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10 CFR 50
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10 CFR 54

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

Hope Creek Generating Station
Facility Operating License No. NPF-57
NRC Docket No. 50-354

Subject: Response to NRC Request for Additional Information, dated June 22, 2010, Related to Fire Protection associated with the Hope Creek Generating Station License Renewal Application

Reference: Letter from Ms. Bennett Brady (USNRC) to Mr. Thomas Joyce (PSEG Nuclear, LLC) "REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE HOPE CREEK GENERATING STATION LICENSE RENEWAL APPLICATION FOR FIRE PROTECTION (TAC NO. ME1832)", dated June 22, 2010

In the referenced letter, the NRC requested additional information related to Sections 3.3.1 and 3.3.2 of the Hope Creek Generating Station License Renewal Application (LRA). Enclosed is the response to this request for additional information.

There are no new or revised regulatory commitments contained in this letter.

If you have any questions, please contact Mr. Ali Fakhar, PSEG Manager - License Renewal, at 856-339-1646.

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JUL 19 2010

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

Executed on 7/19/10

Sincerely,

Paul J. Davison

Paul J. Davison
Vice President, Operations Support
PSEG Nuclear LLC

Enclosure A: Responses to Request for Additional Information
Enclosure B: Hope Creek Generating Station License Renewal Application (LRA) Changes Associated with Responses to RAIs

cc: S. Collins, Regional Administrator – USNRC Region I
B. Brady, Project Manager, License Renewal – USNRC
R. Ennis, Project Manager - USNRC
NRC Senior Resident Inspector – Hope Creek
P. Mulligan, Manager IV, NJBNE
L. Marabella, Corporate Commitment Tracking Coordinator
T. Devik, Hope Creek Commitment Tracking Coordinator

Enclosure A

Responses to Request for Additional Information related to Section 3.3.2 and 3.3.1 of the Hope Creek Generating Station License Renewal Application

RAI 3.3.2.2.10.6-01
RAI 3.3.2.3.10-02
RAI 3.3.2.3.10-03
RAI 3.3.1-01
RAI 3.3.1.65-01

RAI 3.3.2.2.10.6-01

Background:

SRP-LR Section 3.3.2.2.10, item 6 refers to Table 3.3.1, item 28 and GALL Report Item VII.G-9 and recommends further evaluation of a plant-specific program to manage loss of material due to pitting and crevice corrosion for copper alloy piping, piping components, and piping elements exposed to internal condensation. LRA Section 3.3.2.2.10.6 states that copper alloy fire protection system piping, piping components, and piping elements exposed to internal condensation are managed for loss of material due to pitting and crevice corrosion by the Fire Protection and Fire Water System Programs. Specifically, the Fire Protection Program is credited to manage loss of material for the copper alloy restricting orifice in LRA Table 3.3.2-10, page 3.3-187.

Issue:

The description of the Fire Protection Program in LRA Section B.2.1.17 states that the program performs visual inspections of fire barriers and the external surfaces of the halon and CO2 systems, and includes performance testing of the diesel driven fire pump fuel supply lines. The description of the Fire Protection Program does not include criteria for inspections of the internal surfaces of components which could detect loss of material for the copper alloy restricting orifice listed in Table 3.3.2-10.

Request:

Justify how the Fire Protection Program will adequately manage the aging effect of loss of material due to pitting and crevice corrosion for the copper alloy restricting orifices exposed to internal condensation in LRA Table 3.3.2-10.

PSEG Response:

The copper alloy restricting orifices referenced in Fire Protection System, Summary of Aging Management Evaluation Table 3.3.2-10 are located on sprinkler system headers that utilize fused sprinkler heads. The restricting orifices are installed in the system to allow for functional testing of system alarms. The normally closed test valve isolates the orifice from the fire protection system during normal operation. The piping and restricting orifice downstream of the test valve are not relied upon in safety analysis or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for Fire Protection (10 CFR 50.48). In addition, the piping and restricting orifice downstream of the test valve do not normally contain water and do not have a leakage boundary function for potential spatial interaction. Therefore, the restricting orifices do not have a license renewal intended function and are not within the scope of license renewal.

As discussed above, the copper alloy restricting orifices in the Fire Protection System do not have a license renewal intended function and are not subject to aging management review. LRA Table 2.3.3-10 (Components Subject to Aging Management Review), LRA Subsection 3.3.2.2.10.6, LRA Table 3.3.1 (Summary of Aging Management Evaluations for the Auxiliary Systems), and LRA Table 3.3.2-10 (Fire Protection System) are revised as shown in Enclosure B of this letter to remove the restricting orifices from the scope of license renewal.

RAI 3.3.2.3.10-02

Background:

LRA Table 3.3.2-10, Fire Protection System, states that alumina silicate fire barriers (wraps) exposed to an indoor air environment have an aging effect of change in material properties and credits the Fire Protection Program to manage this aging effect. Non-metallic fire barrier wraps are not evaluated for aging effects in the GALL Report and no inspection criteria are discussed in GALL AMP XI.M26, Fire Protection Program, regarding visual inspections for change in material properties of fire barrier wraps.

Issue:

In LRA Section B.2.1.17, the applicant stated that the Fire Protection Program performs periodic visual inspection to detect age related degradation of fire barriers. However, the LRA did not include a description of the change in material properties that will be managed by the program or the parameters that will be observed during the visual inspections of the alumina silicate fire barriers (wraps).

Request:

Describe the material properties of the aluminum silicate fire barrier wraps that will be managed by the Fire Protection Program, the parameters that will be observed during the visual inspection of the aluminum silicate fire barrier wraps, and the acceptance criteria used to evaluate the change in material properties. Justify how the visual inspections performed by the Fire Protection Program are adequate to manage the aging effect of change in material properties for alumina silicate fire barriers (wraps).

PSEG Response:

The alumina silicate fire barrier (wraps) referenced in Fire Protection System, Summary of Aging Management Evaluation Table 3.3.2-10 are assigned change in material properties as an aging effect requiring management. The fire wraps consist of a ceramic fiber mat encased in aluminum foil and held in place with mesh wire cloth and steel bands. These fire wraps are used to provide a fire barrier on ventilation ducting or bus ducting. The intent of including the change in material properties aging effect is to address possible degradation due to physical damage (e.g. tears or holes in foil) that may occur during plant activities or any other visible physical damage that may challenge the design thickness of the fire wrap.

The fire wraps are visually inspected on an 18-month frequency for physical damage, gaps in outside layer of mat, holes on outside foil, loose bands, and sagging or falling mesh wire cloth. Fire wrap for the ventilation ducts and bus ducts is considered acceptable and operable if the visually observed condition is the same as the "as designed" condition. Confirmation of satisfactory condition of the visible part of the fire wrap ensures the enclosed ceramic fiber mat is in proper functioning condition.

RAI 3.3.2.3.10-03

Background:

LRA Table 3.3.2-10, Fire Protection System Summary of Aging Management Evaluation, states that polymer hoses exposed to air-indoor - external, and air/gas - wetted internal, have no aging effects requiring management. The LRA also references plant-specific footnote 18, which states:

> The polymer (plexiglass) material located indoors and subject to an indoor air or air-gas (wetted) environment is not subject to significant aging effects. Polymer materials do not experience aging effects unless exposed to temperatures, radiation or chemicals capable of attacking the specific polymer chemical composition. Polymer materials are selected for compatibility with the environment during the design, and, if properly selected, will not experience significant degradation. Polymer (Teflon) material in this nonaggressive air environment is not expected to experience significant aging effects. This is consistent with plant operating experience.

Issue:

Although polymer hoses are not evaluated for aging effects in the GALL Report, polymers do experience aging in certain environments, including radiation environments. It is not clear to the staff where the polymer hoses listed in LRA Table 3.3.2-10 are located such that the environment is considered non-aggressive.

Request:

Explain the bounding environmental conditions used to determine that the environment is nonaggressive and the selection criteria used for the polymer hoses within the scope of license renewal.

PSEG Response:

Fire Protection Summary of Aging Management Evaluation Table 3.3.2-10 identifies polymer hoses exposed to an Air-Indoor external environment and an Air/Gas-Wetted internal environment. The specific chemical name for this polymer compound is polytetraflouroethylene (PTFE). PTFE is commonly known under the DuPont trademark name of Teflon. The PTFE hoses in question are a section of 1-inch hose and a section of ½-inch hose that extend from the quick disconnect fittings at the outlet of the initial discharge and extended discharge Halon cylinders to the quick disconnect fittings attached to the piping supplying Halon to the control room operator's console. The hoses are normally disconnected and stored on a hose rack in the main control room. The two sections of flexible hose can be seen on LR-M-22-0, Sheet 6, Location B-7.

The external environment to which the hoses are exposed is climate controlled, low radiation and non-aggressive. The internal surfaces of air or gas filled systems are assigned the environment Air/Gas-Wetted, to account for potential moisture infiltration and existence of contaminants, unless the enclosed air or gas is treated (i.e., filtered and dried air or commercial grade gas). Since the PTFE hoses are normally disconnected

the internal environment is essentially the same as the external environment but the internal environment is conservatively classified as Air/Gas-Wetted.

PTFE is resistant to aging effects associated with both Air-Indoor and Air/Gas-Wetted environments. PTFE is rated for a continuous service temperature of up to 500°F. PTFE is chemically resistant to all common solvents, acids, and bases, and is chemically inert. PTFE has a relatively low radiation damage threshold of 2×10^4 rads. However, the service location of the PTFE hoses (i.e., the main control room) is a very low radiation area, so aging effects associated with radiation damage are not applicable.

RAI 3.3.1-01

Background:

SRP-LR Table 3.3.1, item 54 recommends GALL AMP XI.M24, "Compressed Air Monitoring Program," to manage loss of material for stainless steel piping, piping components, and piping elements exposed to internal condensation within the compressed air system. LRA Table 3.3.1, item 3.3.1-54 states that the Fire Protection Program will be substituted to manage loss of material due to pitting and crevice corrosion of the stainless steel piping, piping components and piping elements exposed to wetted air in the Fire Protection System. Specifically, the Fire Protection Program is credited to manage aging for stainless steel spray nozzles in LRA Table 3.3.2-10, page 3.3-187.

SRP-LR Table 3.3.1, item 71 recommends GALL AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program", to manage loss of material for steel piping, piping components, and piping elements exposed to moist air or condensation. LRA Table 3.3.1, item 3.3.1-71 states that the Fire Protection Program will be substituted to manage loss of material due to general, pitting and crevice corrosion of the steel piping, piping components and piping elements exposed to wetted air in the Fire Protection System. Specifically, the Fire Protection Program is credited to manage aging for galvanized steel piping and components in LRA Table 3.3.2-10, page 3.3-184, and for steel spray nozzles in LRA Table 3.3.2-10, page 3.3-187.

Issue:

The Compressed Air Monitoring Program includes control of contaminants in order to limit loss of material due to corrosion, and leakage testing to detect loss of material. The "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program" includes inspections of the internal surfaces of piping and components to detect loss of material. The description of the Fire Protection Program in LRA Section B.2.1.17 does not include criteria for inspections of the internal surfaces of components or leakage testing which could detect loss of material. LRA Section B.2.1.17 states, "The program also provides for aging management of external surfaces of the Halon and carbon dioxide fire suppression system components through periodic functional tests and visual inspections for any loss of material." It is not clear to the staff how the Fire Protection Program is adequate to manage loss of material for the steel and stainless steel components for which it is credited in Table 3.3.2-10 under items 3.3.1-54 and 3.3.1-71.

Request:

Justify how the Fire Protection Program will adequately manage the aging effect of loss of material due to pitting and crevice corrosion for the various steel and stainless steel components exposed to an internal environment of air/gas – wetted discussed above.

PSEG Response:

The stainless steel spray nozzles contained in LRA Table 3.3.2-10 are part of the carbon dioxide and halon fire suppression systems. The nozzles are located in an indoor air environment and are inspected during periodic system functional testing as part of the Fire Protection aging management program. The internal surfaces of these open stainless steel nozzles are normally exposed to the same air environment as the external surfaces, however, the internal surfaces were conservatively evaluated as Air/Gas – Wetted during the aging management review process. The stainless steel carbon dioxide and halon fire suppression spray nozzles are not subject to internal condensation or wetting that could cause corrosion of the internal surfaces. Since aging effects are not expected on the internal or external surfaces of these stainless steel spray nozzles in an indoor air environment, the periodic nozzle inspection activities in the Fire Protection program are adequate to assure the component intended function is maintained consistent with the CLB for the period of extended operation.

LRA Table 3.3.2-10 is revised to change the environment for the stainless steel carbon dioxide and halon spray nozzles to an Air – Indoor (Internal) environment. As a result, there are no applicable aging effects and no required aging management program for these components. Changes to Table 3.3.2-10 can be seen below with deletions shown in strikethroughs and additions in bolded italics. For clarity, these revisions have also been included in Enclosure B.

Table 3.3.2-10 Fire Protection System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Spray Nozzles (Carbon Dioxide)	Spray	Stainless Steel	~~Air/Gas – Wetted (Internal)~~	~~Loss of Material/Pitting and Crevice Corrosion~~	~~Fire Protection~~	~~VII.D-4~~	~~3.3.1-54~~	~~E, 1~~
			Air – Indoor (Internal)	***None***	***None***	***VII.J-15***	***3.3.1-94***	***A***
Spray Nozzles (Halon)	Spray	Stainless Steel	~~Air/Gas – Wetted (Internal)~~	~~Loss of Material/Pitting and Crevice Corrosion~~	~~Fire Protection~~	~~VII.D-4~~	~~3.3.1-54~~	~~E, 1~~
			Air – Indoor (Internal)	***None***	***None***	***VII.J-15***	***3.3.1-94***	***A***

The Fire Protection halon suppression system distribution piping located in the Control Room is galvanized steel. Since the system utilizes open discharge nozzles, the distribution piping internal surface is normally exposed to the Control Room air environment. The environment inside the Control Room is temperature and humidity controlled. The halon fire suppression system is not subject to internal condensation or wetting that could cause corrosion of the internal surfaces of galvanized piping and fittings. The piping internal environment was conservatively evaluated as Air/Gas – Wetted during the aging management review process. Air – Indoor (Internal) is the more applicable environment for this piping. Therefore, an additional line item is added to LRA Table 3.3.2-10 to address galvanized steel piping and fittings in an Air – Indoor (Internal) environment. Changes to Table 3.3.2-10 can be seen below with deletions

shown in strikethroughs and additions in bolded italics. For clarity, this revision has also been included in Enclosure B.

Table 3.3.2-10 Fire Protection System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Piping and Fittings (Halon)	***Pressure Boundary***	***Galvanized Steel***	***Air – Indoor (Internal)***	***None***	***None***	***VII.J-6***	***3.3.1-92***	***A***

In order to ensure the loss of material aging effects are adequately managed for the internal surfaces of the carbon steel spray nozzles (foam) and galvanized steel piping in the Fire Protection foam system, the credited aging management program is revised from "Fire Protection" to "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components." Similarly, the credited aging management program is revised from "Fire Protection" to "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" for the carbon steel odorizer and the carbon steel piping and fittings exposed to an Air/Gas – Wetted (Internal) environment. Changes to Table 3.3.2-10 of the LRA can be seen below with deletions shown in strikethroughs and additions in bolded italics. For clarity, these revisions have also been included in Enclosure B.

Table 3.3.2-10 Fire Protection System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Odorizer	Pressure Boundary	Carbon Steel	Air/Gas - Wetted (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	~~Fire Protection~~ ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	VII.G-23	3.3.1-71	~~E, 1~~ ***A***
Piping and Fittings	Pressure Boundary	Carbon Steel	Air/Gas - Wetted (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	~~Fire Protection~~ ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	VII.G-23	3.3.1-71	~~E, 1~~ ***A***
Piping and Fittings	Pressure Boundary	Galvanized Steel	Air/Gas - Wetted (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	~~Fire Protection~~ ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	VII.G-23	3.3.1-71	~~E, 1~~ ***A***
Spray Nozzles (Foam)	Spray	Carbon Steel	Air/Gas - Wetted (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	~~Fire Protection~~ ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	VII.G-23	3.3.1-71	~~E, 1~~ ***A***

The changes described above result in impacts to other LRA sections. Therefore, LRA section 3.3.2.1.10 (Fire Protection System), LRA Table 3.3.1 (Summary of Aging Management Evaluations for the Auxiliary Systems), and LRA Table 3.3.2-10 (Fire Protection System) are revised as shown in Enclosure B of this letter.

RAI 3.3.1.65-01

Background:

LRA Table 3.3.1, line item 3.3.1-65 addresses reinforced concrete structural fire barriers (e.g., walls, ceilings and floors) exposed to air – indoor uncontrolled with an aging effect of concrete cracking and spalling due to aggressive chemical attack and reaction with aggregates. In the discussion column for line item 3.3.1-65, the LRA states that this item is not applicable because these concrete aging effects and mechanisms are addressed with the applicable building structure in Section 3.5. Line item 3.3.1-65 is associated with GALL Report item VII.G-28, which recommends use of the Fire Protection and Structures Monitoring Programs to manage these aging effects.

Issue:

The Structures Monitoring Program performs inspection of structures such that structures are inspected at least once in 10 years, while the Fire Protection Program inspections are performed on an 18 month frequency for fire barriers outside containment. The staff reviewed Section 3.5 and could not determine where this material, environment and aging effect was addressed for fire barriers because there were no entries for these components being managed by the fire protection program.

Request:

Identify how reinforced concrete structural fire barriers (e.g., walls, ceilings and floors) exposed to air – indoor uncontrolled are adequately managed for the aging effects of cracking and spalling due to aggressive chemical attack and reaction with aggregates, given that they are not listed in any Table 2 entries in LRA Section 3.5, and the inspection interval for the Structures Monitoring Program is ten years versus the GALL recommended frequency of 18 months for fire barriers.

PSEG Response:

As stated in Table 3.3.1 on page 3.3-94 of the LRA, line item 3.3.1-65 is not applicable for Hope Creek. Hope Creek interior and above grade concrete is not exposed to aggressive chemical attack and reaction with aggregates is not an applicable aging mechanism for reasons detailed in LRA Section 3.5.2.2.2.1. However, the aging effect of concrete cracking, loss of bond, and loss of material (spalling, scaling) was considered an applicable aging effect regardless of aging mechanism. For this reason, LRA Table 3.3.2-10 contains the component type fire barriers (walls, ceilings and floors), exposed to an Air – Indoor environment, susceptible to cracking, loss of bond, and loss of material (spalling, scaling), aligned to Table 1 Item 3.5.1-23 and managed by the Structures Monitoring Program.

During review of information in support of the response to this RAI, it was identified that a line item crediting the Fire Protection program for the fire barriers (walls, ceilings and floors) component type was inadvertently omitted from the Summary of Aging Management Evaluation Table 3.3.2-10 for the Fire Protection System. The addition of the Fire Protection program to manage the effects of aging for this component type meets the GALL recommended inspection frequency for reinforced concrete fire barriers. LRA Table 3.3.2-10, on page 3.3-179 of the LRA, is revised to add the Fire Protection

program as a credited aging management program, as shown below with additions in bolded italics. For clarity, this revision has also been included in Enclosure B.

Table 3.3.2-10 Fire Protection System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Fire Barriers (Walls, Ceilings and Floors)	***Fire Barrier***	***Reinforced Concrete***	***Air - Indoor***	***Cracking, Loss of Bond, and Loss of Material (Spalling, Scaling)/Corrosion of Embedded Steel***	***Fire Protection***	***III.A3-9***	***3.5.1-23***	***E, 6***
Fire Barriers (Walls, Ceilings and Floors)	Fire Barrier	Reinforced Concrete	Air - Indoor	Cracking, Loss of Bond, and Loss of Material (Spalling, Scaling)/Corrosion of Embedded Steel	Structures Monitoring Program	III.A3-9	3.5.1-23	A

Although the above line item crediting the Fire Protection program was inadvertently omitted, the second paragraph of the Appendix B Program Description for Fire Protection, B.2.1.17 on page B-86 of the LRA, specifies that visual examinations for the fire barrier walls, ceilings and floors in structures within the scope of license renewal are performed on a frequency of once every 18 months. In addition, as stated in Enhancement 1 to the Fire Protection program, the program will be enhanced to provide additional inspection guidance to identify degradation of fire barrier walls, ceilings, and floors for aging effects such as cracking, spalling, and loss of material.

Therefore, the aging effects of cracking and spalling for reinforced concrete fire barriers (walls, ceilings and floors) exposed to Air – Indoor will be properly managed by the Fire Protection and Structures Monitoring aging management programs through the period of extended operation.

Enclosure B

Hope Creek Generating Station License Renewal Application (LRA) Changes Associated with Responses to RAIs 3.3.2.2.10.6-01, 3.3.1-01, and 3.3.1.65-01

The PSEG responses to RAIs 3.3.2.2.10.6-01, 3.3.1-01, and 3.3.1.65-01 have resulted in several changes to the LRA. The affected LRA Section and Enclosure pages for the associated LRA Section markups are identified below. For clarity, portions of the original RAI response are repeated in this Enclosure. Added text is shown in ***Bold Italics***, and deletions are shown with strikethrough text.

As a result of the response to RAI 3.3.2.2.10.6-01 provided in Enclosure A of this letter, the Fire Protection System Components Subject to Aging Management Review Table 2.3.3-10 on page 2.3-141 of the LRA is revised as follows:

Table 2.3.3-10 **Fire Protection System**
Components Subject to Aging Management Review

Component Type	Intended Function
~~Restricting Orifices~~	~~Pressure Boundary~~
~~Restricting Orifices~~	~~Throttle~~

As a result of the response to RAI 3.3.1-01, the list of aging management programs credited for managing aging effects for the Fire Protection System components on page 3.3-15 of the LRA is revised as follows:

3.3.2.1.10 Fire Protection System

Aging Management Programs

The following aging management programs manage the aging effects for the Fire Protection System components:

- ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.1.26)***

As a result of the response to RAI 3.3.2.2.10.6-01, LRA Subsection 3.3.2.2.10.6 on pages 3.3-50 through 3.3-51 of the LRA of is revised as follows:

6. *Loss of material due to pitting and crevice corrosion could occur for copper alloy fire protection system piping, piping components, and piping elements exposed to internal condensation. The GALL Report recommends further evaluation of a plant-specific aging management program to ensure that these aging effects are adequately managed. Acceptance criteria are described in Branch Technical Position RLSB-1.*

   Hope Creek will implement the ~~Fire Protection program, B.2.1.17, and~~ Fire Water System program, B.2.1.18, to manage loss of material due to pitting and crevice corrosion of the copper alloy fire protection sprinkler heads ~~and restricting orifices~~ exposed to wetted air in the Fire Protection System. The ~~Fire Protection program and~~ Fire Water System program include**s** periodic system and component inspections that include inspection of the sprinkler heads ~~and restricting orifices~~ as part of the fire protection system surveillance activities. In addition, the Fire Water System program includes 50-year sprinkler head inspections using the guidance of NFPA-25. The ~~Fire Protection program and~~ Fire Water System program ~~are~~ ***is*** described in Appendix B.

As a result of the response to RAI 3.3.2.2.10.6-01, the Summary of Aging Management Evaluations Table 3.3.1, Item 3.3.1-28 on pages 3.3-69 is revised as shown below. In addition, as a result of the response to RAI 3.3.1-01, the Summary of Aging Management Evaluations Table 3.3.1, Item 3.3.1-54 and Item 3.3.1-71 on pages 3.3-85 and 3.3-97 of the LRA are also revised as shown below.

Table 3.3.1 Summary of Aging Management Evaluations for the Auxiliary Systems

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	The ~~Fire Protection program, B.2.1.17, and~~ Fire Water System program, B.2.1.18, will be used to manage loss of material due to pitting and crevice corrosion of the copper alloy fire protection sprinkler heads ~~and restricting orifices~~ exposed to wetted air. See subsection 3.3.2.2.10.6.
3.3.1-54	Stainless steel compressed air system piping, piping components, and piping elements exposed to internal condensation	Loss of material due to pitting and crevice corrosion	Compressed Air Monitoring	No	Consistent with NUREG-1801. The Compressed Air Monitoring program, B.2.1.16, will be used to manage loss of material due to general, pitting and crevice corrosion of the stainless steel piping, piping components and piping elements exposed to wetted air/gas in the Primary Containment Instrument Gas System. Components in the Containment Inerting and Purging System, ~~Fire Protection System~~, Hardened Torus Vent System, Leak Detection and Radiation Monitoring System, Primary Containment Leakage Rate Testing System, Process and Post-Accident Sampling Systems, Standby Diesel Generators and Auxiliary Systems and Torus Water Cleanup System have been aligned to this item number based on material, environment and aging effect. The Periodic Inspection program, B.2.2.2,

Table 3.3.1 Summary of Aging Management Evaluations for the Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
					and Fire Protection program, B.2.1.17, will be substituted to manage loss of material due to pitting and crevice corrosion of the stainless steel piping, piping components and piping elements exposed to wetted air/gas in these systems.
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. The Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components program, B.2.1.26, will be used to manage loss of material due to general, pitting, and crevice corrosion of the steel piping, piping components and piping elements exposed to wetted air for the Containment Inerting and Purging System, Control Area Chilled Water System, Control Rod Drive System, Control Room and Control Area HVAC Systems, Fire Protection System, Fuel Pool Cooling and Cleanup System, Hardened Torus Vent System, Leak Detection and Radiation Monitoring System, Primary Containment Leakage Rate Testing System, Process and Post-Accident Sampling Systems, Reactor Building Ventilation System, Remote Shutdown Panel Room HVAC System and Standby Diesel Generators and Auxiliary Systems. ~~Components in the Fire Protection System have been aligned to this item number based on material, environment and aging effect. The Fire Protection program will be substituted to manage loss of material due to general, pitting and crevice corrosion of the steel piping, piping components and~~

Table 3.3.1 Summary of Aging Management Evaluations for the Auxiliary Systems

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
					~~piping elements exposed to wetted air for the Fire Protection System.~~

As a result of the responses to RAI's 3.3.2.2.10.6-01, 3.3.1-01, and 3.3.1-65-01, the Summary of Aging Management Evaluation Table 3.3.2-10 for the Fire Protection System on pages 3.3-179 through 3.3-187 of the LRA is revised as follows.

Table 3.3.2-10 Fire Protection System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Fire Barriers (Walls, Ceilings and Floors)	***Fire Barrier***	***Reinforced Concrete***	***Air - Indoor***	***Cracking, Loss of Bond, and Loss of Material (Spalling, Scaling)/ Corrosion of Embedded Steel***	***Fire Protection***	***III.A3-9***	***3.5.1-23***	***E, 6***
Odorizer	Pressure Boundary	Carbon Steel	Air/Gas - Wetted (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	~~Fire Protection~~ ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	VII.G-23	3.3.1-71	~~E, 1~~ ***A***
Piping and Fittings	Pressure Boundary	Carbon Steel	Air/Gas - Wetted (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	~~Fire Protection~~ ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	VII.G-23	3.3.1-71	~~E, 1~~ ***A***
Piping and Fittings (Halon)	***Pressure Boundary***	***Galvanized Steel***	***Air – Indoor (Internal)***	***None***	***None***	***VII.J-6***	***3.3.1-92***	***A***
Piping and Fittings	Pressure Boundary	Galvanized Steel	Air/Gas - Wetted (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	~~Fire Protection~~ ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	VII.G-23	3.3.1-71	~~E, 1~~ ***A***
~~Restricting Orifices~~	~~Pressure Boundary~~	~~Copper Alloy with less than 15% Zinc~~	~~Air - Indoor (External)~~	~~None~~	~~None~~	~~V.F-3~~	~~3.2.1-53~~	~~A~~
~~Restricting Orifices~~	~~Pressure Boundary~~	~~Copper Alloy with less than 15% Zinc~~	~~Air/Gas - Wetted (Internal)~~	~~Loss of Material/Pitting and Crevice Corrosion~~	~~Fire Protection~~	~~VII.G-9~~	~~3.3.1-28~~	~~E, 2~~
~~Restricting Orifices~~	~~Throttle~~	~~Copper Alloy with less than 15% Zinc~~	~~Air - Indoor (External)~~	~~None~~	~~None~~	~~V.F-3~~	~~3.2.1-53~~	~~A~~

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
~~Restricting Orifices~~	~~Throttle~~	~~Copper Alloy with less than 15% Zinc~~	~~Air/Gas - Wetted (Internal)~~	~~Loss of Material/Pitting and Crevice Corrosion~~	~~Fire Protection~~	~~VII.G-9~~	~~3.3.1-28~~	~~E, 2~~
Spray Nozzles (Carbon Dioxide)	Spray	Stainless Steel	~~Air/Gas - Wetted (Internal)~~ ***Air – Indoor (Internal)***	~~Loss of Material/Pitting and Crevice Corrosion~~ ***None***	~~Fire Protection~~ ***None***	~~VII.D-4~~ ***VII.J-15***	~~3.3.1-54~~ ***3.3.1-94***	~~E, 1~~ ***A***
Spray Nozzles (Foam)	Spray	Carbon Steel	Air/Gas - Wetted (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	~~Fire Protection~~ ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components***	VII.G-23	3.3.1-71	~~E, 1~~ ***A***
Spray Nozzles (Halon)	Spray	Stainless Steel	~~Air/Gas - Wetted (Internal)~~ ***Air – Indoor (Internal)***	~~Loss of Material/Pitting and Crevice Corrosion~~ ***None***	~~Fire Protection~~ ***None***	~~VII.D-4~~ ***VII.J-15***	~~3.3.1-54~~ ***3.3.1-94***	~~E, 1~~ ***A***

Plant Specific Notes:

2. ***Not Used.*** ~~NUREG-1801 specifies a plant-specific program. The Fire Protection program is used to manage the aging effect(s) applicable to this component type, material, and environment combination.~~