NEXTera ENERGY SEABROOK

March 5, 2014

SBK-L-14037
Docket No. 50-443

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Seabrook Station
Supplement 33 to NextEra Energy Seabrook License Renewal Application

References:

1. NextEra Energy Seabrook, LLC letter SBK-L-10077, "Seabrook Station Application for Renewed Operating License", May 25, 2010. (Accession Number ML101590099)
2. LR-ISG-2012-02: Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation (Accession Number ML13227A361)

In Reference 1, NextEra Energy Seabrook, LLC (NextEra) submitted an application for a renewed facility operating license for Seabrook Station Unit 1 in accordance with the Code of Federal Regulations, Title 10, Parts 50, 51, and 54.

In Reference 2, the staff issued LR-ISG-2012-02. Enclosure 1 of this Supplement provides changes to the License Renewal Application (LRA) in response to LR-ISG-2012-02. Enclosure 2 provides changes to the LRA to address aging effects of Service Level III (augmented) internal coatings. Enclosure 3 provides an updated License Renewal Commitment List to reflect changes to date.

To facilitate understanding, the changes are explained, and where appropriate, portions of the LRA are repeated with the change highlighted by strikethroughs for deleted text and bolded italics for inserted text.

There are seven revised and ten new regulatory commitments contained in this letter.

If there are any questions or additional information is needed, please contact Mr. Edward J. Carley, N. Engineering Supervisor – License Renewal, at (603) 773-7957.

If you have any questions regarding this correspondence, please contact Mr. Michael H. Ossing, Licensing Manager, at (603) 773-7512.

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

Executed on March 5, 2014

Sincerely,

Kevin T. Walsh
Site Vice President
NextEra Energy Seabrook, LLC

Enclosures:

Enclosure 1 - Response to LR-ISG-2012-02, Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation

Enclosure 2 - Aging Management of Loss of Coating Integrity for Service Level III (augmented) Internal Coatings

Enclosure 3 - LRA Appendix A - Final Safety Report Supplement Table A.3, License Renewal Commitment List Updated to Reflect Changes to Date

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Enclosure 1 to SBK-L-14037

Response to LR-ISG-2012-02
Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation

LR-ISG-2012-02: Recurring Internal Corrosion

Based on a review of the past 10 years of plant-specific OE (August 2003 to August 2013), recurring internal corrosion has only occurred in the cement lined carbon steel Service Water (SW) piping. The SW piping is managed under the Open-Cycle Cooling Water Program, B.2.1.11.

a. Description of the aging effect and its extent.

The Seabrook Station SW system piping is fabricated from butt welded, cement lined, carbon steel piping. During construction, joint compound was applied at field welds to seal the cement liner crevices. Defects or degradation of the joint compound as well as random defects in the cement lining allowed sea water intrusion to the carbon steel pipe and subsequent internal corrosion. In some cases, corrosion has led to through wall leakage.

Between 1995 and 2000, elastomeric joint seals (WEKO seals) were installed on field-welded joints in the underground piping. A number of WEKO seals were also installed on some of the above ground field welds. These joint seals consist of an elastomer boot which overlaps the field weld cement liner crevice. These seals were installed to prevent corrosion of cement-lined carbon-steel piping at field welds due to degradation of the original joint compound. Access to piping for joint seal installation and maintenance is via the inspection vaults and dropout spools installed in the SW system.

Seabrook Station had 16 through wall leaks between August 2003 and August 2013 in the SW system. While some leaks occurred at or near a weld joint, some leaks were also found in pipe sections and in fittings. In all cases, repairs were made on-line or during the subsequent refueling outage with no loss of SW system function.

b. Description of the applicable programs' examination methods to detect the recurring aging mechanism before affecting the ability of a component to perform its intended function.

The maintenance strategy for the SW piping evolved from ultrasonic testing of above ground field welds to internal visual examinations during WEKO seal inspections. In 2006, it was recognized that ultrasonic testing of just above ground field welds was ineffective in identifying areas of future leaks. However, it was determined that identification of rust stains/corrosion nodules during internal inspections was effective in identifying potential liner degradation and areas susceptible to corrosion/wall thinning.

In January, 2011, a leak was identified at the welded area downstream of a butterfly valve. The extent of condition review for this new leak identified that the wall thinning had occurred in an area of turbulent flow. Subsequent to the January 2011 leak, a root cause analysis was performed to address the through wall leaks in the SW system.

The root cause analysis identified lack of a process that requires the assessment of all material condition data (including failures, leaks, repairs, degradation, and, inspection adjustments). In the case of the 2011 leak, this lack of assessment resulted in an inadequate maintenance strategy for SW piping and did not incorporate the long term effects of turbulent sea water flow on lined piping into the inspection plan. Repairs to the SW piping were not trended or analyzed in the aggregate to determine specific causes or to make changes to the maintenance strategy.

As part of the corrective actions, the process was changed to require post outage assessment of SW material condition. The assessment includes all SW material condition data including failures, leaks, repairs, and any degradation. The new process includes reevaluation of the maintenance strategy to determine if changes are warranted. An inspection plan was also developed for the SW piping and incorporates turbulent flow considerations and stagnant locations. In addition to the inspection plan, the process was enhanced to include inspection criteria for various coating materials, a WEKO seal inspection and testing plan, tracking SW system leak history, and trending of repairs to SW piping.

c. The basis for the adequacy of augmented or lack of augmented inspections.

The augmented inspections (i.e., visual inspection of the pipe liner for indication of degradation) have enabled identification of under-liner corrosion which had occurred due to defects in the liner or liner degradation. Once located, actual wall loss due to corrosion can be evaluated by ultrasonic testing on above ground piping. After removal of liner material in the area of interest for buried piping, wall loss can again be evaluated by ultrasonic testing.

d. Parameters that will be trended as well as the decision points where increased inspections would be implemented (e.g., extent of degradation at individual corrosion sites, rate of degradation change).

Visual inspection of the pipe liner for indication of degradation has enabled identification of under-liner corrosion which had occurred due to defects in the liner or liner degradation.

Visual inspections are intended to identify defects such as discoloration of the cement liner (rust stains), cracking, and spalling. During visual inspections, other lining materials such as polyurethane, Plastisol, and Belzona are also inspected for defects such as blistering, flaking, peeling, delamination, and rust stains.

The enhanced SW inspection and repair trending process requires trending of all SW material condition data including, inspection results, coating assessment, failures, leaks, repairs, and any degradation. Inspection plans include turbulent flow considerations and stagnant locations as well as repair history. Following identification of any new degradation, maintenance strategies are assessed to determine if changes are warranted.

e. The basis for parameter testing frequency and how it will be conducted.

An inspection plan, which identifies areas of piping that require inspections during each refueling outage, is maintained on an ongoing basis. The lines to be inspected correspond with the applicable train related outage. High susceptible locations are inspected more frequently. For example, each SW strainer bypass line is inspected on an every other refueling outage frequency.

f. Description of how inspections of not easily accessed components will be conducted (i.e., buried, underground).

Inspection vaults and dropout spools have been installed in the SW system to allow access to the buried and underground pipe internals.

g. Identification of leaks in buried components.

Buried piping is periodically visually inspected for indications of degraded coating as part of the SW inspection plan. The WEKO seals in the buried piping are also periodically leak tested and repaired or replaced if found to be defective. Access to the buried piping is via the inspection vaults and dropout spools installed in the SW system.

h. The program(s) that will be augmented to include the above requirements.

Recurring internal corrosion observed in the SW system has been due to coating degradation or failure. As discussed in the "Loss of Coating Integrity for Service Level III (augmented) Internal Coatings" section of this supplement letter, the Open-Cycle Cooling Water System Program will be further enhanced to specifically include management of loss of coating integrity due to blistering, cracking, flaking, peeling, or physical damage of Service Level III (augmented) internal coatings in the SW system (Ref. new commitment #79).

LR-ISG-2012-02: Representative Minimum Sample Size for Periodic Inspections in GALL Report AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components"

The Seabrook Station Inspections of Internal Surfaces in Miscellaneous Piping and Ducting Components Program will be enhanced to include performance of focused examinations to provide a representative sample of 20%, or a maximum of 25, of each identified material, environment, and aging effect combination in each 10 year period during the period of extended operation. Where practical, the population to be inspected will be selected from components most susceptible to aging because of time in service and severity of operating conditions.

Based on the above discussion, the LRA has been revised as follows:

1. In LRA Appendix B, in Section B.2.1.25 (Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components), on page B-135, the following paragraphs of the Program Description have been revised as follows:

   a. The 2nd paragraph on page B-139 is revised as follows:
   The program inspections will ~~be~~ ***include*** inspections of opportunity, performed during pre-planned periodic system and component surveillances or during maintenance activities when the systems are opened and the surfaces made accessible for visual inspection. This maintenance may occur during power operations or refueling outages when many systems are opened. ***The program also includes focused inspections as needed to ensure that a representative sample of material, environment, and aging effect combinations are periodically evaluated.*** The visual inspections will assure that existing environmental conditions are not causing material degradation that could result in a loss of the component intended function. The program will include indication of borated water leakage on internal surfaces. The Seabrook Station program will provide for visual inspection

activities performed by personnel who are qualified in accordance with site controlled procedures and processes.

b. The 2nd full paragraph on page B-140 is revised as follows:
Visual inspections of internal surfaces of plant components ~~will~~ ***may*** be performed during maintenance or surveillance activities. The presence of corrosion or fouling will be identified by visual inspection as localized discoloration and surface irregularities such as rust, scale/deposits, surface pitting, surface discontinuities and coating degradation. Metallic components including aluminum, brass or bronze, cast austenitic stainless steel, copper alloy, copper nickel and stainless steel will exhibit indications of loss of material on the surface similar to steel material and visual inspections will be capable of detecting any surface breaking flaws (i.e., cracks or surface areas that have exhibited loss of material) that occur on the same side as that being examined.

c. The 1st full paragraph on page B-141 is revised as follows:
The system engineer review of inspection results will help ensure that the extent and schedule of inspections and testing detect component degradation prior to loss of intended function. ***The responsible engineer will ensure that an adequate number of inspections have been performed during each 10 year period during the period of extended operation. Where practical, components falling under this program will be assigned to groups of similar material, environment, and aging effect combinations. Approximately 20% of each group, with a maximum of 25 components of a group, will be inspected each 10 year period in the period of extended operation. Where practical, the population to be inspected is selected from components most susceptible to aging because of time in service and severity of operating conditions. Opportunistic inspections continue in each period despite meeting the sampling limit.***

2. In the Enhancements section of B.2.1.25, on page B-143, a new enhancement has been added as follows:

Enhancements

~~None~~

The following enhancement will be made prior to entering the period of extended operation.

1. The Seabrook Station Inspections of Internal Surfaces in Miscellaneous Piping and Ducting Components Program will be enhanced to include performance of focused examinations to provide a representative sample of 20%, or a maximum of 25, of each identified material, environment, and aging effect combination in each 10 year period during the period of extended operation. Where practical, the population to be inspected is selected from components most susceptible to aging because of time in service and severity of operating conditions.

3. In LRA Appendix A, in Section A.2.1.25 (Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components), on Page A-15, the second paragraph has been revised as follows:

   The program inspections are inspections of opportunity, performed during pre-planned periodic system and component surveillances or during maintenance activities when the systems are opened and the surfaces made accessible for visual inspection. This maintenance may occur during power operations or refueling outages when many systems are opened. ***Inspections of opportunity are supplemented with focused inspections to ensure that a representative sample of material, environment, and aging effect combinations are inspected in each 10 year period during the period of extended operation. Where practical, the population to be inspected is selected from components most susceptible to aging because of time in service and severity of operating conditions. Opportunistic inspections continue in each period despite meeting the sampling limit.*** The visual inspections assure that existing environmental conditions are not causing material degradation that could result in a loss of the component intended function.

4. In LRA Appendix A, in Section A-3 (License Renewal Commitment List), a new commitment #73 has been added as follows:

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
73.	***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	***Enhance the program to include performance of focused examinations to provide a representative sample of 20%, or a maximum of 25, of each identified material, environment, and aging effect combinations during each 10 year period in the period of extended operation.***	***A.2.1.25***	***Prior to the period of extended operation.***

LR-ISG-2012-02: Flow Blockage of Water-Based Fire Protection System Piping, GALL Report AMP XI.M27, "Fire Water System"

a. The following information is provided demonstrating consistency with the requirements for inspections of fire water system components relative to Table 4a (Fire Water System Inspection and Testing Recommendations) provided in LR-ISG-2012-02.

   1. Sprinklers - Inspections

      Sprinklers within the scope of License Renewal are inspected every 18 months, consistent with the Nuclear Electric Insurance Limited (NEIL) Property Standards for Fire Protection Systems Testing. NFPA 25 (2011 Edition) specifies an annual inspection of sprinklers from floor level.

      The Fire Water System Program will be enhanced to perform sprinkler inspections annually per the guidance provided in NFPA 25 (2011 Edition) Section 5.2.1.1. Inspection will ensure that sprinklers are free of corrosion, foreign materials, paint, and physical damage and installed in the proper orientation (e.g., upright, pendant, or

sidewall). Any sprinkler that is painted, corroded, damaged, loaded, or in the improper orientation, and any glass bulb sprinkler where the bulb has emptied, will be evaluated for replacement (Ref. new commitment #74).

2. Sprinklers - Testing

   Per LRA Appendix B, Section B.2.1.16 and current commitment #9, the Seabrook Station Fire Water System Program includes the guidance referenced in NFPA 25 (2011 Edition) that where sprinklers have been in place for 50 years, they will be replaced or representative samples from one or more sample areas will be submitted to a recognized testing laboratory for field service testing. If laboratory testing is credited in lieu of replacement, this testing will be performed every 10 years after the initial field service testing to ensure that signs of degradation, such as corrosion, are detected in a timely manner.

   This activity is consistent with NFPA 25 (2011 Edition).

3. Standpipe and Hose Systems - Flow Tests

   Seabrook performs 5 year flow tests to validate NEIL Loss Control Standards – Chapter 4 Table I Standpipe & Hose, Section I.2 which states the following:

   > "A flow test needs to be conducted at the hydraulically most remote hose connection of each zone of a standpipe system to verify the water supply still adequately provides the design pressure at the required flow. Where a flow test of the hydraulically most remote outlet(s) is not practical, NSO/NEIL needs to be consulted while determining the appropriate location for the test. A flow test needs to be conducted every 5 years."

   This activity is consistent with NFPA 25 (2011 Edition).

4. Private Fire Service Mains - Underground and Exposed Piping Flow Tests

   The Fire Protection System mains are flushed annually to prove the operability of the system. Each valve operated is flowed to insure an adequate flush of the systems' piping has been achieved. The valve is flushed for two minutes or until clear water is emitted. A 3-year flow test is conducted for flow verification of the fire protection water system on a sufficient number of hydrants to determine the capacity of the system in the area tested.

   This activity is consistent with NFPA 25 (2011 Edition).

5. Private Fire Service Mains - Hydrants

   The Yard Hydrant Semi-Annual Inspection and Functional Test is performed at least once per six months by visually inspecting each yard fire hydrant, adding oil to the top of each hydrant to lubricate the hydrant main valve, cycling each hydrant main valve and flowing water from each hydrant for at least two minutes. Each hydrant is checked annually to verify it is draining properly, and, if not a self-draining type, the barrel is pumped out if required.

   This activity is consistent with NFPA 25 (2011 Edition).

6. Fire Pumps

   The fire pumps are tested by the Fire Pumps Annual Test. However, the fire pumps take suction off fire water storage tanks and do not have suction strainers and therefore, the activity specified in NFPA 25 (2011 Edition), Section 8.3.3.7 is not applicable.

7. Water Storage Tanks - Exterior Inspection

   The Seabrook Station Aboveground Steel Tanks Program, B.2.1.17, includes the required inspections of the fire water tanks. The tank foundation and supports are to be included in the Structures Monitoring Program. The Fire Water System Program will be enhanced to perform exterior inspection of the fire water storage tanks annually for signs of degradation per the guidance provided in NFPA 25 (2011 Edition) Section 9.2.5.5 (Ref. new commitment #76) .

8. Water Storage Tanks - Interior Inspection

   Per LRA Appendix B, Section B.2.1.16 and current commitment #13, the internal bottom surface of the two fire protection water storage tanks will be UT inspected and evaluated within ten years prior to the period of extended operation.

   Fire Protection Water Storage Tanks are inspected on a 5 year interval for adherent scale, coating bubbles or blisters, delamination of coating, pitting, corrosion, spalling, rot or other forms of deterioration, and aquatic growth (tubercules and slimes shall be sampled, if possible, and tested for microbiological influenced corrosion); recirculation lines, pipe supports, and other piping is inspected; the anti-vortex plate is inspected for deterioration or blockage. When inspections are made by means of underwater evaluation, silt is removed from the tank floor to facilitate the inspection.

   This activity is consistent with NFPA 25 (2011 Edition).

9. Valves and System-Wide Testing - Main Drain Test

   During the 18-month Deluge and Preaction Sprinkler Valve Actuation Test Flow and System Alarms Test, main drain flow verification is performed for each system tested to ensure that the isolation valve that was closed for the test has not failed and has been returned to full open and to verify the operability of all the flow alarms. This is done by performing a test to simulate a flow to the flow alarm pressure switch, and a test of the air or nitrogen supervisory system low pressure alarm, if applicable. Main drain flow verification includes recording flow prior to and during flow through the main drain and calculating the respective pressure drops.

   NFPA 25 (2011 Edition) Section 13.2.5 requires that main drain test be conducted annually at each water-based fire protection system riser to determine whether there has been a change in the condition of the water supply piping and control valves. Additionally, Section 13.2.5.2 requires that if there is a 10 percent reduction in full flow pressure when compared to the original acceptance tests or previously performed tests, the cause of the reduction be identified and corrected if necessary. Furthermore, Section A.13.2.5 requires recording the time taken for the supply water pressure to return to the original static (nonflowing) pressure.

The Fire Water System Program will be enhanced to a) revise the frequency of main drain testing to annually, b) to include a requirement that if there is a 10 percent reduction in full flow pressure when compared to the original acceptance tests or previously performed tests, the cause of the reduction shall be identified and corrected if necessary, and c) recording the time taken for the supply water pressure to return to the original static (nonflowing) pressure consistent with NFPA 25 (2011 Edition) Section 13.2.5 and A.13.2.5 (Ref. new commitments #76 and #77).

10. Valves and System-Wide Testing - Deluge Valves

    The auto initiation of deluge spray and preaction sprinkler system valves is tested every 18 months by an actuation signal from the local fire alarm panel. Alarms must be generated at the detectors or at a remote manual pull station to achieve the automatic activation. Main drain flow verification will be performed for each system tested to ensure that the isolation valve that was closed for the test has not failed and has been returned to full open and to verify the operability of all the flow alarms. This is done by performing a test to simulate a flow to the flow alarm pressure switch, and a test of the air or nitrogen supervisory system low pressure alarm, if applicable.

    The Fire Water System Program will be enhanced to revise the frequency of deluge and preaction valve actuation testing to annually, consistent with NFPA 25 (2011 Edition) Section 13.4.3.2.2 (Ref. new commitment #76).

    An Open Head Spray Nozzle Air Flow Test is performed every 3 years to verify that the open heads and branch lines on the deluge system are free of debris and not blocked. This is done by connecting the selected deluge system to the service air system and observing air flow through each sprinkler head.

    This activity is consistent with NFPA 25 (2011 Edition).

11. Water Spray Fixed Systems - Strainers

    Water spray fixed systems strainers are cleaned every 5 years during the wet sprinkler alarm valve inspection/maintenance, deluge or sprinkler flooding valve inspection/maintenance, and deluge or sprinkler multimatic valve inspection/maintenance.

    This activity is consistent with NFPA 25 (2011 Edition).

12. Water Spray Fixed Systems - Operation Test

    An Open Head Spray Nozzle Air Flow Test is performed every 3 years to verify that the open heads and branch lines on the deluge system are free of debris and not blocked. This is done by connecting the selected deluge system to the service air system and observing air flow through each sprinkler head.

    This activity is consistent with NFPA 25 (2011 Edition).

13. Obstruction Investigation - Internal Inspection of Piping

    a. The Fire Water System Program will be enhanced to conduct an inspection of piping and branch line conditions every 5 years by opening a flushing connection at the end of one main and by removing a sprinkler toward the end of one branch line for the purpose of inspecting for the presence of foreign organic and inorganic material per

the guidance provided in NFPA 25 (2011 Edition) Section 14.2.2 (Ref. new commitment #75).

b. Follow-up volumetric examinations are conducted when internal visual inspections detect surface irregularities that could be indicative of wall loss below nominal pipe wall thickness. Per LRA Appendix B, Section B.2.1.16 and current commitment #11, the Seabrook Station Fire Water System Program is to be enhanced to include the performance of periodic visual inspection or volumetric inspection, as required, of the internal surface of the fire protection system upon each entry to the system for routine or corrective maintenance to evaluate wall thickness and inner diameter of the fire protection piping.

c. Per LRA Appendix B, Section B.2.1.16 and current commitment #10, the Seabrook Station Fire Water System Program is to be enhanced to include the performance of periodic flow testing of the fire water system per the guidance provided in NFPA 25 (2011 Edition) prior to the period of extended operation. Therefore, no further change is necessary.

d. The Station's Fixed Fire Suppression Systems installation specification states that "[a]ll piping shall be pitched to permit complete drainage of the system. Drain valves shall be provided at all low points of the system." Therefore, no further change is necessary.

e. The Fire Water System Program will be enhanced to include periodic inspection of the fire water storage tanks (Ref. revised commitment #13). This activity, which includes annual external inspections, five-year interval internal tank inspections, and ultrasonic testing of the tank bottom interior surface prior to entering the PEO, was previously included in the Seabrook Aboveground Steel Tanks aging management program. The following has been added to the Fire Water System Program basis document:

> Periodic inspection and testing of the fire water tanks is performed using the guidance in NFPA 25 (2011 Edition). The exterior surface of tanks FP-TK-36-A and FP-TK-36-B are inspected annually. Internal inspections are performed on a 5 year interval for adherent scale, coating bubbles or blisters, delamination of coating, pitting, corrosion, spalling, rot or other forms of deterioration and aquatic growth. The Fire Water System Program will be enhanced to require the performance of a UT inspection and evaluation of the internal bottom surface of the two Fire Protection Water Storage Tanks within ten years prior to the period of extended operation.

Based on the information provided above, the following changes have been made to the License Renewal Application.

1. The 3rd paragraph of LRA Section 3.3.2.2.10.5 has been revised as follows:

Seabrook Station will implement the ~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program, B.2.1.25~~***Fire Water System Program, B2.1.16*** to manage loss of material due to pitting and crevice corrosion of the aluminum piping components

exposed to condensation in the Fire Protection system. In addition, galvanic corrosion ***and microbiologically induced corrosion have been added as*** ~~is an~~ additional aging mechanism***s***. The ~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program*** is described in Appendix B.

2. The 3rd paragraph of LRA Section 3.3.2.2.10.6 has been revised as follows:

   Seabrook Station will implement the ~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program, B.2.1.25,~~ ***Fire Water System Program, B.2.1.16*** to manage loss of material due to pitting and crevice corrosion of the copper alloy piping components exposed to condensation in the Fire Protection System. ***In addition, microbiologically induced corrosion has been added as an additional aging mechanism.*** The ~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program*** is described in Appendix B.

3. In LRA Section 3.2, Table 3.2.1 has been revised as follows:

   a. Table 3.2.1, the last paragraph of discussion section of item 3.2.1-32 has been revised and a new paragraph has been added as follows:

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-32	Steel piping and ducting components and internal surfaces exposed to air-indoor uncontrolled (Internal)	Loss of material due to general corrosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	No	Consistent with NUREG-1801 with exceptions. The Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program (with exceptions), B.2.1.25, will be used to manage loss of material due to general corrosion in steel piping components or steel ducting components exposed to air-indoor uncontrolled (internal) in the Auxiliary Boiler, Combustible Gas Control, Containment Air Handling, Containment Air Purge, Containment Enclosure Air Handling, Containment On-Line Purge, Control Building Air Handling, Diesel Generator, Diesel Generator Air Handling, Emergency Feedwater Pump House Air Handling, ~~Fire Protection,~~ Fuel Oil, Fuel Storage Building Air Handling, Instrument Air, Primary Auxiliary Building Air Handling, Primary Component Cooling Water, Service Water, and Service Water Pump House Air Handling systems. ***Fire Water System Program, B.2.1.16, will be used to manage loss of material due to general corrosion in steel piping components exposed to air-indoor uncontrolled (internal)***

					in the Fire Protection system. Pitting, crevice, and microbiologically-induced corrosion have been added as additional aging mechanisms.

b. Table 3.2.1, the last paragraph of discussion section of item 3.2.1-53 has been revised as follows:

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-53	Stainless steel, copper alloy, and nickel alloy piping, piping components, and piping elements exposed to air-indoor uncontrolled (external)	None	None	NA - No AEM or AMP	Copper alloy piping components exposed to air-indoor uncontrolled (internal) are contained in the Chemical and Volume Control, Containment Air Handling, Containment Enclosure Air Handling, Control Building Air Handling, Dewatering, Diesel Generator, ~~Fire Protection,~~ Fuel Storage Building Air Handling, and Service Water systems.

4. In LRA Section 3.3, Table 3.3.1 has been revised as follows:

a. Table 3.3.1, the 3rd paragraph of the discussion section of item 3.3.1-27 has been revised as follows:

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-27	Stainless steel HVAC ducting and aluminum HVAC piping, piping components and piping elements exposed to condensation	Loss of material due to pitting and crevice corrosion	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801 ~~with exceptions~~. The ~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program (with exceptions), B.2.1.25~~***The Fire Water System Program, B.2.1.16*** will be used to manage loss of material due to pitting and crevice corrosion of the aluminum piping components exposed to condensation in the Fire Protection system. In addition galvanic corrosion ***and microbiologically induced corrosion have been added as*** ~~is an~~ additional aging mechanisms. See subsection 3.3.2.2.10.5.

b. Table 3.3.1, the 3rd paragraph of the discussion section of item number 3.3.1-28 has been revised as follows:

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-28	Copper alloy fire protection piping, piping components, and piping elements exposed to condensation (internal)	Loss of material due to pitting and crevice corrosion	A plant-specific aging management program is to be evaluated.	Yes, plant specific	Consistent with NUREG-1801 ~~with exceptions~~. The ~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program (with exceptions), B.2.1.25~~ ***Fire Water System Program, B.2.1.16*** will be used to manage loss of material due to pitting and crevice corrosion of the copper alloy piping components exposed to condensation in the Fire Protection System. ***Additionally, microbiologically induced corrosion has been added as an additional aging mechanism.*** See subsection 3.3.2.2.10.6.

c. Table 3.3.1, the 2nd paragraph of the discussion section of item number 3.3.1-71 has been revised as follows:

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-71	Steel piping, piping components, and piping elements exposed to moist air or condensation (Internal)	Loss of material due to general, pitting, and crevice corrosion	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	No	Consistent with NUREG-1801 ~~with exceptions~~. The ~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program (with exceptions), B.2.1.25~~ ***Fire Water System Program, B.2.1.16*** will be used to manage loss of material due to general, pitting, and crevice corrosion of the steel piping components exposed to condensation in the Fire Protection System. In addition galvanic corrosion ***and microbiologically induced corrosion*** ~~is an~~ ***have been added as*** additional aging mechanism***s***.

5. The following AMR line items have been revised and new ones added as follows:

   a. Table 3.3.2-15, Fire Protection System, on Page 3.3-301, line item 4 has been revised and new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Filter Element	***Filter***	***Stainless Steel***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Filter Housing	Pressure Boundary	Copper Alloy	Condensation (internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program***	VII.G-9 (AP-78)	3.3.1-28	~~E, 2~~ ***A, 6***
Filter Housing	***Pressure Boundary***	***Copper Alloy***	***Condensation (internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Filter Housing	***Pressure Boundary***	***Copper Alloy***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Filter Housing	***Pressure Boundary***	***Galvanized Steel***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

b. Table 3.3.2-15, Fire Protection System, on Page 3.3-302, 1st line item has been revised and new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Filter Housing	Pressure Boundary	Gray Cast Iron	Condensation (internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ *Fire Water System Program*	VII.G-23 (A-23)	3.3.1-71	~~B~~ *A, 6*
Filter Housing	*Pressure Boundary*	*Gray Cast Iron*	*Condensation (internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*
Filter Housing	*Pressure Boundary*	*Gray Cast Iron*	*Raw Water (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*
Filter Housing	*Pressure Boundary*	*Steel*	*Raw Water (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*

c. Table 3.3.2-15, Fire Protection System, on Page 3.3-304, new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Heat Exchanger Components (FP-E-46 & 47 Channel Head)	*Pressure Boundary*	*Gray Cast Iron*	*Raw Water (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*
Heat Exchanger Components (FP-E-46 & 47 Tubes)	*Heat Transfer* *Pressure Boundary*	*Stainless Steel*	*Raw Water (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*

d. Table 3.3.2-15, Fire Protection System, on Page 3.3-305, 6th line item has been revised and new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Instrumentation Element	Leakage Boundary (Spatial)	Copper Alloy > 15% ZN	Air-Indoor Uncontrolled (Internal)	~~None~~ *Loss of Material*	~~None~~ *Fire Water System Program*	~~V.F-3 (EP-10)~~ *None*	~~3.2.1-53~~ *None*	A, *6*
Instrumentation Element	***Leakage Boundary (Spatial)***	***Copper Alloy > 15% ZN***	***Air-Indoor Uncontrolled (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Instrumentation Element	***Pressure Boundary***	***Stainless Steel***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

e. In Table 3.3.2-15, on page 3.3-306, the 1st line item that was added under SBK-L-12186 has been revised (2nd line item added under SBK-L-12186 is unchanged) and a new 3rd line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Orifice	Pressure Boundary Throttle	Stainless Steel	Air-Indoor Uncontrolled (External)	~~None~~ *Loss of Material*	~~None~~ *Fire Water System Program*	~~VII.J-15 (AP-17)~~ *None*	~~3.3.1-94~~ *None*	A, *6*
Orifice	***Pressure Boundary*** ***Throttle***	***Stainless Steel***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

f. Table 3.3.2-15, Fire Protection System, on Page 3.3-306, 2nd and 8th line items have been revised and new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	Pressure Boundary	Aluminum	Condensation (Internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program***	VII.F1-14 (AP-74)	3.3.1-27	~~E, 2~~ ***A, 6***
Piping and Fittings	***Pressure Boundary***	***Aluminum***	***Condensation (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Piping and Fittings	***Pressure Boundary***	***Copper Alloy***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Piping and Fittings	Pressure Boundary	Galvanized Steel	Air-Indoor Uncontrolled (Internal)	~~None~~ ***Loss of Material***	~~None~~ ***Fire Water System Program***	~~VII.J-6 (AP-13)~~ ***None***	~~3.3.1-92~~ ***None***	A, ***6***
Piping and Fittings	***Pressure Boundary***	***Galvanized Steel***	***Air-Indoor Uncontrolled (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Piping and Fittings	***Pressure Boundary***	***Galvanized Steel***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

g. Table 3.3.2-15, Fire Protection System, on Page 3.3-307, 3rd line item has been revised and new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	Pressure Boundary	Gray Cast Iron	Condensation (Internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program***	VII.G-23 (A-23)	3.3.1-71	~~B~~ ***A, 6***
Piping and Fittings	***Pressure Boundary***	***Gray Cast Iron***	***Condensation (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Piping and Fittings	***Pressure Boundary***	***Gray Cast Iron***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Piping and Fittings	***Pressure Boundary***	***Stainless Steel***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

h. Table 3.3.2-15, Fire Protection System, on Page 3.3-308, 6th and 7th line items have been revised and new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	Pressure Boundary	Steel	Air-Indoor Uncontrolled (Internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program***	V.A-19 (E-29)	3.2.1-32	~~B~~ ***A, 6***
Piping and Fittings	Pressure Boundary	Steel	Condensation (Internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program***	VII.G-23 (A-23)	3.3.1-71	~~B~~ ***A, 6***
Piping and Fittings	***Pressure Boundary***	***Steel***	***Air-Indoor Uncontrolled (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Piping and Fittings	***Pressure Boundary***	***Steel***	***Condensation (internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

i. Table 3.3.2-15, Fire Protection System, on Page 3.3-309, new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	***Leakage Boundary (Spatial)*** ***Pressure Boundary***	***Steel***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Piping and Fittings (Containment Isolation)	***Pressure Boundary***	***Steel***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

j. Table 3.3.2-15, Fire Protection System, on Page 3.3-310, new line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Pump Casing	*Pressure Boundary*	*Gray Cast Iron*	*Raw Water (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*
Pump Casing	*Pressure Boundary*	*Stainless Steel*	*Raw Water (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*

k. Table 3.3.2-15, Fire Protection System, on Page 3.3-311, 4th line item has been revised and new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Sprinkler Head	*Pressure Boundary* *Spray*	*Copper Alloy*	*Raw Water (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*
Sprinkler Head	Pressure Boundary Spray	Gray Cast Iron	Air-Indoor Uncontrolled (Internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ *Fire Water System Program*	V.A-19 (E-29)	3.2.1-32	~~B~~ *A, 6*
Sprinkler Head	*Pressure Boundary* *Spray*	*Gray Cast Iron*	*Air-Indoor Uncontrolled (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*

1. Table 3.3.2-15, Fire Protection System, on Page 3.3-312, 3rd, 4th and 9th line items have been revised and new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Valve Body	Pressure Boundary	Copper Alloy	Air-Indoor Uncontrolled (Internal)	~~None~~ ***Loss of Material***	~~None~~ ***Fire Water System Program***	~~V.F-3 (EP-10)~~ ***None***	~~3.2.1-53~~ ***None***	~~A, 4~~ ***A, 6***
Valve Body	Pressure Boundary	Copper Alloy	Condensation (Internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program***	VII.G-9 (AP-78)	3.3.1-28	E, ~~2~~ ***A, 6***
Valve Body	Pressure Boundary	Copper Alloy >15% Zn	Air-Indoor Uncontrolled (Internal)	~~None~~ ***Loss of Material***	~~None~~ ***Fire Water System Program***	~~V.F-3 (EP-10)~~ ***None***	~~3.2.1-53~~ ***None***	~~A, 4~~ ***A, 6***
Valve Body	***Pressure Boundary***	***Copper Alloy***	***Condensation (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Valve Body	***Pressure Boundary***	***Copper Alloy***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Valve Body	***Pressure Boundary***	***Copper Alloy >15% Zn***	***Air-Indoor Uncontrolled (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

m. Table 3.3.2-15, Fire Protection System, on Page 3.3-313, 1st and 10th line items have been revised and new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Valve Body	Pressure Boundary	Copper Alloy >15% Zn	Condensation (Internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program***	VII.G-9 (AP-78)	3.3.1-28	~~E, 2~~ ***A, 6***
Valve Body	Pressure Boundary	Gray Cast Iron	Air-Indoor Uncontrolled (Internal)	Loss of Material	~~Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program~~ ***Fire Water System Program***	V.A-19 (E-29)	3.2.1-32	~~B~~ ***A, 6***
Valve Body	***Pressure Boundary***	***Copper Alloy >15% Zn***	***Condensation (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Valve Body	***Pressure Boundary***	***Copper Alloy >15% Zn***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Valve Body	***Pressure Boundary***	***Gray Cast Iron***	***Air-Indoor Uncontrolled (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

n. Table 3.3.2-15, Fire Protection System, on Page 3.3-314, new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Valve Body	***Pressure Boundary***	***Gray Cast Iron***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***
Valve Body	***Pressure Boundary***	***Stainless Steel***	***Raw Water (Internal)***	***Flow Blockage Due to Fouling***	***Fire Water System Program***	***None***	***None***	***A, 6***

o. Table 3.3.2-15, Fire Protection System, on Page 3.3-315, new line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Valve Body	*Pressure Boundary*	*Steel*	*Raw Water (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*
Valve Body (Containment Isolation)	*Pressure Boundary*	*Steel*	*Raw Water (Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*
Vortex Plate	*Direct Flow*	*Steel*	*Raw Water (External/ Internal)*	*Flow Blockage Due to Fouling*	*Fire Water System Program*	*None*	*None*	*A, 6*

p. Table 3.3.2-15, Fire Protection System, on Page 3.3-317, a new plant specific note 6 has been added as follows:

6 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

6. License Renewal Application, Appendix A, Section A.2.1.16 (Fire Water System), on page A-12, the 1st paragraph is changed to read as follows:
   The Fire Water System Program is established in accordance with the applicable National Fire Protection Association (NFPA) codes and standards. ***Full flow testing and visual inspections are conducted to ensure that loss of material due to general, pitting, and crevice corrosion, microbiologically influenced corrosion (MIC), or fouling, and blockage due to fouling is adequately managed.***

7. License Renewal Application, Appendix B, Section B.2.1.16 (Fire Water System), on page B-100, the 3rd paragraph is changed and subsequent paragraph added as follows:
   The Seabrook Station Aboveground Steel Tanks Program, B.2.1.17, includes required inspections of the ~~fire water tanks and~~ fire protection fuel oil tanks.

   Periodic inspection and testing of the fire water storage tanks is performed using the guidance in NFPA 25 (2011 Edition). The exterior surfaces of the tanks are inspected annually. Internal inspections are performed on a 5 year interval for adherent scale, coating bubbles or blisters, delamination of coating, pitting, corrosion, spalling, rot or other forms of deterioration and aquatic growth. UT inspection and evaluation of the internal bottom surface of the two fire water storage tanks is to be performed within ten years prior to the period of extended operation.

8. License Renewal Application, Appendix B, Section B.2.1.16 (Fire Water System), on page B-101, Enhancement 3 is revised as follows:

3. The Seabrook Station Fire Water System Program will be enhanced to include the performance of periodic visual inspection or volumetric inspection, as required, of the internal surface of the fire protection system upon each entry to the system for routine or corrective maintenance to evaluate wall thickness and inner diameter of the fire protection piping ***ensuring that corrosion product buildup will not result in flow blockage due to fouling. Where surface irregularities are detected, follow-up volumetric examinations are performed.*** This inspection will be performed no earlier than 10 years before the period of extended operation.

9. License Renewal Application, Appendix B, Section B.2.1.16 (Fire Water System), on page B-101, new enhancements 4 through 8 are added as follows:

4. ***The Fire Water System Program will be enhanced to require the performance of a UT inspection and evaluation of the internal bottom surface of the two Fire Protection Water Storage Tanks per the guidance provided in NFPA 25 (2011 Edition) within ten years prior to the period of extended operation.***
   Program Elements Affected: Element 4 (Detection of Aging Effects)
5. ***The Fire Water System Program will be enhanced to conduct an inspection of piping and branch line conditions every 5 years by opening a flushing connection at the end of one main and by removing a sprinkler toward the end of one branch line for the purpose of inspecting for the presence of foreign organic and inorganic material per the guidance provided in NFPA 25 (2011 Edition).***

   Program Elements Affected: Element 4 (Detection of Aging Effects)
6. ***The Fire Water System Program will be enhanced to perform sprinkler inspections annually per the guidance provided in NFPA 25 (2011 Edition). Inspection will ensure that sprinklers are free of corrosion, foreign materials, paint, and physical damage and installed in the proper orientation (e.g., upright, pendant, or sidewall). Any sprinkler that is painted, corroded, damaged, loaded, or in the improper orientation, and any glass bulb sprinkler where the bulb has emptied, will be evaluated for replacement.***

   Program Elements Affected: Element 4 (Detection of Aging Effects)
7. ***The Fire Water System Program will be enhanced to conduct the following activities annually per the guidance provided in NFPA 25 (2011 Edition).***

   - ***main drain tests***
   - ***deluge valve trip tests***
   - ***fire water storage tank exterior surface inspections***

   Program Elements Affected: Element 4 (Detection of Aging Effects)
8. ***The Fire Water System Program will be enhanced to include the following requirements related to the main drain testing per the guidance provided in NFPA 25***

(2011 Edition).

- ***The requirement that if there is a 10 percent reduction in full flow pressure when compared to the original acceptance tests or previously performed tests, the cause of the reduction shall be identified and corrected if necessary.***

- ***Recording the time taken for the supply water pressure to return to the original static (nonflowing) pressure.***

10. In LRA Appendix A, in Section A.3 (License Renewal Commitment List), the following changes have been made.

    a. Commitments #9, #10, #11 and #13 have been revised as follows:

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
9.	Fire Water System	Enhance the program to include NFPA 25 ***(2011 Edition)*** guidance for "where sprinklers have been in place for 50 years, they shall be replaced or representative samples from one or more sample areas shall be submitted to a recognized testing laboratory for field service testing".	A.2.1.16	Prior to the period of extended operation.
10.	Fire Water System	Enhance the program to include the performance of periodic flow testing of the fire water system in accordance with the guidance of NFPA 25 ***(2011 Edition)***.	A.2.1.16	Prior to the period of extended operation.
11.	Fire Water System	Enhance the program to include the performance of periodic visual or volumetric inspection of the internal surface of the fire protection system upon each entry to the system for routine or corrective maintenance ***to evaluate wall thickness and inner diameter of the fire protection piping ensuring that corrosion product buildup will not result in flow blockage due to fouling. Where surface irregularities are detected, follow-up volumetric examinations are performed.*** These inspections will be documented and trended to determine if a representative	A.2.1.16	Within ten years prior to the period of extended operation

		number of inspections have been performed prior to the period of extended operation. If a representative number of inspections have not been performed prior to the period of extended operation, focused inspections will be conducted. These inspections will be performed within ten years prior to the period of extended operation.		

13.	~~Aboveground Steel Tanks~~ ***Fire Water System***	Enhance the program to ***perform exterior inspection of the fire water storage tanks annually for signs of degradation and*** include an ultrasonic inspection and evaluation of the internal bottom surface of the two Fire Protection Water Storage ***Tanks per the guidance provided in NFPA 25 (2011 Edition).***	~~A.2.1.17~~ ***A.2.1.16***	Within ten years prior to the period of extended operation

b. New commitments #74, #75, #76, and 77 have been added as follows:

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
74.	***Fire Water System***	***Enhance the program to perform sprinkler inspections annually per the guidance provided in NFPA 25 (2011 Edition). Inspection will ensure that sprinklers are free of corrosion, foreign materials, paint, and physical damage and installed in the proper orientation (e.g., upright, pendant, or sidewall). Any sprinkler that is painted, corroded, damaged, loaded, or in the improper orientation, and any glass bulb sprinkler where the bulb has emptied, will be evaluated for replacement.***	***A.2.1.16***	***Within ten years prior to the period of extended operation***

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
75.	*Fire Water System*	*Enhance the program to conduct an inspection of piping and branch line conditions every 5 years by opening a flushing connection at the end of one main and by removing a sprinkler toward the end of one branch line for the purpose of inspecting for the presence of foreign organic and inorganic material per the guidance provided in NFPA 25 (2011 Edition).*	*A.2.1.16*	*Within ten years prior to the period of extended operation*
76.	*Fire Water System*	*Enhance the program to conduct the following activities annually per the guidance provided in NFPA 25 (2011 Edition).* • *main drain tests* • *deluge valve trip tests* • *fire water storage tank exterior surface inspections*	*A.2.1.16*	*Within ten years prior to the period of extended operation*
77.	*Fire Water System*	*The Fire Water System Program will be enhanced to include the following requirements related to the main drain testing per the guidance provided in NFPA 25 (2011 Edition).* • *The requirement that if there is a 10 percent reduction in full flow pressure when compared to the original acceptance tests or previously performed tests, the cause of the reduction shall be identified and corrected if necessary.* • *Recording the time taken for the supply water pressure to return to the original static (nonflowing) pressure.*	*A.2.1.16*	*Within ten years prior to the period of extended operation*

LR-ISG-2012-02: Revisions to the Scope and Inspection Recommendations of GALL Report AMP XI.M29, "Above Ground Metallic Tanks"

Review of the Seabrook Station component database indicates that there are three indoor water storage tanks that meet the following criteria:

i. have a large volume (i.e., greater than 100,000 gallons)
ii. are designed to near-atmospheric internal pressures
iii. sit on concrete or soil
iv. are exposed internally to water

The indoor tanks that meet the above criteria are as follows:

Tank ID	Volume (gallons)	Material	Internal Environment
CBS-TK-8 (Refueling Water Storage Tank)	475,000	Stainless steel	Treated Borated Water
CO-TK-25 (Condensate Storage Tank)*	400,000	Stainless steel	Treated Water
RMW-TK-12 (Reactor Makeup Water Storage Tank)	112,000	Stainless steel	Treated Water

* Condensate Storage Tank is enclosed in a concrete structure and therefore, the tank sides are not accessible for external inspections. Only the dome of the tank, which is exposed to air-outdoor, is accessible for external inspections.

The Seabrook Station Aboveground Steel Tanks Program, B.2.1.17, has been revised to include tanks CBS-TK-8, CO-TK-25, and RMW-TK-12 in to the scope of the program. Additionally, fire water storage tanks, FP-TK-36A and 36 B, have been removed from the scope of the Above Ground Steel Tanks program. Fire water storage tanks will be age managed under the Fire Water System aging management program as recommended by LR-ISG-2012-02.

In accordance with the recommendations of LR-ISG-2012-02, Appendix M, Table 4a, the three indoor tanks listed above will be inspected as follows:

a. For managing loss of material on the internal surfaces of stainless steel indoor tanks exposed to treated-water or treated borated water, visual inspections will be performed from inside the tank or volumetric examinations from outside tank using the One-Time Inspection Program. At least 25 percent of the tank's internal surface will be inspected by a method capable of precisely determining wall thickness. The inspection method must be capable of detecting both general and pitting corrosion and must be qualified and demonstrated effective by the NextEra Energy Seabrook. The one-time inspection must occur within the 5-year period prior to entering the PEO.

b. For managing cracking on the external surfaces of stainless steel indoor tanks exposed to air-indoor uncontrolled, surface examinations will be performed each 10-year period

starting 10 years before the period of extended operation. A minimum of either 25 1-square-foot sections for tank surfaces or 1-linear-foot of weld length, or 20 percent of the tank's surface are examined. The sample inspection points are distributed such that inspections occur in those areas most susceptible to degradation (e.g., areas where contaminants could collect, inlet and outlet nozzles, welds).

c. For managing loss of material on the external surfaces of stainless steel tanks exposed to air-outdoor (dome of the Condensate Storage Tank), visual examinations of the outside surfaces will be performed every 18-months. For managing cracking on the external surfaces of stainless steel tanks exposed to air-outdoor, surface examinations will be performed each 10-year period starting 10 years before the period of extended operation. A minimum of either 25 1-square-foot sections for tank surfaces or 1-linear-foot of weld length or 20 percent of the tank's surface are examined. The sample inspection points are distributed such that inspections occur in those areas most susceptible to degradation (e.g., areas where contaminants could collect, inlet and outlet nozzles, welds).

d. For managing loss of material on the external surfaces of stainless steel indoor tank bottoms exposed to soil or concrete, volumetric examinations will be performed from inside the tanks each 10-year period starting 10 years before the period of extended operation. For tank bottoms exposed to soil, a one-time inspection may be conducted in accordance with GALL Report AMP XI.M32 in lieu of periodic inspections if an evaluation conducted prior to the PEO and during each 10-year period during the PEO demonstrates that the soil under the tank is not corrosive using actual soil samples that are analyzed for each individual parameter (e.g., resistivity, pH, redox potential, sulfides, sulfates, moisture) and overall soil corrosivity. The evaluation should include soil sampling from underneath the tank.

The following tanks are within the scope of LR and located outdoors. These tanks have an internal environment of fuel oil. Fuel Oil Chemistry Program, B.2.1.18, is used to manage loss of material on the internal surfaces of fuel oil storage tanks. Inspections to identify aging of the external surfaces of tank bottoms and tank shells exposed to soil or concrete are conducted in accordance with the Aboveground Steel Tanks Program, B.2.1.17.

Tank ID	Material	Internal Environment
1-AB-TK-29 (Auxiliary Boiler Fuel Oil Storage Tank)	Steel	Fuel Oil
1-FP-TK-35-A (Fire Protection Fuel Oil Tank)	Steel	Fuel Oil
1-FP-TK-35-B (Fire Protection Fuel Oil Tank)	Steel	Fuel Oil

In accordance with the recommendations of LR-ISG-2012-02, Appendix M, Table 4a, the three outdoor tanks listed above will be inspected as follows:

a. For managing loss of material on the external surfaces of steel tanks exposed to air-outdoor, visual examinations of the outside surfaces will be performed during each refueling outage.

b. For managing loss of material on the external surfaces of steel tank bottoms exposed to soil or concrete, volumetric examinations will be performed from inside the tanks each 10-year period starting 10 years before the period of extended operation. A one-time inspection conducted in accordance with GALL Report AMP XI.M32 may be conducted in lieu of periodic inspections if an evaluation conducted prior to the PEO and during each 10-year period during the PEO demonstrates that the soil under the tank is not corrosive using actual soil samples that are analyzed for each individual parameter (e.g., resistivity, pH, redox potential, sulfides, sulfates, moisture) and overall soil corrosivity. The evaluation should include soil sampling from underneath the tank.

Based on the above discussion, the following changes have been made to the LRA.

A. In LRA Section 3, the following new environment has been added to Sections 3.2.2.1.2 (Containment Building Spray System), 3.3.2.1.31 (Reactor Makeup Water System), and 3.4.2.1.5 (Condensate System).

- ***Soil or Concrete***

B. In LRA Section 3.4.2.2.7(1), on page 3.4-18, Loss of Material due to Pitting and Crevice Corrosion, a new paragraph is added as follows:

Seabrook Station will implement the Above Ground Steel Tanks Program, B.2.1.17, to manage loss of material due to pitting and crevice corrosion in stainless steel Condensate Storage Tank exposed to treated water in the Condensate system.

C. In LRA Section 3.4.2.2.7(2), on page 3.4-18, Loss of Material due to Pitting and Crevice Corrosion, a new paragraph is added as follows:

Seabrook Station will implement the Above Ground Steel Tanks Program, B.2.1.17, to manage loss of material due to pitting and crevice corrosion in stainless steel Condensate Storage Tank exposed to soil in the Condensate system.

D. In LRA Section 3.2 and 3.4, Tables 3.2.1 and 3.4.1 have been revised as follows:

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.2.1-49	Stainless steel piping, piping components, piping elements, and tanks exposed to treated borated water	Loss of material due to pitting and crevice corrosion	Water Chemistry	No	Components in the Reactor Coolant system have been aligned to this line item based on material, environment, and aging effect. ***Stainless steel Refueling Water Storage Tank in the Containment Building Spray system and stainless steel Reactor Makeup Water Storage Tank in the Reactor makeup Water system have also been aligned to this line item based on component, material, environment, and aging effect.*** Consistent with NUREG-1801. The Water Chemistry Program, B.2.1.2, will be used to manage loss of material due to pitting and crevice corrosion in stainless steel piping components exposed to treated borated water in the Containment Building Spray, Reactor Coolant, Residual Heat Removal, and Safety Injection systems, and stainless steel heat exchanger components exposed to treated borated water in the Containment Building Spray, Reactor Coolant, and Residual Heat Removal systems, and stainless steel tanks exposed to treated borated water in the ~~Containment Building Spray,~~ Reactor Coolant~~,~~ and Safety Injection systems. ***Refueling Water Storage Tank in the Containment Building Spray system and Reactor Makeup Water Storage Tank in the Reactor makeup Water System will be age managed using the Aboveground Steel Tanks Program.***

3.4.1-6	Steel and stainless steel tanks exposed to treated water	Loss of material due to general (steel only) pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Components in the Chemical and Volume Control, Containment Building Spray, Fuel Handling, Hot Water Heating, Mechanical Seal Supply, Reactor Coolant, Reactor Make-Up Water, Release Recovery, and Sample systems have been aligned to this line item based on material, environment, and aging effect. Consistent with NUREG-1801. The One-Time Inspection Program, B.2.1.20, will be used to verify the effectiveness of the Water Chemistry Program, B.2.1.2, to manage loss of material due to general, pitting, and crevice corrosion in steel tanks exposed to treated water in the Auxiliary Steam Condensate, Fuel Handling, Hot Water Heating, Release Recovery, and Steam Generator Blowdown systems, and to manage pitting and crevice corrosion in the stainless steel tanks exposed to treated water in the Chemical and Volume Control, Containment Building Spray, Condensate, Mechanical Seal Supply, Reactor Coolant, Reactor Make-Up Water, and Sample systems. ***Condensate Storage Tank in the Condensate system will be age managed using the Aboveground Steel Tanks Program.*** See Subsection 3.4.2.2.2.1 for steel tanks and Subsection 3.4.2.2.7.1 for stainless steel tanks.

E. In LRA Sections 3.2, 3.3, and 3.4, Tables 3.2.2-2, 3.3.1-31, and 3.4.2-5 have been revised as follows:

a. Table 3.2.2-2, Containment Building Spray System, on Page 3.2-53, new AMR line items have been added after the 5th line item as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table3.X.1 Item	Note
Tank	*Pressure Boundary*	*Stainless Steel*	*Air-Indoor Uncontrolled (External)*	*Cracking*	*Aboveground Steel Tanks Program*	*None*	*None*	*A, 1*
Tank	*Pressure Boundary*	*Stainless Steel*	*Treated Borated Water (Internal)*	*Loss of Material*	*Aboveground Steel Tanks Program*	*V.A-27 (EP-41)*	*3.2.1-49*	*E*
Tank	*Pressure Boundary*	*Stainless Steel*	*Soil or Concrete*	*Loss of Material*	*Aboveground Steel Tanks Program*	*None*	*None*	*E*

A new Plant Specific Note 1 has been added as follows:

1 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

b. Table 3.3.1-31, Reactor Makeup Water System, on Page 3.3-431, the 3rd, and 5th AMR line items have been revised and a new line item has been added after the 5th line item as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table3.X.1 Item	Note
Tank	Leakage Boundary (Spatial)	Stainless Steel	Air-Indoor Uncontrolled (External)	~~None~~ *Cracking*	~~None~~ *Aboveground Steel Tanks Program*	~~VII.J-15 (AP-17)~~ *None*	~~3.3.1-94~~ *None*	~~C~~ *A, 2*
Tank	Leakage Boundary (Spatial)	Stainless Steel	Treated Water (Internal)	Loss of Material	~~Water Chemistry Program~~ ~~One-Time Inspection Program~~ *Aboveground Steel Tanks Program*	~~VIII.E-40 (S-13)~~ V.A-27 (EP-41)	~~3.4.1-6~~ 3.2.1-49	~~A~~ ~~A~~ *A, 2*
Tank	*Leakage Boundary (Spatial)*	*Stainless Steel*	*Soil or Concrete*	*Loss of Material*	*Aboveground Steel Tanks Program*	*V.D1-26 (EP-31)*	*None*	*A, 2*

A new Plant Specific Note 2 has been added as follows:

2 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

c. Table 3.4.2-5, Condensate System, on Pages 3.4-73, the 9th AMR line item and the 1st AMR line item on Page 3.4-74 have been revised as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table3.X.1 Item	Note
Tank	Pressure Boundary	Stainless Steel	Air-Indoor Uncontrolled (External)	~~None~~ ***Cracking***	~~None~~ ***Aboveground Steel Tanks Program***	~~VIII.I-10 (SP-12)~~ ***None***	~~3.4.1-41~~ ***None***	~~A~~ ***A, 2***
Tank	Pressure Boundary	Stainless Steel	Air-Outdoor (External)	Loss of Material	~~External Surfaces Monitoring Program~~ ***Aboveground Steel Tanks Program***	None	None	~~G~~ ***A, 2***
Tank	Pressure Boundary	Stainless Steel	Treated Water (Internal)	Loss of Material	~~Water Chemistry Program~~ ~~One-Time Inspection Program~~ ***Aboveground Steel Tanks Program***	VIII.E-40 (S-13)	3.4.1-6	~~A~~ ~~A~~ ***A, 2***
Tank	***Pressure Boundary***	***Stainless Steel***	***Soil or Concrete***	***Loss of Material***	***Aboveground Steel Tanks Program***	***VIII.E-28 (SP-37)***	***None***	***A, 2***

A new Plant Specific Note 2 has been added as follows:

2 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

F. In LRA Appendix B, Section B.2.1.17 (Above Ground Steel Tanks Program) has been revised as follows:

1. The 1st and the 2nd paragraphs of the program description has been revised as follows:
Seabrook Station Aboveground Steel Tanks Program is an existing program that manages the aging effects of loss of material due to general, pitting, and crevice corrosion ***and cracking on the outside and inside surfaces of*** aboveground steel tanks within the scope of

License Renewal. The Program includes preventive measures to mitigate corrosion ***and cracking*** and periodic inspections to validate the effectiveness of the preventive actions.

The program includes outdoor tanks within the scope of License Renewal and indoor large volume storage tanks (greater than 100,000 gallons) designed to near-atmospheric internal pressures, sit on concrete or soil, and exposed internally to water. Fire water storage tanks are not within the scope of this program and managed separately under the Fire Water System aging management program. Tank inside and outside surfaces are inspected by visual, surface, or volumetric examinations as required to detect the applicable aging effect.

2. Enhancement 1a has been revised as follows:

   Include the Fire Protection Fuel Oil Tanks, Auxiliary Boiler Fuel Oil Storage Tank, ***Refueling Water Storage Tank, Reactor Makeup Water Storage Tank, and Condensate Storage Tank in the scope of Aboveground Steel Tanks Program.*** ~~and Fire Protection Water Storage tanks as part of the scope of tanks.~~

3. Enhancement 2 has been revised as follows:

   Enhance the Seabrook Station Aboveground Steel Tanks Program implementing procedures to require the performance of ***visual, surface, and volumetric examinations of the Fire Protection Fuel Oil Tanks, Auxiliary Boiler Fuel Oil Storage Tank, Refueling Water Storage Tank, Condensate Storage Tank, and Reactor Makeup Water Storage Tank as follows:*** ~~an ultrasonic examination and evaluation of the internal bottom surface of the two Fire Protection Water Storage Tanks within ten years prior to the period of extended operation.~~

   a. For managing loss of material on the internal surfaces of stainless steel Refueling Water Storage Tank, Reactor Makeup Water Storage Tank, and Condensate Storage Tank exposed to treated-water or treated borated water, visual inspections will be performed from inside the tank or volumetric examinations from outside tank using the One-Time Inspection Program. At least 25 percent of the tank's internal surface will be inspected by a method capable of precisely determining wall thickness. The inspection method must be capable of detecting both general and pitting corrosion and must be qualified and demonstrated effective by the applicant. The one-time inspection must occur within the 5-year period prior to entering the PEO.

   b. For managing cracking on the external surfaces of stainless steel Refueling Water Storage Tank, Reactor Makeup Water Storage Tank, and Condensate Storage Tank exposed to air-indoor uncontrolled, surface examinations will be performed each 10-year period starting 10 years before the period of extended operation. A minimum of either a combination of 25 1-square-foot sections for tank surfaces

and for welds, 1-linear-foot of weld length; or 20 percent of the tank's surface are examined. The sample inspection points are distributed such that inspections occur in those areas most susceptible to cracking (e.g., areas where contaminants could collect, inlet and outlet nozzles, welds).

c. ***For managing loss of material on the external surfaces of stainless steel Condensate Storage Tank exposed to air-outdoor, visual examinations of the outside surfaces will be performed each refueling outage. For potential cracking on the external surfaces of stainless steel Condensate Storage Tank exposed to air-outdoor, surface examinations will be performed each 10-year period starting 10 years before the period of extended operation.***

d. ***For managing loss of material on the external surfaces of Refueling Water Storage Tank, Reactor Makeup Water Storage Tank, and Condensate Storage Tank bottoms exposed to soil or concrete, volumetric examinations will be performed from inside the tanks each 10-year period starting 10 years before the period of extended operation***

e. ***For managing loss of material on the external surfaces of steel Fire Protection Fuel Oil Tanks and Auxiliary Boiler Fuel Oil Storage Tank exposed to air-outdoor, visual examinations of the outside surfaces will be performed every 18-months***

f. ***For managing loss of material on the external surfaces of steel Fire Protection Fuel Oil Tanks and Auxiliary Boiler Fuel Oil Storage Tank bottoms exposed to soil or concrete, volumetric examinations will be performed from inside the tanks each 10-year period starting 10 years before the period of extended operation. A one-time inspection conducted in accordance with GALL Report AMP XI.M32 may be conducted in lieu of periodic inspections if an evaluation conducted prior to the PEO and during each 10-year period during the PEO demonstrates that the soil under the tank is not corrosive using actual soil samples that are analyzed for each individual parameter (e.g., resistivity, pH, redox potential, sulfides, sulfates, moisture) and overall soil corrosivity. The evaluation should include soil sampling from underneath the tank.***

G. In LRA Appendix B, Section B.2.1.20 (One-Time Inspection Program), on page B-118, a new bullet has been added under the section titled "This program will be used to" as follows:

- ***For potential loss of material on the internal surfaces of stainless steel Refueling Water Storage Tank, Reactor Makeup Water Storage Tank, and Condensate***

Storage Tank exposed to treated-water or treated borated water, visual inspections will be performed from inside the tank or volumetric examinations from outside tank using the One-Time Inspection Program. At least 25 percent of the tank's internal surface will be inspected by a method capable of precisely determining wall thickness. The inspection method must be capable of detecting both general and pitting corrosion and must be qualified and demonstrated effective by NextEra Seabrook.

H. In LRA Appendix A, Section A.2.1.17 (Above Ground Steel Tanks Program), the 1st paragraph has been revised and a new 2nd paragraph has been added as follows:

The Aboveground Steel Tanks Program manages ***the*** aging effects ~~through preventive measures to mitigate corrosion~~ ***of loss of material and cracking on the outside and inside surfaces of*** ~~and through periodic inspections to manage any effects of corrosion on~~ aboveground ~~steel~~ tanks within the scope of License Renewal.

Tanks within the scope of this program include all in-scope outdoor tanks, except fire water storage tanks, constructed on soil or concrete. Indoor large volume storage tanks (greater than 100,000 gallons) designed to near-atmospheric internal pressures, sit on concrete or soil, and exposed internally to water are included within the scope of this program. Tank inside and outside surfaces are inspected by visual, surface, or volumetric examinations as required to detect the applicable aging effect.

I. In LRA Appendix A, Section A.2.1.20 (One-Time Inspection Program), the following new bullet has been added to the end of the program description as follows:

- ***For potential loss of material on the internal surfaces of stainless steel Refueling Water Storage Tank, Reactor Makeup Water Storage Tank, and Condensate Storage Tank exposed to treated-water or treated borated water, visual inspections will be performed from inside the tank or volumetric examinations from outside tank using the One-Time Inspection Program. At least 25 percent of the tank's internal surface will be inspected by a method capable of precisely determining wall thickness. The inspection method must be capable of detecting both general and pitting corrosion and must be qualified and demonstrated effective by Seabrook Station.***

J. In LRA Appendix A, Section A.3, commitment #12 has been revised as follows:

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
12.	Aboveground Steel Tanks	Enhance the program to include components and aging effects required by the Aboveground Steel Tanks ***and to perform visual, surface, and volumetric examinations of the outside and inside surfaces for managing the aging effects of loss of material and cracking.***	A.2.1.17	~~Prior to the period of extended operation.~~ ***Within 10 years prior to the period of extended operation***

LR-ISG-2012-02: Corrosion Under Insulation

Seabrook Station will perform periodic representative inspections of in-scope insulated steel, stainless steel, copper alloy, aluminum, or copper alloy >15% Zn piping, piping components, and tanks exposed to condensation or air-outdoor. The LRA changes related to the timing, frequency, and extent of these inspections are as follows:

A. LRA Section 2.1.3, "Insulation", on page 2.1-23 and 2.1-24 has been revised as follows:

At Seabrook Station, thermal insulation was treated as a passive, long lived component during the scoping and screening process. There is no aging effect for thermal insulation in an "air-indoor uncontrolled" environment, however, aluminum insulation jacketing in "air with borated water leakage environment" would have an aging effect of loss of material due to boric acid corrosion. This aging effect will be age managed by the Boric Acid Corrosion Program. Additionally, ***visual inspections are conducted on insulation jacketing under the External Surfaces Monitoring Program to ensure that no aging effects are impairing the function of the thermal insulation.*** The intended function for "Insulation" per Table 2.1-1 is "Provide temperature control."

For license renewal purposes, thermal insulation jacketing is being addressed as a commodity group in the civil / structural section of the license renewal application. Therefore, insulation is not included as a separate component type in each mechanical in scope system. The thermal insulation jacketing is shown in Table 3.5.2-6.

B. In LRA Appendix B, in Section B.2.1.24 (External Surfaces Monitoring), on page B-133, the 3rd paragraph has been removed from the Program Description as shown below:

~~The Seabrook Station External Surfaces Monitoring Program will require a periodic review of documented under insulation inspection results to verify that there were a sufficient number of inspection opportunities to provide a representative indication of system condition, and to assess the need for further inspections.~~

C. License Renewal Application, Appendix B, Section B.2.1.24 (External Surfaces Monitoring), on page B-135, the following new paragraphs have been added to end of the Program Description as follows:

The External Surfaces Monitoring Program includes visual inspections on insulation jacketing to ensure that no aging effects are impairing the function of the thermal insulation. The External Surfaces Monitoring Program also includes examination of surfaces under insulation. For systems that are within the scope of License Renewal and susceptible to corrosion under insulation, removal of insulation and inspections will be performed during each 10-year period of the PEO.

For in-scope outdoor components (except tanks) that are insulated and in-scope indoor components that are exposed to condensation (in-scope components are operated below the dew point), removal of insulation and inspection will be performed as follows:

1) ***20% of the piping length for each material type or 20% of the surface area for components where its configuration does not conform to a 1-foot axial length determination (e.g., valve, accumulator) or,***
2) ***Any combination of 25 1-foot axial length sections and components for each material type. Inspections will be conducted in each air environment (e.g., air-outdoor, moist air) where condensation or moisture on the surfaces of the component could occur routinely or seasonally. In some instances, although indoor air is conditioned, significant moisture can accumulate under insulation during high humidity seasons.***

For outdoor tanks and indoor tanks exposed to condensation, remove the insulation from either 25 1-square-foot sections or 20 percent of the surface area and inspect the exterior surface of the tank. The sample inspection points should be distributed such that inspections occur on the tank dome, sides, near the bottom, at points where structural supports or instrument nozzles penetrate the insulation, and where water collects such as on top of stiffening rings.

Inspection locations should be based on the likelihood of corrosion under insulation occurring (e.g., alternate wetting and drying in environments where trace contaminants could be present, length of time the system operates below the dewpoint).

Removal of tightly adhering insulation that is impermeable to moisture is not required unless there is evidence of damage to the moisture barrier. If the moisture barrier is intact, the likelihood of corrosion under insulation is low for tightly adhering insulation. Tightly adhering insulation should be considered to be a separate population from the remainder of insulation installed on in-scope components. The entire population of in-scope piping that has tightly adhering insulation should be visually inspected for damage to the moisture barrier with the same frequency as for other types of insulation inspections. These inspections would not be credited towards the inspection quantities for other types of insulation.

Subsequent inspections may consist of examination of the exterior surface of the insulation for indications of damage to the jacketing or protective outer layer of the insulation when the following conditions are verified in the initial inspection:

i. no loss of material due to general, pitting or crevice corrosion, beyond that which could have been present during initial construction, and

ii. no evidence of SCC.

If the external visual inspections of the insulation reveal damage to the exterior surface of the insulation or there is evidence of water intrusion through the insulation (e.g. water seepage through insulation seams/joints), periodic inspections under the insulation should continue as described above.

D. In the Enhancements section of B.2.1.24 (External Surfaces Monitoring), on Page B-137, a 2nd enhancement has been added as follows:

2. Seabrook Station procedures will be enhanced to include periodic inspections of in-scope insulated components for possible corrosion under insulation.
Program Elements Affected: Element 1 (Scope of Program) and Element 4 (Detection of Aging Effects)

E. In LRA Appendix A, in Section A.2.1.24 (External Surfaces Monitoring), on Page A-14, a new paragraph has been added after the last paragraph as follows:

The External Surfaces Monitoring Program includes periodic inspections of in-scope insulated components for possible corrosion under insulation.

F. In LRA Appendix A, in Section A.3 (License Renewal Commitment List), commitment #26 has been revised as follows:

26.	External Surfaces Monitoring	Enhance the program to specifically address the scope of the program, relevant degradation mechanisms and effects of interest, the refueling outage inspection frequency~~, the inspections of opportunity for possible corrosion under insulation,~~ the training requirements for inspectors and the required periodic reviews to determine program effectiveness.	A.2.1.24	Prior to the period of extended operation.

G. In LRA Appendix A, in Section A.3 (License Renewal Commitment List), a new commitment #78 has been added as follows:

78.	***External Surfaces Monitoring***	***Enhance the program to include periodic inspections of in-scope insulated components for possible corrosion under insulation.***	***A.2.1.8***	***Prior to the period of extended operation.***

H. The following new component types have been added to Tables 2.3.3-4 (Chlorination System), 2.3.3-10 (Demineralized Water System), 2.3.3-12 (Diesel Generator), 2.3.3-15 (Fire Protection System), 2.3.3-27 (Potable Water System), 2.3.3-29 (Primary Component Cooling Water System), 2.3.3-37 (Service Water System), 2.3.4-2 (Auxiliary Steam Condensate System), 2.3.4-4 (Circulating Water System), 2.3.4-5 (Condensate System), 2.3.4-6 (Feedwater System), and 2.3.4-7 (Main Steam System), .

- ***Insulated Piping and Fittings***

I. The following new AMR line items have been added as follows:

a. Table 3.3.2-9, Control Building Air Handling System, on Page 3.3-244, the following line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Leakage Boundary (Spatial)*	*Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 13*

A new Plant Specific Note 13 has been added as follows:

13 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

b. Table 3.3.2-10, Demineralized Water System, on Page 3.3-254, the following line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Leakage Boundary (Spatial)*	*Stainless Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 1*
Insulated Piping and Fittings	*Leakage Boundary (Spatial)*	*Stainless Steel*	*Condensation (External)*	*Cracking*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 1*

A new Plant Specific Note 1 has been added as follows:

1 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

c. Table 3.3.2-12, Diesel Generator, on Page 3.3-279, the following line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Pressure Boundary*	*Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 12*

A new Plant Specific Note 12 has been added as follows:

12 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

d. Table 3.3.2-15, Fire Protection System, on Page 3.3-309, the following line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Pressure Boundary*	*Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 6*

A new Plant Specific Note 6 has been added as follows;

6 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

e. Table 3.3.2-27, Potable Water System, on Page 3.3-396, the following line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Leakage Boundary (Spatial)*	*Copper Alloy*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 2*
Insulated Piping and Fittings	*Leakage Boundary (Spatial)*	*Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 2*

A new Plant Specific Note 2 has been added as follows:

2 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

f. Table 3.3.2-28, Primary Auxiliary Building Air Handling System, on Page 3.3-403, the following line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Leakage Boundary (Spatial)*	*Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 3*

A new Plant Specific Note 3 has been added as follows;

3 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

g. Table 3.3.2-29, Primary Component Cooling water System, on Page 3.3-413, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Leakage Boundary (Spatial)* *Pressure Boundary*	*Copper Alloy*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 8*
Insulated Piping and Fittings	*Leakage Boundary (Spatial)* *Pressure Boundary*	*Stainless Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 8*
Insulated Piping and Fittings	*Leakage Boundary (Spatial)* *Pressure Boundary*	*Stainless Steel*	*Condensation (External)*	*Cracking*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 8*
Insulated Piping and Fittings	*Leakage Boundary (Spatial)* *Pressure Boundary*	*Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 8*

A new Plant Specific Note 8 has been added as follows;

7 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

h. Table 3.3.2-37, Service Water System, on Page 3.3-470, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Pressure Boundary*	*Steel*	*Condensation/ Air-Outdoor (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 9*

A new Plant Specific Note 9 has been added as follows;

9 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

i. Table 3.4.2-5, Condensate System, on Page 3.4-73, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Pressure Boundary*	*Stainless Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 2*
Insulated Piping and Fittings	*Pressure Boundary*	*Stainless Steel*	*Condensation (External)*	*Cracking*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 2*
Insulated Piping and Fittings	*Pressure Boundary*	*Steel*	*Condensation (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 2*

A new Plant Specific Note 2 has been added as follows;

2 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

j. Table 3.4.2-6, Feedwater System, on Page 3.4-84, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Pressure Boundary*	*Steel*	*Air-Outdoor (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 1*

A new Plant Specific Note 1 has been added as follows:

1 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

k. Table 3.4.2-7, Main Steam System, on Page 3.4-94, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Insulated Piping and Fittings	*Pressure Boundary*	*Steel*	*Air-Outdoor (External)*	*Loss of Material*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 2*

A new Plant Specific Note 2 has been added as follows:

2 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

l. Table 3.5.2-6, Supports, on page 3.5-239, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Jacketed Insulation	*Structural Support*	*Fiberglass*	*Air-Indoor Uncontrolled/ Air-Outdoor (External)*	*Reduced Thermal Insulation Resistance*	*External Surfaces Monitoring Program*	*None*	*None*	*B, 517*

A new Plant Specific Note 517 has been added as follows:

517 Consistent with NUREG-1801 as modified by LR-ISG-2012-02

Enclosure 2 to SBK-L-14037

Aging Management of Loss of Coating Integrity for Internal Service Level III (augmented) Coatings

Aging Management of Loss of Coating Integrity for Internal Service Level III (augmented) Coatings

NextEra Energy Seabrook has components within the scope of License Renewal that are coated and subject to the aging effect of loss of coating integrity due to blistering, cracking, flaking, peeling, or physical damage.

The vast majority of the Service Water (SW) system piping is fabricated from butt welded, cement lined, carbon steel piping. During construction, joint compound was applied at field welded joints to seal the cement liner crevices. Defects or degradation of the joint compound as well as random defects in the cement lining allowed sea water intrusion to the carbon steel pipe and subsequent internal corrosion. In some cases, corrosion has led to through wall leakage. Repairs were made on-line or during the subsequent refueling outage with no loss of SW system function. Further discussion related to through wall leaks in the SW cement lined piping is provided in the "Recurring Internal Corrosion" section of this supplement letter.

Seabrook Station also has plant specific OE related to the degradation of the Plastisol PVC lining in the SW piping. In 1994, the cement SW piping associated with the Diesel Generator heat exchangers (DGHXs) was replaced with Plastisol PVC lined carbon steel piping. In July 2011, Service Water flow through the Train 'B' DGHX was identified as being degraded. Subsequent inspection of the Train 'B' DGHX downstream flow orifice revealed that pieces of the Plastisol PVC lining had detached from the pipe and was partially restricting flow through the orifice. NextEra Seabrook has previously provided the staff details of the Plastisol PVC lining failure in SBK-L-12023 dated February 7, 2012 (Supplement 19, Enclosure 1), SBK-L-12084 dated April 26, 2012 (Supplement 22, Enclosure 1), and SBK-L-12217 dated November 2, 2012 (Supplement 27, Enclosure 2). As stated in SBK-L-12084, NextEra Seabrook made a commitment (Commitment #69) to replace the DGHX Plastisol PVC lined SW piping with piping fabricated from AL6XN material prior to entering the period of extended operation. Plastisol PVC lined piping in the "A" train of the Diesel Generator Heat Exchanger (DGHX) piping was replaced with AL6XN material during Refueling Outage 15 (Fall of 2012). Replacement of the Plastisol PVC lined piping in the "B" train is scheduled for Refueling Outage 16 (Spring of 2014).

In response to NextEra Seabrook's review of draft LR-ISG-2013-01, "Aging Management of Loss of Coating Integrity For Internal Service Level III (Augmented) Coatings" and review of the Staff's questions to Sequoyah and Callaway, NextEra Energy Seabrook has made the following changes to the LRA to address aging effects of Service Level III (augmented) internal coatings. NextEra Energy Seabrook recognizes that LR-ISG-2013-01 is currently in the final stages of comment resolution and approval. Upon issuance, NextEra will evaluate the final version and subsequent revisions under the associated operating experience program elements.

Definition of Internal Service Level III (augmented) Coatings:

All coatings applied to the internal surfaces of an in-scope component if its degradation could prevent satisfactory accomplishment of any of the functions identified under 10 CFR 54.4 (a)(1), (a)(2), or (a)(3). Service Level III (augmented) coatings are those:

a. Used in areas outside of the reactor containment whose failure could adversely affect the safety function of a safety-related SSC or,

b. Applied to the internal surfaces of in-scope components and whose failure could prevent satisfactory accomplishment of any of the functions identified under 10 CFR 54.4 (a)(3).

The term "coating" includes inorganic (e.g., zinc-based) or organic (e.g., elastomeric or polymeric) coatings, linings (e.g., rubber, cementitious), and concrete surfaces that are designed to adhere to a component to protect its surface. The terms "paint" and "linings" are considered as coatings.

The scope of the program changes include those components exposed to closed-cycle cooling water, raw water, treated water, treated borated water, fuel oil, and lubricating oil. Aging effects for these components will be managed as described below. Fire water storage tanks are not included in the scope of aging management of Service Level III (augmented) internal coatings. As described in LR-ISG-2012-02, the internal surfaces of fire water storage tanks will be inspected to the requirements of NFPA 25 (Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems).

a. The inspection method

   The program changes consist of periodic visual inspections of Service Level III (augmented) internal coatings.

b. The parameters to be inspected

   The program includes visual inspections for indication of blistering, cracking, flaking, peeling, or physical damage.

c. When inspections will commence and the frequency of subsequent inspections

   - Baseline visual inspections of coatings installed on the interior surfaces of in-scope components will be conducted in the 10-year period prior to the PEO.

   - Subsequent inspections are based on an evaluation of the effect of a coating failure on the in-scope component's intended function, potential problems identified during prior inspections, and known service life history. Subsequent inspection intervals are established by a coating specialist. Inspection intervals however, will not exceed those shown in the below table.

Inspection Intervals for Internal Service Level III (augmented) Coatings for Tanks, Piping, and Heat Exchangers [1, 6]	
Inspection Category[2]	Inspection Interval
A	6 years[3]
B[4, 5]	4 years
C[5]	Inspections occur during the next 2 refueling outage intervals

1. Current licensing basis requirements (e.g. Generic Letter 89-13) might require more frequent inspections.

2. Inspection Categories

   A. No peeling, delamination, blisters, or rusting are observed during inspections. Any cracking and flaking has been found acceptable in accordance with the acceptance criteria. No spalling in cementitious coatings.

   B. Prior inspection results do not meet Inspection Category A. However, a coating specialist has determined that no remediation is required.

   C. Newly installed coatings or coatings that have been repaired or replaced.

3. If the following conditions are met, the inspection interval may be extended to 12 years:

   a. The identical coating material was installed with the same installation requirements in redundant trains with the same operating conditions and at least one of the trains is inspected every 6 years.
   b. The coating is not in a location subject to turbulence (e.g., piping downstream of control valve).

4. Specific locations that resulted in subsequent inspections being conducted to Inspection Category B or C are re-inspected as well as new locations.

5. When conducting inspections to Inspection Category B, if two sequential subsequent inspections demonstrate no change in coating condition, subsequent inspections may be conducted at six-year intervals.

6. Internal inspection intervals for diesel fuel storage tanks may meet either this table or if the inspection results meet Inspection Category A.

d. The extent of inspections

The extent of inspections is based on an evaluation of the effect of a coating failure on the in-scope component's intended function, potential problems identified during prior inspections, and known service life history. Inspection locations are selected based on susceptibility to degradation and consequences of failure.

- All accessible internal coated surfaces of in-scope tanks and heat exchangers will be inspected.

- A representative sample of internally coated piping components not less than 73 1-foot axial length circumferential segments of piping or 50% of the total length of each coating material and environment combination will be inspected. The inspection surface includes the entire inside surface of the 1-foot sample. If geometric limitations impede movement of remote or robotic inspection tools, the number of inspection segments is increased in order to cover an equivalent of 73 1-foot axial length sections. For example, if the remote tool can only be maneuvered to view 1/3 of the inside surface, then 219 feet of pipe is inspected.

The above listed inspection of coatings may be omitted if the degradation of coatings cannot result in downstream effects such as reduction in flow, drop in pressure, or reduction in heat transfer for in-scope components. However, inspections are performed if corrosion rates or inspection intervals have been based on the integrity of the coatings. In this case, loss of coating integrity could result in unanticipated or accelerated corrosion rates of the base metal. Alternatively, if corrosion of the base material is the only issue related to coating degradation of the component, external wall thickness measurements can be performed to confirm the acceptability of the corrosion rate of the base metal.

e. The training and qualification of individuals involved in coating inspections

Coatings specialists and inspectors will be qualified in accordance with ASTM International Standards.

f. How monitoring and trending of coating degradation will be conducted

Monitoring and trending includes pre-inspection reviews of the previous two inspection results and any subsequent repair activities. The review is performed by a coatings specialist and includes a list and location of all areas evidencing deterioration, a prioritization of the repair areas into areas that must be repaired before returning the system to service, areas where repair can be postponed to the next inspection, and, where possible, photographic evidence of inspection locations. When corrosion of the base material is the only issue related to coating degradation of the component, external wall thickness measurements can be used to in lieu of internal visual inspections of the coating and the corrosion rate of the base metal trended.

g. Acceptance criteria

- Indications of peeling and delamination are not acceptable and the coatings are repaired or replaced. For coated surfaces that show evidence of delamination or peeling, physical testing is performed where physically possible. The test consists of destructive or

nondestructive adhesion testing using ASTM International Standards. A minimum of three sample points adjacent to the defective area are tested.

- Blisters are evaluated by a coating specialist. However, inspections are conducted to ensure that the blister is completely surrounded by sound coating bonded to the surface. If coatings are credited for corrosion prevention, the component's base material in the vicinity of the blister is inspected to determine if unanticipated corrosion has occurred.

- Indications such as cracking, flaking, and rusting are to be evaluated by a coating specialist.

- Minor cracking and spalling of cementitious coatings is acceptable provided there is no evidence that the coating is debonding from the base material.

- As applicable, wall thickness measurements meet design minimum wall requirements.

- Adhesion values provide reasonable assurance that the coating will remain bonded to the substrate as evaluated by the coating specialist.

h. Corrective actions for coatings that do not meet acceptance criteria, and

Indications noted will be entered into the Seabrook Station Corrective Action Program for appropriate disposition.

i. The program(s) that will be augmented to include the above requirements.

The following programs will be augmented to include the above requirements:

- Open-Cycle Cooling Water System Program
- Fire Water System Program
- Fuel Oil Chemistry Program
- Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program

Based on the above discussion, the following changes have been made to the LRA.

A. LRA Section 3.3, Aging Management of Auxiliary Systems and Section 3.4, Aging Management of Steam and Power Conversion Systems have been revised as follows:

1. The following new material has been added to Sections 3.3.2.1.1, Auxiliary Boiler, 3.3.2.1.4, Chlorination System, 3.3.2.1.12, Diesel Generator, 3.3.2.1.15, Fire Protection System, 3.3.2.1.17, Fuel Oil System, 3.3.2.1.26, Plant Floor Drain System, 3.3.2.1.36, Screen Wash System, 3.3.2.1.37, Service Water System, 3.4.2.1.44, Waste Processing Liquid System, and 3.4.2.1.4, Circulating Water System

Materials

- ***Metallic with Service Level III (augmented) Internal Coating***

2. The following new AMR line items have been added as follows:

   a. Table 3.3.2-1, Auxiliary Boiler, on Page 3.3-133, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Tank	*Pressure Boundary*	*Metallic with Service Level III (augmented) Internal Coating*	*Fuel Oil (Internal)*	*Loss of Coating Integrity*	*Fuel Oil Chemistry Program*	*None*	*None*	*G*

   b. Table 3.3.2-4, Chlorination System, on Page 3.3-190, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	*Leakage Boundary (Spatial)*	*Metallic with Service Level III (augmented) Internal Coating*	*Raw Water (Internal)*	*Loss of Coating Integrity*	*Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program*	*None*	*None*	*G*

   c. Table 3.3.2-12, Diesel Generator, on Page 3.3-285, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Tank	*Pressure Boundary*	*Metallic with Service Level III (augmented) Internal Coating*	*Fuel Oil (Internal)*	*Loss of Coating Integrity*	*Fuel Oil Chemistry Program*	*None*	*None*	*G*

d. Tables 3.3.2-15, Fire Protection System, on Pages 3.3-309 and 3.3-311, the following line items have been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	*Pressure Boundary*	*Metallic with Service Level III (augmented) Internal Coating*	*Raw Water (Internal)*	*Loss of Coating Integrity*	*Fire Water System Program*	*None*	*None*	*G*

e. Table 3.3.2-26, Plant Floor Drain System, on Page 3.3-392, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Tank	*Leakage Boundary (Spatial)*	*Metallic with Service Level III (augmented) Internal Coating*	*Raw Water (Internal)*	*Loss of Coating Integrity*	*Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program*	*None*	*None*	*G*

f. Table 3.3.2-36, Screen Wash System, on Page 3.3-459, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	*Leakage Boundary (Spatial)*	*Metallic with Service Level III (augmented) Internal Coating*	*Raw Water (Internal)*	*Loss of Coating Integrity*	*Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program*	*None*	*None*	*G*

g. Table 3.3.2-37, Service Water System, on Page 3.3-470, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	*Pressure Boundary*	*Metallic with Service Level III (augmented) Internal Coating*	*Raw Water (Internal)*	*Loss of Coating Integrity*	*Open-Cycle Cooling Water System Program*	*None*	*None*	*G*

h. Table 3.4.2-44, Waste Processing Liquid System, on Page 3.4-508, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	*Leakage Boundary (Spatial)*	*Metallic with Service Level III (augmented) Internal Coating*	*Raw Water (Internal)*	*Loss of Coating Integrity*	*Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program*	*None*	*None*	*G*

i. Table 3.4.2-4, Circulating Water System, on Page 3.4-67, the following line item has been added as follows:

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG 1801 Vol. 2 Item	Table 3.X.1 Item	Note
Piping and Fittings	*Leakage Boundary (Spatial)*	*Metallic with Service Level III (augmented) Internal Coating*	*Raw Water (Internal)*	*Loss of Coating Integrity*	*Open-Cycle Cooling Water System Program*	*None*	*None*	*G*

B. LRA Appendix B, Section B.2, Aging Management Programs, has been revised as follows:

1. In LRA Section B.2.1.11, Open-Cycle Cooling Water System, the 1st paragraph of the program description has been revised as follows:

The Seabrook Station Open-Cycle Cooling Water System Program is an existing program that manages the aging effects of:

a. hardening and loss of strength due to elastomer degradation,

b. loss of material due to erosion, due to general, pitting, crevice and galvanic corrosion, due to microbiologically influenced corrosion and fouling and due to liner/coating degradation, ~~and~~

c. reduction of heat transfer by fouling of specific components, ***and***

d. loss of coating integrity due to blistering, cracking, flaking, peeling, or physical damage of Service Level III (augmented) internal coatings.

2. In LRA Section B.2.1.16, Fire Water System, the 1st paragraph of the program description has been revised as follows:

The Seabrook Station Fire Water System Program is an existing program that manages the effects of aging on Fire Water System components through detailed inspections in accordance with the Seabrook Station Surveillance Test Procedures. Specifically, the program manages the following aging effects: (a) loss of material due to general, crevice, pitting, galvanic, and microbiologically influenced corrosion, (b) fouling, ~~and~~ (c) reduction of heat transfer due to fouling of the Fire Water System components, ***and loss of coating integrity due to blistering, cracking, flaking, peeling, or physical damage of Service Level III (augmented) internal coatings***.

3. In LRA Section B.2.1.18, Fuel Oil Chemistry, the 1st paragraph of the program description has been revised as follows:

The Seabrook Station Fuel Oil Chemistry Program is an existing program that manages the aging effects of loss of material due to general, pitting, crevice, galvanic, and microbiologically influenced corrosion, and due to fouling in the diesel fuel oil systems for the Emergency Diesel Generators, diesel engine driven Fire Protection system pumps, and the Auxiliary Boiler fuel oil system, through monitoring and maintenance of diesel fuel oil quality. ***The program also manages loss of coating integrity due to blistering, cracking, flaking, peeling, or physical damage of Service Level III (augmented) internal coatings***. The program complies with the Seabrook Station Technical Specifications and associated Technical Requirements.

4. In LRA Section B.2.1.25, Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components, the1st paragraph of the program description has been revised as follows:

The Seabrook Station Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program is a new program that will manage the aging effects of (a) cracking due to stress corrosion cracking, (b) loss of material due to general, pitting, crevice, galvanic and microbiologically influenced corrosion and due to fouling (c) loss of material

due to erosion and wear (d) reduction of heat transfer due to fouling, ~~and~~ (e) hardening and loss of strength due to elastomer degradation***, and f) loss of coating integrity due to blistering, cracking, flaking, peeling, or physical damage of Service Level III (augmented) internal coatings.*** This program will consist of inspections of the internal surfaces of aluminum, cast austenitic stainless steel, copper alloy, copper alloy >15% Zn, elastomer, galvanized steel, gray cast iron, nickel alloy, stainless steel, and steel piping, piping components, ducting and other components that are not covered by other aging management programs.

5. In LRA Sections B.2.1.11, Open-Cycle Cooling Water System, B.2.1.16, Fire Water System, B.2.1.18, Fuel Oil Chemistry, and B.2.1.25, Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components, the following has been added to the end of the program descriptions as follows:

Loss of Coating Integrity for Service Level III (augmented) Internal Coatings:

The program also manages loss of internal coating integrity due to blistering, cracking, flaking, peeling, or physical damage of Service Level III (augmented) internal coatings.

Definition of Internal Service Level III (augmented) Coatings is as follows:

All coatings applied to the internal surfaces of an in-scope component if its degradation could prevent satisfactory accomplishment of any of the functions identified under 10 CFR 54.4 (a)(1), (a)(2), or (a)(3). Service Level III (augmented) coatings are those:

a. Used in areas outside of the reactor containment whose failure could adversely affect the safety function of a safety-related SSC or,

b. Applied to the internal surfaces of in-scope components and whose failure could prevent satisfactory accomplishment of any of the functions identified under 10 CFR 54.4 (a)(3).

The term "coating" includes inorganic (e.g., zinc-based) or organic (e.g., elastomeric or polymeric) coatings, linings (e.g., rubber, cementitious), and concrete surfaces that are designed to adhere to a component to protect its surface. The terms "paint" and "linings" are considered as coatings.

The program consists of periodic visual inspections of Service Level III (augmented) internal coatings and includes:

a. Baseline visual inspections of coatings installed on the interior surfaces of in-scope components will be conducted in the 10-year period prior to the period of extended operation.

b. Subsequent inspections are based on an evaluation of the effect of a coating failure on the in-scope component's intended function, potential problems identified during prior inspections, and known service life history. Subsequent inspection intervals are established by a coating specialist. Inspection intervals however, should not exceed those shown in the below table.

Inspection Intervals for Internal Service Level III (augmented) Coatings for Tanks, Piping, and Heat Exchangers [1, 6]	
Inspection Category[2]	*Inspection Interval*
A	*6 years*[3]
B[4, 5]	*4 years*
C[5]	*Inspections occur during the next 2 refueling outage intervals*

1. Current licensing basis requirements (e.g. Generic Letter 89-13) might require more frequent inspections.

2. Inspection Categories

A. No peeling, delamination, blisters, or rusting are observed during inspections. Any cracking and flaking has been found acceptable in accordance with the acceptance criteria. No spalling in cementitious coatings.

B. Prior inspection results do not meet Inspection Category A. However, a coating specialist has determined that no remediation is required.

C. Newly installed coatings or coatings that have been repaired or replaced.

3. If the following conditions are met, the inspection interval may be extended to 12 years:

a. The identical coating material was installed with the same installation requirements in redundant trains with the same operating conditions and at least one of the trains is inspected every 6 years.

b. The coating is not in a location subject to turbulence (e.g., piping downstream of a control valve).

4. Specific locations that resulted in subsequent inspections being conducted to Inspection Category B or C are re-inspected as well as new locations.

5. When conducting inspections to Inspection Category B, if two sequential subsequent inspections demonstrate no change in coating condition, subsequent inspections may be conducted at six-year intervals.

6. Internal inspection intervals for diesel fuel storage tanks may meet either this table or if the inspection results meet Inspection Category A.

c. ***The extent of inspections is based on an evaluation of the effect of a coating failure on the in-scope component's intended function, potential problems identified during prior inspections, and known service life history. Inspection locations are selected based on susceptibility to degradation and consequences of failure.***

   - ***All accessible internal coated surfaces of in-scope tanks and heat exchangers will be inspected.***

   - ***A representative sample of internally coated piping components not less than 73 1-foot axial length circumferential segments of piping or 50% of the total length of each coating material and environment combination will be inspected. The inspection surface includes the entire inside surface of the 1-foot sample. If geometric limitations impede movement of remote or robotic inspection tools, the number of inspection segments is increased in order to cover an equivalent of 73 1-foot axial length sections. For example, if the remote tool can only be maneuvered to view 1/3 of the inside surface, then 219 feet of pipe is inspected.***

   The above listed inspection of coatings may be omitted if the degradation of coatings cannot result in downstream effects such as reduction in flow, drop in pressure, or reduction in heat transfer for in-scope components. However, inspections are performed if corrosion rates or inspection intervals have been based on the integrity of the coatings. In this case, loss of coating integrity could result in unanticipated or accelerated corrosion rates of the base metal. Alternatively, if corrosion of the base material is the only issue related to coating degradation of the component, external wall thickness measurements can be performed to confirm the acceptability of the corrosion rate of the base metal.

d. ***Coatings specialists and inspectors will be qualified in accordance with ASTM International Standards.***

e. ***Monitoring and trending includes pre-inspection reviews of the previous two inspection results and any subsequent repair activities. The review is performed by a coatings specialist and includes a list and location of all areas evidencing deterioration, a prioritization of the repair areas into areas that must be repaired before returning the system to service, areas where repair can be postponed to the next inspection, and, where possible, photographic evidence of inspection locations. When corrosion of the base material is the only issue related to coating degradation of the component, external wall thickness measurements can be used to in lieu of internal visual inspections of the coating and the corrosion rate of the base metal trended.***

f. ***Acceptance criteria are as follows:***

- ***Indications of peeling and delamination are not acceptable and the coatings are repaired or replaced. For coated surfaces that show evidence of delamination or peeling, physical testing is performed where physically possible. The test consists of destructive or nondestructive adhesion testing using ASTM International Standards. A minimum of three sample points adjacent to the defective area are tested.***

- ***Blisters are evaluated by a coating specialist. However, physical testing is conducted to ensure that the blister is completely surrounded by sound coating bonded to the surface. If coatings are credited for corrosion prevention, the component's base material in the vicinity of the blister is inspected to determine if unanticipated corrosion has occurred.***

- ***Indications such as cracking, flaking, and rusting are to be evaluated by a coating specialist.***

- ***Minor cracking and spalling of cementitious coatings is acceptable provided there is no evidence that the coating is debonding from the base material.***

- ***As applicable, wall thickness measurements meet design minimum wall requirements.***

- ***Adhesion testing results meet or exceed the degree of adhesion recommended in engineering documents specific to the coating and substrate.***

7. In LRA Sections B.2.1.11, Open-Cycle Cooling Water System, B.2.1.16, Fire Water System, and B.2.1.18, Fuel Oil Chemistry, the following new enhancement has been added to the enhancements section of the aging management programs:

   Enhancements

   Enhance the program to include visual inspection of Service Level III (augmented) internal coatings for loss of coating integrity.

C. LRA Appendix A, Section A.2, Aging Management Programs, the program descriptions have been revised as follows:

1. In LRA Section A.2.1.11, Open-Cycle Cooling Water System, the 1st paragraph has been revised as follows:

   The Open-Cycle Cooling Water System Program manages the aging effects of hardening and loss of strength, loss of material, ~~and~~ reduction of heat transfer***, and loss of coating integrity of Service Level III (augmented) internal coatings.***

2. In LRA Section A.2.1.16, Fire Water System, the 1st paragraph has been revised as follows:

   The Fire Water System Program manages the aging effects of loss of material, and reduction of heat transfer due to fouling of the Fire Water System components through detailed inspections via the Seabrook Station Surveillance Test Procedures. ***The program also manages loss of coating integrity of Service Level III (augmented) internal coatings.***

3. In LRA Section A.2.1.18, Fuel Oil Chemistry, the last paragraph has been revised as follows:

   Fuel Oil storage tanks are periodically drained and inspected. This inspection includes ultrasonic thickness measurements of the tank bottom surface to ensure that significant degradation has not occurred. ***The program also manages loss of coating integrity of Service Level III (augmented) internal coatings.***

4. In LRA Section A.2.1.25, Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components, the1st paragraph has been revised as follows:

   The Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program manages the aging effects of cracking, loss of material, fouling, reduction of heat transfer, ~~and~~ hardening and loss of strength***, and loss of coating integrity of Service Level III (augmented) internal coatings***. This program consists of inspections of the internal surfaces of aluminum, CASS, copper alloy, copper alloy >15% zinc, elastomer, galvanized steel, gray cast iron, nickel alloy, stainless steel, and steel piping, piping components, ducting and other components that are not covered by other aging management programs.

D. LRA Appendix A, Section A.3, License Renewal Commitment List, new commitments #79, #80, #81, and #82 have been added as follows:

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
79.	***Open-Cycle Cooling Water System***	***Enhance the program to include visual inspection of Service Level III (augmented) internal coatings for loss of coating integrity.***	*A.2.1.11*	***Within 10 years prior to the period of extended operation***
80.	***Fire Water System***	***Enhance the program to include visual inspection of Service Level III (augmented) internal coatings for loss of coating integrity.***	*A.2.1.16*	***Within 10 years prior to the period of extended operation***
81.	***Fuel Oil Chemistry***	***Enhance the program to include visual inspection of Service Level III (augmented) internal coatings for loss of coating integrity.***	*A.2.1.18*	***Within 10 years prior to the period of extended operation***
82.	***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	***Enhance the program to include visual inspection of Service Level III (augmented) internal coatings for loss of coating integrity.***	*A.2.1.25*	***Within 10 years prior to the period of extended operation***

Enclosure 3 to SBK-L-14037

LRA Appendix A - Final Safety Report Supplement Table A.3,
License Renewal Commitment List Updated to Reflect Changes to Date

A.3 LICENSE RENEWAL COMMITMENT LIST

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
1.	PWR Vessel Internals	An inspection plan for Reactor Vessel Internals will be submitted for NRC review and approval.	A.2.1.7	Program to be implemented prior to the period of extended operation. Inspection plan to be submitted to NRC not later than 2 years after receipt of the renewed license or not less than 24 months prior to the period of extended operation, whichever comes first.
2.	Closed-Cycle Cooling Water	Enhance the program to include visual inspection for cracking, loss of material and fouling when the in-scope systems are opened for maintenance.	A.2.1.12	Prior to the period of extended operation.
3.	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	Enhance the program to monitor general corrosion on the crane and trolley structural components and the effects of wear on the rails in the rail system.	A.2.1.13	Prior to the period of extended operation.
4.	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	Enhance the program to list additional cranes for monitoring.	A.2.1.13	Prior to the period of extended operation.
5.	Compressed Air Monitoring	Enhance the program to include an annual air quality test requirement for the Diesel Generator compressed air sub system.	A.2.1.14	Prior to the period of extended operation.
6.	Fire Protection	Enhance the program to perform visual inspection of penetration seals by a fire protection qualified inspector.	A.2.1.15	Prior to the period of extended operation.
7.	Fire Protection	Enhance the program to add inspection requirements such as spalling, and loss of material caused by freeze-thaw, chemical attack, and reaction with aggregates by qualified inspector.	A.2.1.15	Prior to the period of extended operation.
8.	Fire Protection	Enhance the program to include the performance of visual inspection of fire-rated doors by a fire protection qualified inspector.	A.2.1.15	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
9.	Fire Water System	Enhance the program to include NFPA 25 ***(2011 Edition)*** guidance for "where sprinklers have been in place for 50 years, they shall be replaced or representative samples from one or more sample areas shall be submitted to a recognized testing laboratory for field service testing".	A.2.1.16	Prior to the period of extended operation.
10.	Fire Water System	Enhance the program to include the performance of periodic flow testing of the fire water system in accordance with the guidance of NFPA 25 ***(2011 Edition)***.	A.2.1.16	Prior to the period of extended operation.
11.	Fire Water System	Enhance the program to include the performance of periodic visual or volumetric inspection of the internal surface of the fire protection system upon each entry to the system for routine or corrective maintenance ***to evaluate wall thickness and inner diameter of the fire protection piping ensuring that corrosion product buildup will not result in flow blockage due to fouling. Where surface irregularities are detected, follow-up volumetric examinations are performed***. These inspections will be documented and trended to determine if a representative number of inspections have been performed prior to the period of extended operation. If a representative number of inspections have not been performed prior to the period of extended operation, focused inspections will be conducted. These inspections will be performed within ten years prior to the period of extended operation.	A.2.1.16	Within ten years prior to the period of extended operation.
12.	Aboveground Steel Tanks	Enhance the program to include components and aging effects required by the Aboveground Steel Tanks ***and to perform visual, surface, and volumetric examinations of the outside and inside surfaces for managing the aging effects of loss of material and cracking***.	A.2.1.17	~~Prior to the period of extended operation.~~ ***Within 10 years prior to the period of extended operation.***
13.	~~Aboveground Steel Tanks~~ ***Fire Water System***	Enhance the program to ***perform exterior inspection of the fire water storage tanks annually for signs of degradation and*** include an ultrasonic inspection and evaluation of the internal bottom surface of the two Fire Protection Water Storage Tanks per the guidance provided ***in NFPA 25 (2011 Edition)***.	~~A.2.1.17~~ ***A.2.1.16***	Within ten years prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
14.	Fuel Oil Chemistry	Enhance program to add requirements to 1) sample and analyze new fuel deliveries for biodiesel prior to offloading to the Auxiliary Boiler fuel oil storage tank and 2) periodically sample stored fuel in the Auxiliary Boiler fuel oil storage tank.	A.2.1.18	Prior to the period of extended operation.
15.	Fuel Oil Chemistry	Enhance the program to add requirements to check for the presence of water in the Auxiliary Boiler fuel oil storage tank at least once per quarter and to remove water as necessary.	A.2.1.18	Prior to the period of extended operation.
16.	Fuel Oil Chemistry	Enhance the program to require draining, cleaning and inspection of the diesel fire pump fuel oil day tanks on a frequency of at least once every ten years.	A.2.1.18	Prior to the period of extended operation.
17.	Fuel Oil Chemistry	Enhance the program to require ultrasonic thickness measurement of the tank bottom during the 10-year draining, cleaning and inspection of the Diesel Generator fuel oil storage tanks, Diesel Generator fuel oil day tanks, diesel fire pump fuel oil day tanks and auxiliary boiler fuel oil storage tank.	A.2.1.18	Prior to the period of extended operation.
18.	Reactor Vessel Surveillance	Enhance the program to specify that all pulled and tested capsules, unless discarded before August 31, 2000, are placed in storage.	A.2.1.19	Prior to the period of extended operation.
19.	Reactor Vessel Surveillance	Enhance the program to specify that if plant operations exceed the limitations or bounds defined by the Reactor Vessel Surveillance Program, such as operating at a lower cold leg temperature or higher fluence, the impact of plant operation changes on the extent of Reactor Vessel embrittlement will be evaluated and the NRC will be notified.	A.2.1.19	Prior to the period of extended operation.
20.	Reactor Vessel Surveillance	Enhance the program as necessary to ensure the appropriate withdrawal schedule for capsules remaining in the vessel such that one capsule will be withdrawn at an outage in which the capsule receives a neutron fluence that meets the schedule requirements of 10 CFR 50 Appendix H and ASTM E185-82 and that bounds the 60-year fluence, and the remaining capsule(s) will be removed from the vessel unless determined to provide meaningful metallurgical data.	A.2.1.19	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
21.	Reactor Vessel Surveillance	Enhance the program to ensure that any capsule removed, without the intent to test it, is stored in a manner which maintains it in a condition which would permit its future use, including during the period of extended operation.	A.2.1.19	Prior to the period of extended operation.
22.	One-Time Inspection	Implement the One Time Inspection Program.	A.2.1.20	Within ten years prior to the period of extended operation.
23.	Selective Leaching of Materials	Implement the Selective Leaching of Materials Program. The program will include a one-time inspection of selected components where selective leaching has not been identified and periodic inspections of selected components where selective leaching has been identified.	A.2.1.21	Within five years prior to the period of extended operation.
24.	Buried Piping And Tanks Inspection	Implement the Buried Piping And Tanks Inspection Program.	A.2.1.22	Within ten years prior to entering the period of extended operation
25.	One-Time Inspection of ASME Code Class 1 Small Bore-Piping	Implement the One-Time Inspection of ASME Code Class 1 Small Bore-Piping Program.	A.2.1.23	Within ten years prior to the period of extended operation.
26.	External Surfaces Monitoring	Enhance the program to specifically address the scope of the program, relevant degradation mechanisms and effects of interest, the refueling outage inspection frequency, ~~the inspections of opportunity for possible corrosion under insulation,~~ the training requirements for inspectors and the required periodic reviews to determine program effectiveness.	A.2.1.24	Prior to the period of extended operation.
27.	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	Implement the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program.	A.2.1.25	Prior to the period of extended operation.
28.	Lubricating Oil Analysis	Enhance the program to add required equipment, lube oil analysis required, sampling frequency, and periodic oil changes.	A.2.1.26	Prior to the period of extended operation.
29.	Lubricating Oil Analysis	Enhance the program to sample the oil for the Reactor Coolant pump oil collection tanks.	A.2.1.26	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
30.	Lubricating Oil Analysis	Enhance the program to require the performance of a one-time ultrasonic thickness measurement of the lower portion of the Reactor Coolant pump oil collection tanks prior to the period of extended operation.	A.2.1.26	Prior to the period of extended operation.
31.	ASME Section XI, Subsection IWL	Enhance procedure to include the definition of "Responsible Engineer".	A.2.1.28	Prior to the period of extended operation.
32.	Structures Monitoring Program	Enhance procedure to add the aging effects, additional locations, inspection frequency and ultrasonic test requirements.	A.2.1.31	Prior to the period of extended operation.
33.	Structures Monitoring Program	Enhance procedure to include inspection of opportunity when planning excavation work that would expose inaccessible concrete.	A.2.1.31	Prior to the period of extended operation.
34.	Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Implement the Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program.	A.2.1.32	Prior to the period of extended operation.
35.	Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits	Implement the Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits program.	A.2.1.33	Prior to the period of extended operation.
36.	Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Implement the Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program.	A.2.1.34	Prior to the period of extended operation.
37.	Metal Enclosed Bus	Implement the Metal Enclosed Bus program.	A.2.1.35	Prior to the period of extended operation.
38.	Fuse Holders	Implement the Fuse Holders program.	A.2.1.36	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
39.	Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Implement the Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program.	A.2.1.37	Prior to the period of extended operation.
40.	345 KV SF_6 Bus	Implement the 345 KV SF_6 Bus program.	A.2.2.1	Prior to the period of extended operation.
41.	Metal Fatigue of Reactor Coolant Pressure Boundary	Enhance the program to include additional transients beyond those defined in the Technical Specifications and UFSAR.	A.2.3.1	Prior to the period of extended operation.
42.	Metal Fatigue of Reactor Coolant Pressure Boundary	Enhance the program to implement a software program, to count transients to monitor cumulative usage on selected components.	A.2.3.1	Prior to the period of extended operation.
43.	Pressure –Temperature Limits, including Low Temperature Overpressure Protection Limits	Seabrook Station will submit updates to the P-T curves and LTOP limits to the NRC at the appropriate time to comply with 10 CFR 50 Appendix G.	A.2.4.1.4	The updated analyses will be submitted at the appropriate time to comply with 10 CFR 50 Appendix G, Fracture Toughness Requirements.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
44.	Environmentally-Assisted Fatigue Analyses (TLAA)	NextEra Seabrook will perform a review of design basis ASME Class 1 component fatigue evaluations to determine whether the NUREG/CR-6260-based components that have been evaluated for the effects of the reactor coolant environment on fatigue usage are the limiting components for the Seabrook plant configuration. If more limiting components are identified, the most limiting component will be evaluated for the effects of the reactor coolant environment on fatigue usage. If the limiting location identified consists of nickel alloy, the environmentally-assisted fatigue calculation for nickel alloy will be performed using the rules of NUREG/CR-6909. (1) Consistent with the Metal Fatigue of Reactor Coolant Pressure Boundary Program Seabrook Station will update the fatigue usage calculations using refined fatigue analyses, if necessary, to determine acceptable CUFs (i.e., less than 1.0) when accounting for the effects of the reactor water environment. This includes applying the appropriate Fen factors to valid CUFs determined from an existing fatigue analysis valid for the period of extended operation or from an analysis using an NRC-approved version of the ASME code or NRC-approved alternative (e.g., NRC-approved code case). (2) If acceptable CUFs cannot be demonstrated for all the selected locations, then additional plant-specific locations will be evaluated. For the additional plant-specific locations, if CUF, including environmental effects is greater than 1.0, then Corrective Actions will be initiated, in accordance with the Metal Fatigue of Reactor Coolant Pressure Boundary Program, B.2.3.1. Corrective Actions will include inspection, repair, or replacement of the affected locations before exceeding a CUF of 1.0 or the effects of fatigue will be managed by an inspection program that has been reviewed and approved by the NRC (e.g., periodic non-destructive examination of the affected locations at inspection intervals to be determined by a method accepted by the NRC).	A.2.4.2.3	At least two years prior to entering the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
45.	Number Not Used			
46.	Protective Coating Monitoring and Maintenance	Enhance the program by designating and qualifying an Inspector Coordinator and an Inspection Results Evaluator.	A.2.1.38	Prior to the period of extended operation.
47.	Protective Coating Monitoring and Maintenance	Enhance the program by including, "Instruments and Equipment needed for inspection may include, but not be limited to, flashlight, spotlights, marker pen, mirror, measuring tape, magnifier, binoculars, camera with or without wide angle lens, and self sealing polyethylene sample bags."	A.2.1.38	Prior to the period of extended operation.
48.	Protective Coating Monitoring and Maintenance	Enhance the program to include a review of the previous two monitoring reports.	A.2.1.38	Prior to the period of extended operation.
49.	Protective Coating Monitoring and Maintenance	Enhance the program to require that the inspection report is to be evaluated by the responsible evaluation personnel, who is to prepare a summary of findings and recommendations for future surveillance or repair.	A.2.1.38	Prior to the period of extended operation.
50.	ASME Section XI, Subsection IWE	Perform UT testing of the containment liner plate in the vicinity of the moisture barrier for loss of material.	A.2.1.27	Within the next two refueling outages, OR15 or OR16, and repeated at intervals of no more than five refueling outages.
51.	Number Not Used			
52.	ASME Section XI, Subsection IWL	Implement measures to maintain the exterior surface of the Containment Structure, from elevation -30 feet to +20 feet, in a dewatered state.	A.2.1.28	Ongoing
53.	Reactor Head Closure Studs	Replace the spare reactor head closure stud(s) manufactured from the bar that has a yield strength > 150 ksi with ones that do not exceed 150 ksi.	A.2.1.3	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
54.	Steam Generator Tube Integrity	NextEra will address the potential for cracking of the primary to secondary pressure boundary due to PWSCC of tube-to-tubesheet welds using one of the following two options: 1) Perform a one-time inspection of a representative sample of tube-to-tubesheet welds in all steam generators to determine if PWSCC cracking is present and, if cracking is identified, resolve the condition through engineering evaluation justifying continued operation or repair the condition, as appropriate, and establish an ongoing monitoring program to perform routine tube-to-tubesheet weld inspections for the remaining life of the steam generators, or 2) Perform an analytical evaluation showing that the structural integrity of the steam generator tube-to-tubesheet interface is adequately maintaining the pressure boundary in the presence of tube-to-tubesheet weld cracking, or redefining the pressure boundary in which the tube-to-tubesheet weld is no longer included and, therefore, is not required for reactor coolant pressure boundary function. The redefinition of the reactor coolant pressure boundary must be approved by the NRC as part of a license amendment request.	A.2.1.10	Complete
55.	Steam Generator Tube Integrity	Seabrook will perform an inspection of each steam generator to assess the condition of the divider plate assembly.	A.2.1.10	Within five years prior to entering the period of extended operation.
56.	Closed-Cycle Cooling Water System	Revise the station program documents to reflect the EPRI Guideline operating ranges and Action Level values for hydrazine and sulfates.	A.2.1.12	Prior to entering the period of extended operation.
57.	Closed-Cycle Cooling Water System	Revise the station program documents to reflect the EPRI Guideline operating ranges and Action Level values for Diesel Generator Cooling Water Jacket pH.	A.2.1.12	Prior to entering the period of extended operation.
58.	Fuel Oil Chemistry	Update Technical Requirement Program 5.1, (Diesel Fuel Oil Testing Program) ASTM standards to ASTM D2709-96 and ASTM D4057-95 required by the GALL XI.M30 Rev 1	A.2.1.18	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
59.	Nickel Alloy Nozzles and Penetrations	The Nickel Alloy Aging Nozzles and Penetrations program will implement applicable Bulletins, Generic Letters, and staff accepted industry guidelines.	A.2.2.3	Prior to the period of extended operation.
60.	Buried Piping and Tanks Inspection	Implement the design change replacing the buried Auxiliary Boiler supply piping with a pipe-within-pipe configuration with leak detection capability.	A.2.1.22	Prior to entering the period of extended operation.
61.	Compressed Air Monitoring Program	Replace the flexible hoses associated with the Diesel Generator air compressors on a frequency of every 10 years.	A.2.1.14	Within ten years prior to entering the period of extended operation.
62.	Water Chemistry	Enhance the program to include a statement that sampling frequencies are increased when chemistry action levels are exceeded.	A.2.1.2	Prior to the period of extended operation.
63.	Flow Induced Erosion	Ensure that the quarterly CVCS Charging Pump testing is continued during the PEO. Additionally, add a precaution to the test procedure to state that an increase in the CVCS Charging Pump mini flow above the acceptance criteria may be indicative of erosion of the mini flow orifice as described in LER 50-275/94-023.	N/A	Prior to the period of extended operation.
64.	Buried Piping and Tanks Inspection	Soil analysis shall be performed prior to entering the period of extended operation to determine the corrosivity of the soil in the vicinity of non-cathodically protected steel pipe within the scope of this program. If the initial analysis shows the soil to be non-corrosive, this analysis will be re-performed every ten years thereafter.	A.2.1.22	Prior to entering the period of extended operation.
65.	Flux Thimble Tube	Implement measures to ensure that the movable incore detectors are not returned to service during the period of extended operation.	N/A	Prior to entering the period of extended operation.
66.	Number Not Used			
67.	Structures Monitoring Program	Perform one shallow core bore in an area that was continuously wetted from borated water to be examined for concrete degradation and also expose rebar to detect any degradation such as loss of material.	A.2.1.31	No later than December 31, 2015.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
68.	Structures Monitoring Program	Perform sampling at the leakoff collection points for chlorides, sulfates, pH and iron once every three months.	A.2.1.31	~~Starting January 2014.~~ ***Quarterly Preventive Maintenance Activity Implemented***
69.	Open-Cycle Cooling Water System	Replace the Diesel Generator Heat Exchanger Plastisol PVC lined Service Water piping with piping fabricated from AL6XN material.	A.2.1.11	Prior to the period of extended operation.
70.	Closed-Cycle Cooling Water System	Inspect the piping downstream of CC-V-444 and CC-V-446 to determine whether the loss of material due to cavitation induced erosion has been eliminated or whether this remains an issue in the primary component cooling water system.	A.2.1.12	Within ten years prior to the period of extended operation.
71.	Alkali-Silica Reaction (ASR) Monitoring Program	Implement the Alkali-Silica Reaction (ASR) Monitoring Program. Testing will be performed to confirm that parameters being monitored and acceptance criteria used are appropriate to manage the effects of ASR.	A.2.1.31A	Prior to entering the period of extended operation.
72.	Flow-Accelerated Corrosion	Enhance the program to include management of wall thinning caused by mechanisms other than FAC.	A.2.1.8	Prior to entering the period of extended operation.
73.	***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	***Enhance the program to include performance of focused examinations to provide a representative sample of 20%, or a maximum of 25, of each identified material, environment, and aging effect combinations during each 10 year period in the period of extended operation.***	***A.2.1.25***	***Prior to entering the period of extended operation.***
74.	***Fire Water System***	***Enhance the program to perform sprinkler inspections annually per the guidance provided in NFPA 25 (2011 Edition). Inspection will ensure that sprinklers are free of corrosion, foreign materials, paint, and physical damage and installed in the proper orientation (e.g., upright, pendant, or sidewall). Any sprinkler that is painted, corroded, damaged, loaded, or in the improper orientation, and any glass bulb sprinkler where the bulb has emptied, will be evaluated for replacement.***	***A.2.1.16***	***Within ten years prior to the period of extended operation.***

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
75.	*Fire Water System*	*Enhance the program to conduct an inspection of piping and branch line conditions every 5 years by opening a flushing connection at the end of one main and by removing a sprinkler toward the end of one branch line for the purpose of inspecting for the presence of foreign organic and inorganic material per the guidance provided in NFPA 25 (2011 Edition).*	*A.2.1.16*	*Within ten years prior to the period of extended operation.*
76.	*Fire Water System*	*Enhance the Program to conduct the following activities annually per the guidance provided in NFPA 25 (2011 Edition).* • *main drain tests* • *deluge valve trip tests* • *fire water storage tank exterior surface inspections*	*A.2.1.16*	*Within ten years prior to the period of extended operation.*
77.	*Fire Water System*	*The Fire Water System Program will be enhanced to include the following requirements related to the main drain testing per the guidance provided in NFPA 25 (2011 Edition).* • *The requirement that if there is a 10 percent reduction in full flow pressure when compared to the original acceptance tests or previously performed tests, the cause of the reduction shall be identified and corrected if necessary.* • *Recording the time taken for the supply water pressure to return to the original static (nonflowing) pressure.*	*A.2.1.16*	*Within ten years prior to the period of extended operation.*
78.	*External Surfaces Monitoring*	*Enhance the program to include periodic inspections of in-scope insulated components for possible corrosion under insulation.*	*A.2.1.8*	*Prior to the period of extended operation.*
79.	*Open-Cycle Cooling Water System*	*Enhance the program to include visual inspection of Service Level III (augmented) internal coatings for loss of coating integrity.*	*A.2.1.11*	*Within 10 years prior to the period of extended operation.*

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
80.	*Fire Water System*	*Enhance the program to include visual inspection of Service Level III (augmented) internal coatings for loss of coating integrity.*	*A.2.1.16*	*Within 10 years prior to the period of extended operation.*
81.	*Fuel Oil Chemistry*	*Enhance the program to include visual inspection of Service Level III (augmented) internal coatings for loss of coating integrity.*	*A.2.1.18*	*Within 10 years prior to the period of extended operation.*
82.	*Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components*	*Enhance the program to include visual inspection of Service Level III (augmented) internal coatings for loss of coating integrity.*	*A.2.1.25*	*Within 10 years prior to the period of extended operation.*