discussion, it is concluded that loss of conductor strength is not an aging effect requiring management for the ACSR transmission conductors. Therefore, there are no aging effects requiring management for transmission conductors for loss of conductor strength due to corrosion or vibration for the period of extended operation.

609 As supported by the DOE Cable AMG (SAND96-0344) and MNGP operating experience, the likelihood of substantially increased effects or failure rates resulting from the aging mechanisms of thermal cycling, ohmic heating, electrical transients, mechanical stress (vibration), chemical contamination, corrosion, oxidation, and cable subject to frequent manipulation (at connections and terminal blocks) as applied to the metallic components of electrical cables and connections is considered low. Therefore, the above listed mechanisms are not considered aging effects requiring management.