Constellation Energy
Nine Mile Point Nuclear Station

P.O. Box 63
Lycoming, New York 13093

December 17, 2004
NMP1L 1899

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

SUBJECT: Nine Mile Point Units 1 and 2
Docket Nos. 50-220 and 50-410
Facility Operating License Nos. DPR-63 and NPF-69

License Renewal Application – Responses to NRC Requests for Additional Information Regarding Fire Detection and Protection Systems (TAC Nos. MC0691 and MC0692)

Gentlemen:

By letter dated May 26, 2004, Nine Mile Point Nuclear Station, LLC (NMPNS) submitted an application to renew the operating licenses for Nine Mile Point Units 1 and 2.

In a letter dated November 17, 2004, the NRC requested additional information regarding the fire detection and protection systems that are described in Sections 2.3.3.A.9, 2.3.3.B.13, and 3.3 of the License Renewal Application. The NMPNS responses to these requests for additional information are provided in Attachment 1. This letter contains no new regulatory commitments.

If you have any questions about this submittal, please contact Peter Mazzaferro, NMPNS License Renewal Project Manager, at (315) 349-1019.

Very truly yours,

James A. Spina
Vice President Nine Mile Point

JAS/DEV/jm

A107

STATE OF NEW YORK :
: TO WIT:
COUNTY OF OSWEGO :

I, James A. Spina, being duly sworn, state that I am Vice President Nine Mile Point, and that I am duly authorized to execute and file this supplemental information on behalf of Nine Mile Point Nuclear Station, LLC. To the best of my knowledge and belief, the statements contained in this submittal are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other Nine Mile Point employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

Subscribed and sworn before me, a Notary Public in and for the State of New York and County of Oswego, this 17th day of December, 2004.

WITNESS my Hand and Notarial Seal:

Notary Public

My Commission Expires: 12/17/04
Date

SANDRA A. OSWALD
Notary Public, State of New York
No. 01OS6032276
Qualified in Oswego County
Commission Expires 10/25/05

Attachment:
1. Responses to NRC Requests for Additional Information (RAI) Regarding the Fire Detection and Protection Systems Described in Sections 2.3.3.A.9, 2.3.3.B.13, and 3.3 of the License Renewal Application

cc: Mr. S. J. Collins, NRC Regional Administrator, Region I
Mr. G. K. Hunegs, NRC Senior Resident Inspector
Mr. P. S. Tam, Senior Project Manager, NRR
Mr. N. B. Le, License Renewal Project Manager, NRR
Mr. J. P. Spath, NYSERDA

ATTACHMENT 1

Nine Mile Point Nuclear Station

Responses to NRC Requests for Additional Information (RAI)

Regarding the Fire Detection and Protection Systems Described in

Sections 2.3.3.A.9, 2.3.3.B.13, and 3.3 of the License Renewal Application

This attachment provides Nine Mile Point Nuclear Station, LLC (NMPNS) responses to the requests for additional information contained in the NRC letter dated November 17, 2004, regarding fire detection and protection systems. For each identified License Renewal Application (LRA) section, the NRC RAI is repeated, followed by the NMPNS response for Nine Mile Point Unit 1 (NMP1) and/or Nine Mile Point Unit 2 (NMP2), as applicable. Revisions to the LRA are described where appropriate. The revisions are highlighted by shading unless otherwise noted.

LRA Section 2.3.3.A.9, NMP1 Fire Detection and Protection System

RAI 2.3.3.A.9-1

LRA Section 2.3.3.A.9 references LR drawings LR-18030-C, Sheets 2 through 9. The FP water system drawings are numbered LR-18030-0. Verify the drawing numbers LR-18030-0, Sheets 2-9 are the correct LR drawings.

Response

Drawing LR-18030-0, Sheets 2 through 9, are the correct License Renewal (LR) drawings. The "-0" should have been "-C." This was a drafting error.

RAI 2.3.3.A.9-2

LR drawing LR-18030-0, Sheet 2 shows foam water systems 11, 12, 13, 14, and 15 within the scope of license renewal and subject to an AMR, including the foam solution supply piping. However, the LR drawing shows the foam tank and pumps not in the scope of license renewal. Additionally, the foam tanks and pumps are shown disconnected from the foam water system supply piping. The UFSAR has no reference to these foam water systems. Provide the basis for excluding the foam tank and pumps from the scope of license renewal and from being subject to an AMR, since they are necessary for the function of the foam water systems which are shown as in scope of license renewal.

Response

Drawing LR-18030-C, Sheet 2, incorrectly identifies portions of the Foam subsystem as in-scope and subject to aging management review (AMR). The only portions that are in-scope and subject to AMR are the connections from the fire water headers up to the closed valves to the Foam subsystem.

LRA Section 2.3.3.A.9 correctly describes the NMP1 Fire Detection and Protection system as credited for compliance with 10 CFR 50.48 and, therefore, 10 CFR 54. The Foam subsystem is not included in this section since it is retired in place and non-functional. The Foam subsystem is not within the scope of LR for NMP1.

RAI 2.3.3.A.9-3

LR drawing LR-18030-0, Sheet 6 (at location A2) shows sprinkler system SP-9069 is in scope of license renewal and subject to an AMR, except for the womens locker room. Areas within scope of license renewal include Admin Building, Lunch room and Wash Area and New Locker Room and Shops. Identify the basis for excluding a portion of SP-9069 from the scope of license renewal, since the rest of the system is in scope and subject to an AMR.

Response

Drawing LR-18030-C, Sheet 6, depicting portions of the fire water system in the Administration Building as being in-scope and subject to AMR, is incorrect.

LRA Section 2.3.3.A.9 properly describes the portion of the fire water system as in-scope and subject to AMR as "...the connecting fire water supply piping and valves from the pump discharge header to the Reactor Building and Turbine Building fire zones [excluding supplies to non-critical areas, (e.g., storage areas, changing rooms, locker rooms)]." The fire water system in the Administration Building is provided for commercial purposes and is not credited for compliance with 10 CFR 50.48. As described in NMP1 Updated Final Safety Analysis Report (UFSAR) Appendix 10A, Section 3.10, the only safety-related equipment located in the Administration Building is a dc power board located in the foam room. This area is protected by detection and alarm. There is no fire water suppression to this room. This UFSAR section further states that a fire in the Administration Building will not result in the loss of capability to achieve safe shutdown and there are no sources of radioactivity in the building. Therefore, the portion of the fire water system located in the Administration Building is not in-scope for LR and is not subject to AMR.

RAI 2.3.3.A.9-4

LR drawing LR-18030-0, Sheet 6 (at locations B4, C4, D, and E4) and LR-18030-0, Sheet 8 (at locations B1 and D4), shows pneumatic heat actuated devices (HADs) that actuate water spray systems. Although the water spray systems with which the HADs are associated are shown within the scope of license renewal and subject to an AMR, the HADs themselves are excluded from an AMR. These devices are thin-walled, bulb-shaped metal chambers connected to the

releasing chamber by metal tubing. These devices are essential for the actuation of the in scope water spray systems and are passive, long-lived components. Explain the apparent exclusion of these HADs from the scope of license renewal and from requiring an AMR.

Response

Those heat actuated devices (HADs) associated with in-scope deluge valves are also in-scope and subject to AMR. On drawing LR-18030-C, Sheet 6 (at locations B4 and C4), these are the HADs for valves 100-518 and 100-519. The fire water lines containing these valves provide protection for the NMP1 reserve transformers that are credited for compliance with 10 CFR 50.48. These HADs are also shown on drawing LR-18030-C, Sheet 8, at location D4.

The remaining HADs shown on drawing LR-18030-C, Sheets 6 and 8, are not in-scope for LR and are not subject to AMR since their respective deluge valves are not credited for compliance with 10 CFR 50.48. The deluge valves (100-520 and 100-521) associated with these HADs are incorrectly shown on the drawing as in-scope and subject to AMR. The deluge valves associated with these HADs provide fire suppression for the Station Service Transformer and the Main Transformer (to the grid). Neither of these transformers is safety-related nor supports electrical loads for safe shutdown of the plant.

At location D5 on LR-18030-0, Sh. 6, there should be a boundary flag on the downstream side of valve 100-84 that indicates solid blue toward the downstream piping (pointing upward) and LR-FDP toward the valve (pointing downward). All piping and components on the downstream side of valve 100-84 should be shown in black as not within scope of LR and subject to AMR. Additionally, at location A/B-1/2 on drawing LR-18030, Sh. 8, all of the piping and components for that "Detail F" are associated with these deluge valves and should be shown all in black with no LR boundary flags.

LRA Revisions

LRA Table 2.3.3.A.9-1 (page 2.3-81) is revised to add the in-scope HADs, as follows:

Component Type	Intended Functions
Heat-Actuated Devices	NSR Functional Support

LRA Table 3.3.2.A-8 is revised to add a row for the in-scope HADs and associated tubing, as shown on the following page.

Table 3.3.2.A-8 Auxiliary Systems
NMP1 Fire Detection and Protection System – Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
Heat Actuated Devices and associated tubing	NFS	Copper Alloys (Zinc >15%) Aluminum Bronze, Stainless Steel	Dry Air or Gas	None	None			None

RAI 2.3.3.A.9-5

LR drawing LR-18036-C shows pressure maintenance pumps 11 and 12, excluded from the scope of license renewal and from being subject to an AMR. Pressure maintenance devices are an integral part of the FP water system and are a requirement of the National Fire Protection Association Standard NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection. Explain the apparent exclusion of the pressure maintenance pumps from the scope of license renewal and from requiring an AMR.

Response

The depiction of the pressure maintenance pumps on drawing LR-18036-C, indicating that they are not in-scope for LR, is incorrect. LRA Section 2.3.3.A.9 properly describes the pressure maintenance pumps as in-scope and subject to AMR.

RAI 2.3.3.A.9-6

NMP 1 UFSAR Section 2.5.2.3.2 requires at least 1000 gallons of fuel in the fire pump diesel fuel oil storage tank. LR drawing LR-18040-0, Sheet 2 shows level instrumentation consisting of air tubing and other components supplying the level indicating instrumentation for fuel oil storage tank 82-20, excluded from the scope of license renewal and from requiring an AMR. Explain the apparent exclusion of these components from the scope of license renewal and from requiring an AMR.

Response

Drawing LR-18040-0, Sheet 2, incorrectly depicts the current plant configuration. The drawing does not reflect the installation of a replacement tank (TANK-82-116) for the tank (TANK-88-20) shown on the drawing. TANK-82-116 has new fuel oil level instrumentation (LR-82-113) installed that does not require instrument air as a support system.

Instrument LR-82-113 is now used in place of LI-82-28 to verify that the fuel oil supply for the NMP1 Diesel Fire Pump is maintained at greater than or equal to 1000 gallons in compliance with UFSAR Appendix 10A, Section 2.5.2.3.2. Tank level verification is performed on a weekly basis.

RAI 2.3.3.A.9-7

LRA Table 2.3.3.A.9-1 includes the following component types as being subject to an AMR: filters/strainers, flow elements, and orifices. However, the intended function assigned to these components is "NSR Functional Support". LRA Table 2.0-1 identifies intended functions that are applicable to these components that are not identified in LRA Table 2.3.3.A.9-1. Aging management to ensure that the component level intended functions can be performed is necessary to ensure that the system level intended functions can be maintained. The intended functions include "filtration" and "flow restriction". Describe how the intended functions for these components are assigned and evaluated.

Response

Because a component performs a particular function, such as "filtration" for a filter or "flow restriction" for a flow orifice, does not mean that the function is an intended function for LR. A component function such as "filtration" or "flow restriction" would only be considered an Intended Function (IF) for LR if the failure of a component to perform that function would prevent the system, in which the component is installed, from performing any of its LR IFs. Failure of the "filtration" or "flow restriction" functions for the above-mentioned respective components would not prevent the NMP1 Fire Detection and Protection System from performing any of its LR IFs. Therefore, the only IF credited for these components is "NSR Functional Support" as identified in LRA Table 2.3.3.A.9-1 and defined in LRA Table 2.0-1.

LRA Section 3.3, AMR Table 3.3.2.A-8, Auxiliary Systems - NMP1 Fire Detection and Protection System – Summary of Aging Management Evaluation

RAI 2.3.3.A.9-8

NUREG-1801, GALL Report, describes requirements for aging management of the Fire Protection Water System based on the combination of component type, material, and environment.

Table 3.3.2-A.8, Auxiliary Systems, for the NMP 1 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another aging management program is being used.

For the combination of fire hydrants, gray cast iron, raw water, low flow, Note "H" indicates that the selective leaching program is being used in addition to the Fire Water System Program to manage loss of material.

For the staff to complete its review, further information is required regarding the use of the selective leaching program to manage loss of material. Supply the portions of the selective leaching program that are applicable to the combination of fire hydrants, gray cast iron, raw water, and low flow. Include program documents and procedures credited for managing the loss of material for this combination.

Response

As presented in LRA Sections A1.1.33 and B2.1.21, the implementation of the Selective Leaching of Materials Program is discussed in the program description for the One-Time Inspection Program (see LRA Section B2.1.20). The One-Time Inspection Program is a new LR aging management program (AMP) commitment for NMPNS that is to be implemented prior to the period of extended operation. This commitment was made in the original LRA submittal, as

supplemented by NMPNS letter NMP1L 1880 dated October 29, 2004. As such, NMPNS does not currently have any program procedures specific to managing selective leaching for fire hydrants. The Selective Leaching Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Selective Leaching PAA is available on-site at NMP for review.

RAI 2.3.3.A.9-9

NUREG-1801, GALL Report, describes requirements for aging management of the fire protection water system based on the combination of component type, material, and environment.

LRA Table 3.3.2-A.8, Auxiliary Systems, for the NMP 1 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another aging management program is being used.

For the combination of flow elements, wrought austenitic stainless steel, raw water, and low flow, Note "H" indicates that the fire water system program has been modified to manage cracking in addition to loss of material.

Additionally, Note "11" indicates that flow elements are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the fire water system program to manage cracking and loss of material. Supply the fire water system program documents and procedures that are applicable to the combination of flow elements, wrought austenitic stainless steel, raw water, and low flow that are credited with managing cracking and loss of material.

Response

The aging effect requiring management (AERM) of material cracking resulting from stress corrosion cracking (SCC) for wrought austenitic stainless steel components (including the flow elements) in low flow, raw water is reassigned to the One-Time Inspection Program for aging management. As presented in LRA Sections A1.1.28 and B2.1.20, the One-Time Inspection Program is a new AMP for NMPNS that is to be implemented prior to the period of extended operation. This commitment was made in the original LRA submittal, as supplemented by NMPNS letter NMP1L 1880 dated October 29, 2004. As such, there are no existing program procedures specific to the One-Time Inspection Program. The One-Time Inspection Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The One-Time Inspection PAA is available on-site at NMP for review during the AMR Regional Inspection.

The above flow elements are also susceptible to loss of material (LOM) from galvanic, general, pitting, and microbiologically influenced corrosion mechanisms. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System flow test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for performing visual inspections to monitor internal corrosion and to detect biofouling. This new activity will include inspections for loss of material in the flow elements identified above and will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. The procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N1-FST-FPW-3A001, "FPW System Flow Test," is credited with managing corrosion, biofouling, and microbiologically influenced corrosion (MIC) of the Fire Protection Water (FPW) distribution system. The procedure provides for full flow testing of the system in accordance with the NFPA Fire Protection Handbook. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met. The procedure verifies that the system is capable of retaining pressure and is not obstructed or degraded by corrosion or fouling.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection

LRA Revisions

LRA Table 3.3.2.A-8 (pages 3.3-134 and 3.3-135) is revised as shown on the following page. "Fire Water System Program" is replaced with "One-Time Inspection Program" for the management of material cracking for wrought austenitic stainless steel components (flow elements and orifices) in a raw water, low flow environment.

Table 3.3.2.A-8 Auxiliary Systems
NMP1 Fire Detection and Protection System – Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
Flow Elements	NFS	Wrought Austenitic Stainless Steel	Raw Water, Low Flow	Cracking	One-Time Inspection Program			H
				Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.A-21	C, 11
Orifices	NFS	Carbon or Low Alloy Steel (Yield Strength <100 Ksi) and Ductile/ Malleable Cast Iron	Air	Loss of Material	One-Time Inspection Program	VII.H2.3-a	3.3.1.A-05	C, 7
			Raw Water, Low Flow	Loss of Material	Fire Water System Program	VII.G.6-a	3.3.1.A-21	C, 7
		Wrought Austenitic Stainless Steel	Raw Water, Low Flow	Cracking	One-Time Inspection Program			H
				Loss of Material	Fire Water System Program	VII.G.6-a	3.3.1.A-21	C, 7

RAI 2.3.3.A.9-10

NUREG-1801, GALL Report, describes requirements for aging management of the fire protection water system based on the combination of component type, material, and environment.

LRA Table 3.3.2.A-8, Auxiliary Systems, for the NMP 1 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a Note indicating that the prescribed AMP has been modified for use or that another AMP is being used.

For the combination of heat exchangers, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, low flow, Note "6" indicates that the fire water system program has been modified to manage loss of material in heat exchangers which are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the fire water system program to manage loss of material for heat exchangers. Supply the Fire Water System Program documents and procedures that are applicable to the combination of heat exchangers, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, low flow that are credited with managing loss of material in heat exchangers.

Response

The NMP1 heat exchangers referenced above are HTX-100-02 (Diesel Driven Fire Pump 100-02 Diesel Cooler) and HTX-100-22 (Motor Driven Fire Pump 100-22 Motor Cooler). These heat exchangers are susceptible to LOM from galvanic, general, pitting, and microbiologically influenced corrosion mechanisms. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System flow test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for performing visual inspections to monitor internal corrosion and to detect biofouling. This new activity will include inspections for loss of material in the heat exchangers identified above and will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. The procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System

Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N1-FST-FPW-3A001, "FPW System Flow Test," is credited with the possible discovery of corrosion, biofouling, and microbiologically influenced corrosion (MIC) of the Fire Protection Water (FPW) distribution system. The procedure provides for full flow testing of the system in accordance with the NFPA Fire Protection Handbook. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met. The procedure verifies that the system is capable of retaining pressure and is not obstructed or adversely affected by degradation such as corrosion or fouling.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection.

RAI 2.3.3.A.9-11

NUREG-1801, GALL Report, describes requirements for aging management of the fire protection water system based on the combination of component type, material, and environment.

LRA Table 3.3.2.A-8, Auxiliary Systems, for the NMP 1 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another AMP is being used.

For the combination of orifices, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, low flow, Note "7" indicates that the fire water system program has been modified to manage loss of material in orifices which are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the fire water system program to manage loss of material for orifices. Supply the Fire Water System Program documents and procedures that are applicable to the combination of orifices, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, low flow that are credited with managing loss of material in orifices.

Response

The population of orifices satisfying the criteria above is limited to flow orifice FOR-100-509 (Diesel Fire Pump to EDG Cooling). This orifice is susceptible to LOM from galvanic, general, pitting, and microbiologically influenced corrosion mechanisms. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System flow test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for

performing visual inspections to monitor internal corrosion and to detect biofouling. This new activity will include inspections for loss of material in the flow orifice identified above and will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. This procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N1-FST-FPW-3A001, "FPW System Flow Test," is credited with the possible discovery of corrosion, biofouling, and microbiologically influenced corrosion (MIC) of the Fire Protection Water (FPW) distribution system. The procedure provides for full flow testing of the system in accordance with the NFPA Fire Protection Handbook. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met. The procedure verifies that the system is capable of retaining pressure and is not obstructed or adversely affected by degradation such as corrosion or fouling.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection.

RAI 2.3.3.A.9-12

NUREG-1801, GALL Report, describes requirements for aging management of the Fire Protection Water System based on the combination of component type, material, and the environment.

LRA Table 3.3.2.A-8, Auxiliary Systems, for the NMP1 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another AMP is being used.

For the combination of orifices, wrought austenitic stainless steel, raw water, low flow, Note "H" indicates that the Fire Water System Program has been modified to manage cracking in addition to loss of material.

Additionally, Note "7" indicates that orifices are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the fire water system program to manage cracking and loss of material. Supply the fire water system

program documents and procedures that are applicable to the combination of orifices, wrought austenitic stainless steel, raw water, low flow that are credited with managing cracking and loss of material.

Response

Identification of the Fire Water System Program as the aging management program for cracking of wrought austenitic stainless steel orifices in raw water with low flow (LRA Table 3.3.2.A-8, page 3.3-135) is incorrect. The Fire Water System Program is focused on managing loss of material rather than cracking. The One-Time Inspection Program will be designated as the aging management program for the subject flow orifices. Use of the One-Time Inspection Program to manage cracking is appropriate because the aging mechanism that can cause cracking of wrought austenitic stainless steel in raw water with low flow is stress corrosion cracking. While stress corrosion cracking is possible in non-brackish fresh water, it is unlikely. Therefore, a one-time inspection is sufficient to verify that stress corrosion cracking is not occurring.

As presented in LRA Sections A1.1.28 and B2.1.20, the One-Time Inspection Program is a new AMP for NMPNS that is to be implemented prior to the period of extended operation. Development of the new program was a commitment made in the original LRA submittal, as supplemented by NMPNS letter NMP1L 1880 dated October 29, 2004. As such, NMPNS does not currently have any program procedures specific to managing cracking of flow orifices in the Fire Water System. The One-Time Inspection Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The One-Time Inspection PAA is available on-site at NMP for review during the AMR Regional Inspection.

The above orifices are also susceptible to LOM from galvanic, general, pitting, and microbiologically influenced corrosion mechanisms. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System flow test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for performing visual inspections to monitor internal corrosion and to detect biofouling. This new activity will include inspections for loss of material in the orifices identified above and will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. The procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System

Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N1-FST-FPW-3A001, "FPW System Flow Test," is credited with the possible discovery of corrosion, biofouling, and microbiologically influenced corrosion (MIC) of the Fire Protection Water (FPW) distribution system. The procedure provides for full flow testing of the system in accordance with the NFPA Fire Protection Handbook. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met. The procedure verifies that the system is capable of retaining pressure and is not obstructed or adversely affected by degradation such as corrosion or fouling.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection.

LRA Revisions

LRA Table 3.3.2.A-8 (pages 3.3-134 and 3.3-135) is revised as shown in the response to RAI 2.3.3.A.9-9. "Fire Water System Program" is replaced with "One-Time Inspection Program" for the management of material cracking for wrought austenitic stainless steel components (flow elements and orifices) in a raw water, low flow environment.

RAI 2.3.3.A.9-13

NUREG-1801, GALL Report, describes requirements for aging management of the fire protection water system based on the combination of component type, material, and environment.

LRA Table 3.3.2.A-8, Auxiliary Systems, for the NMP 1 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another AMP is being used.

For the combination of sluice gate for motor driven fire pump, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, low flow, Note "22" indicates that the fire water system program has been modified to manage loss of material in the sluice gate for motor driven fire pump which is not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the fire water system program to manage loss of material for the sluice gate for motor driven fire pump. Supply the Fire Water System Program documents and procedures that are applicable to the combination of sluice gate for motor driven fire pump, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, and low flow that are credited with managing loss of material in the sluice gate for motor driven fire pump.

Response

The sluice gate for the motor-driven fire pump is susceptible to LOM from galvanic, general, pitting, and microbiologically influenced corrosion mechanisms. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System flow test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for performing visual inspections to monitor component corrosion and to detect biofouling. This new activity will include inspections for loss of material in the sluice gates identified above and will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. The procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N1-FST-FPW-3A001, "FPW System Flow Test," is credited with the possible discovery of corrosion, biofouling, and microbiologically influenced corrosion (MIC) of the Fire Protection Water (FPW) distribution system. The procedure provides for full flow testing of the system in accordance with the NFPA Fire Protection Handbook. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met. The procedure verifies that the system is capable of retaining pressure and is not obstructed or adversely affected by degradation such as corrosion or fouling.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection.

RAI 2.3.3.A.9-14

NUREG-1801, GALL Report, describes requirements for aging management of the Fire Protection Water System based on the combination of component type, material, and environment.

LRA Table 3.3.2.A-8, Auxiliary Systems, for the NMP 1 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another AMP is being used.

For the combination of spray nozzles, copper alloys (Zinc ≤15%), raw water, low flow, Note "21" indicates that the Fire Water System Program has been modified to manage loss of material in the spray nozzles which are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the Fire Water System Program to manage loss of material for spray nozzles. Supply the Fire Water System Program documents and procedures that are applicable to the combination of spray nozzles, copper alloys (Zinc ≤15%), raw water, low flow, that are credited with managing loss of material in spray nozzles.

Response

The spray nozzles fabricated from copper alloys (Zinc ≤15%), in an environment of raw water and low flow, are susceptible to LOM. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System functional test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for performing visual inspections to monitor internal corrosion and to detect biofouling. This new activity will include inspections for loss of material in the spray nozzles identified above and will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. The procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N1-FST-FPW-C003, "Fire Protection Preaction, Deluge and Automatic Sprinkler Test," verifies the operability of the Fire Protection Preaction, Deluge, and Automatic Systems by performing a system functional test which includes simulated automatic actuation of the system and a visual inspection of the sprinkler heads and system piping to verify their integrity and verify no blockage. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection.

LRA Section 2.3.3.B.13, NMP2 Fire Detection and Protection System

RAI 2.3.3.B.13-1

NUREG-1801, GALL Report, Section XI.27 Fire Water System describes requirement for aging management of the FP water system. It requires that an AMP be established to evaluate the aging effects of corrosion, MIC, biofouling of carbon steel and cast iron components in FP systems exposed to water.

The fire detection and protection system is within the scope of license renewal because, as stated in the LRA,

> *...contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1). And it contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).*

LRA Section 2.3.3.B.13 discusses requirements for the fire detection and protection program but does not mention trash racks and traveling screens for the fire pump suction water supply. Trash racks and traveling screens are mentioned in LRA Section 2.3.3.B.27 service water system, but are not listed in Table 2.3.3.B.27-1 that contains the list of components that require aging management. They are not mentioned in LRA Section 2.4.B.12, Screenwell Building structure.

The UFSAR 9.5.1.2.1 states in part,

> *Trash racks and traveling screens are located upstream of the fire pump suctions to remove any major debris from the water.*

Trash racks and traveling screens are necessary to remove debris and prevent clogging for the FP water supply system. Trash racks and traveling screens are typically considered, passive, long-lived components. Trash racks are located in a freshwater environment. Traveling screens are located in a freshwater/air environment. Although not specifically discussed in the UFSAR or LRA, trash racks and traveling screens are typically constructed of carbon steel material. Carbon steel in a fresh water environment or a freshwater/air environment is subject to corrosion.

Explain the apparent exclusion of the trash racks and traveling screens that are located upstream of the fire pump suctions from the scope of license renewal and from requiring an AMR.

Response

Although the trash racks and traveling screens are addressed in NMP2 Updated Safety Analysis Report (USAR) Section 9.2.5 as preventing large debris from reaching the service water pumps,

and, therefore, the fire pumps as well, they do not perform an intended function for LR and are not credited for compliance with 10 CFR 50.48. The collection of debris on the trash racks and/or the traveling screens, such that blockage could occur, is not a LR intended function. If such a blockage were to occur, bypass valves automatically open to bypass the blockage and continue to supply water to the pump suctions.

Additionally, the fire pump suction headers have their own strainers in-line such that the loss of the trash racks or traveling screens would not challenge the operation of these pumps until repair/replacement of the damaged component could be performed.

The supports for the trash racks are within the scope of LR and subject to AMR. The results of the AMR are captured in LRA Table 3.5.2.B-11.

RAI 2.3.3.B.13-2

NUREG-1801, GALL Report Section XI.27 Fire Water System states that,

> *The aging management program applies to water based fire protection systems that consist of sprinklers,...*

It further states that,

> *in addition a sample of sprinkler heads is to be inspected using guidance of NFPA 25, Section 2.3.3.1.*

This section states that where sprinkler heads have been in service 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. It also contains guidance to perform this sampling every 10 years after the initial field service testing.

LRA Section 2.3.3.B.13 states that the FP water system is composed of hose stations, hydrants, deluge, and water spray systems, fire pumps, sprinkler systems and pressure maintenance pumps. It also states that, the fire detection and protection system is in scope for license renewal for the following reasons:

- *It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).*
- *It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).*

This LRA Section also states that, the FP water subsystem components subject to an AMR consist of the motor-driven and diesel engine-driven fire pumps, the cooling water system for the engine-driven pump including its heat exchangers, the engine-driven pump exhaust system including the piping and muffler, and the associated FP water distribution system piping and fittings, valves, flow orifices, strainers and sprinklers.

LRA Section 2.1.6.4 provides response to Interim Staff Guidance concerning testing of sprinkler heads. This section refers to LRA Section B.2.1.17. Testing or replacement of sprinkler heads is not specifically discussed in this section.

The component types requiring an AMR for the fire detection and protection system and their intended functions are shown in LRA Table 2.3.3.B.13-1. LRA Table 2.3.3.B.13-1 does not include sprinkler heads.

LRA Appendix A - Safety Analysis Report Supplement, Section A2.1.18 Fire Water System Program states,

> *The Fire Water System Program manages aging of water-based fire protection systems due to loss of material and biofouling. Program activities include periodic maintenance, testing, and inspection of system piping and components containing water (e.g., sprinklers, nozzles, fittings, valves, hydrants, hose stations, standpipes). Inspection and testing is performed in accordance with the guidance of applicable National Fire Protection Association (NFPA) Codes and Standards and the Nuclear Electric Insurance Limited (NEIL) Members' Manual.*

Based on information as stated above, it is not clear that sprinkler heads are included within the scope of license renewal. Explain the apparent exclusion of sprinkler heads from the scope of license renewal and from requiring an AMR.

Response

Sprinklers are in-scope for LR and are subject to AMR. See the system description in LRA Section 2.3.3.B.13 (fifth bullet on page 2.3-143). Sprinklers are included with the Component Type "Nozzles" in LRA Table 2.3.3.B.13-1. Their AMR is addressed in LRA Section 3.3.2.B.13 and in Table 3.3.2.B-13.

RAI 2.3.3.B.13-3

LRA Section 2.1.4 describes the criteria for selecting structures, systems and components that are within the scope of license renewal. It states in part,

> *10 CFR 54.4(a)(3) states that SSCs WSLR include all SSCs relied on in safety analyses or plant evaluations to demonstrate compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).*

The fire detection and protection system is in scope for license renewal for the following reasons:

- *It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).*
- *It contains SCs relied on in safety analyses or plant evaluations to perform a*

function that demonstrates compliance with the Commission's Regulations for fire protection (10 CFR 50.48).

LRA Section 2.3.3.B.13, states that the FP foam subsystem components subject to an AMR consist of one water header valve. LRA Table 3.3.2.B-13 list valve environments as in air, dried air or gas, raw water low flow. In addition to the water supply portion of the FP foam subsystem, additional system components include two foam concentrate storage tanks, four foam concentrate pumps, a foam water ratio flow proportioner, numerous valves exposed to foam concentrate and valves exposed to foam water mixture, and a piping distribution system exposed to both foam concentrate and foam water mixture.

Fire fighting foam is an alkaline material and may contribute to internal corrosion of tanks, pumps and piping. This potential corrosion mechanism is a long-lived aging mechanism.

Explain the apparent exclusion of the FP foam subsystem including foam concentrate tanks, foam concentrate pumps, valves, ratio flow proportioner and piping from the scope of license renewal and from requiring an AMR.

Response

The following statement contained in LRA Section 2.3.3.B.13 (page 2.3-143), under the "System Description" heading, is incorrect: "The Fire Protection Foam subsystem components subject to AMR consist of one water header valve."

The components subject to AMR for the Fire Protection Foam subsystem are highlighted in red on drawing LR-44A-0. These components include the foam concentrate tanks, foam concentrate pumps, valves, ratio flow proportioner, and piping as indicated on the drawing. LRA Sections 2.3.3.B.13 and 3.3.2.B.13, and Table 3.3.2.B-13 will be revised to properly address the Fire Protection Foam subsystem. LRA Table 2.3.3.B.13-1 does not require revision.

LRA Revisions

In LRA Section 2.3.3.B.13 the first bullet on page 2.3-143 currently states:

> "The Fire Protection Foam subsystem components subject to AMR consist of one water header valve."

This statement is replaced by the following:

> "The Fire Protection Foam subsystem components subject to AMR consist of the two foam concentrate tanks, the four foam concentrate pumps, the ratio flow proportioner, and the associated piping, fittings, and valves connecting these components and that make up the foam distribution system."

In LRA Section 3.3.2.B:13 (page 3.3-54), under the "Environments" heading, the following environments are added:

- Liquid Foam Concentrate
- Liquid Foam Concentrate/Raw Water, Low Flow.

Table 3.3.2.B-13 is revised to add the AMR results for the Foam System components, as shown on the following page.

Table 3.3.2.B-13 Auxiliary Systems
NMP2 Fire Detection and Protection System – Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
Nozzles	NFS	Brass	Air	None	None			None
NSR piping, fittings, and equipment	PFASRE	Any	Liquid Foam Concentrate/ Raw Water, Low Flow	Loss of Material	Fire Water System Program	VII.G.6-a	3.3.1.B-21	A
Pumps	NFS	Grey Cast Iron	Liquid Foam Concentrate	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	C
Ratio Flow Proportioner	NFS	Carbon or Low Alloy Steel (Yield Strength < 100 Ksi) and Ductile/Malleable Cast Iron	Raw Water, Low Flow	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	A
Strainer	NFS	Carbon or Low Alloy Steel (Yield Strength < 100 Ksi) and Ductile/Malleable Cast Iron	Liquid Foam Concentrate	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	A
Tanks	NFS	Carbon or Low Alloy Steel (Yield Strength < 100 Ksi) and Ductile/Malleable Cast Iron	Liquid Foam Concentrate	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	C
Valves	NFS	Carbon or Low Alloy Steel (Yield Strength < 100 Ksi) and Ductile/Malleable Cast Iron	Liquid Foam Concentrate/ Raw Water, Low Flow	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	A

See Table 2.0-1 for definitions of Intended Functions, Table 3.0-1 for descriptions of Environments, and Table 3.0-2 for descriptions of Aging Effects.

RAI 2.3.3.B.13-4

LRA Section 2.1.4 describes the criteria for selecting structures, systems and components that are within the scope of license renewal. It states in part,

> *10 CFR 54.4(a)(3) states that SSCs WSLR include all SSCs relied on in safety analyses or plant evaluations to demonstrate compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).*

The fire detection and protection system is in scope for license renewal for the following reasons:

- *It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).*
- *It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's Regulations for fire protection (10 CFR 50.48).*

UFSAR Section 9A.3.1.2.5.4 states that fusible link-actuated heat vents are provided in the turbine building roof. Fusible links are set high enough to preclude release due to a steam leak. These vents are provided to reduce the possibility of roof collapse in the event of a fire on the operating level.

Fusible links are not described in LRA Section 2.3.3.B.13. The LRA does not have a section pertaining to Turbine Building HVAC similar to the Section 2.3.3.A.26 Unit 1 turbine building HVAC so that the turbine building heat removal system is not described in the LRA.

LRA Section 2.3.3.B.9 control building HVAC states that fire dampers are included within the scope of license renewal and are included in the aging management program. LRA Table 3.3.2.B.9 states that aging management of fire dampers will be included in the one time inspection program. Heat sensitive fusible links are composed of heat sensitive solder and are long lived passive components. Explain the apparent exclusion of the heat sensitive fusible links in the turbine building heat removal system and fire dampers from the scope of license renewal and from requiring an AMR. Additionally, explain how the one time inspection program will provide adequate aging management of fire damper (and the Turbine Building heat exhaust system fusible links if included).

Response

The NMP2 fusible link-actuated heat vents located in the Turbine Building roof are in-scope for LR in accordance with the 10 CFR 54.4(a)(3) criteria as it relates to fire protection compliance. However, since the fusible links require a change in state to perform their function, they are

considered to be active components. Therefore, although they are in-scope for LR, they are not subject to AMR.

The NMP2 Turbine Building roof vent housings were inadvertently omitted from scope and from AMR. However, these components fall into a component type that is already addressed in the LRA. In Table 2.4.B.13-1 (page 2.4-53), the roof vent housings fall under the last component type in the table; i.e., "Structural Steel (Carbon and Low Alloy Steel) in Air." Their intended function is "Structural Support for NSR." Their AMR is addressed in LRA Section 3.5.2.B.13 (page 3.5-35) and Table 3.5.2.B-13 (last item on page 3.5-138). These components will be managed for aging consistent with the information presented in the referenced LRA locations.

Relative to aging management of the fire dampers included in LRA Table 3.3.2.B-9, because of their fabrication material, the environment to which they are exposed, and plant operating history, it is not expected that the fire dampers will experience loss of material. For that reason, the One-Time Inspection Program has been deemed to be adequate for aging management of these dampers. If the aging effect is discovered as a function of that inspection, the inspection scope will be expanded consistent with the program requirements, as described in LRA Section B2.1.20.

RAI 2.3.3.B.13-5

The diesel engine-driven fire pump, diesel engine is depicted on drawing LR-43A-0 at coordinates G7. There is an AMR boundary flag located immediately upstream of the diesel engine on the fuel oil supply piping that identifies upstream piping as part of the fuel oil supply piping system scope and the diesel engine as part of the FP program scope. There is another AMR boundary flag at coordinated G-7, immediately downstream of the diesel engine, between the diesel engine and the pump that indicates that the diesel engine is excluded from requiring an AMR. Explain the apparent discrepancy between the LR drawing and the AMR boundary flags.

Response

Drawing LR-43A-0 is incorrect. Only one of the three boundary flags associated with the diesel engine is currently correct. The flag to the right and below the engine, which is solid to the left and identifies "LR-FPW" to the right, is correct. The engine is not subject to AMR and should not be highlighted in red. The boundary flag located immediately above the diesel engine on the fuel oil supply piping correctly identifies the piping to the left as part of the fuel oil supply piping system and subject to AMR. The portion of this flag pointing toward the right, however, should be solid indicating that the engine is not subject to AMR. The boundary flag to the left of the engine is reversed. The "LR-FOF" portion of the flag should be pointing downward while the solid portion of the flag should be pointing upward indicating that the engine is not subject to AMR.

RAI 2.3.3.B.13-6

LR drawing LR-43B-0, at location H3 depicts that piping upstream of valve V737 is subject to an AMR. The piping downstream of V737 continues to the Radwaste building via the yard on LR-43H-0 at location B10 where the piping is depicted as requiring an AMR, however, piping between V737 and the Radwaste building in the yard appears to be excluded from requiring an AMR. This portion of the FP system contains passive long-lived components and is required to perform the system level intended functions. Explain the apparent exclusion of this portion of the FP system from requiring an AMR.

Response

Drawing LR-43B-0 is incorrect. The piping downstream of valve V737 to the continuation flag is in scope and subject to AMR. That piping on LR-43B-0 should be red, the continuation flag should read "LR-43H-0" and should be red, and the LR boundary flag at valve V737 should not be there. It should be located at the drawing continuation flag and indicate "LR-FPW" in both directions.

RAI 2.3.3.B.13-7

LR drawing LR-43E-0 at location H11, depicts an AMR boundary symbol downstream of valve V775 indicating that no AMR is required. The piping on each side of valve is "red" indicating that each section of piping upstream and downstream of V775 is subject to an AMR. This portion of the FP system contains passive long-lived components and is required to perform the system level intended functions. Explain the apparent exclusion of this portion of the FP system from requiring an AMR.

Response

Drawing LR-43E-0 is incorrect. The LR boundary flag downstream of valve V775 should not be there. The components downstream of valve V775 are in scope, subject to AMR, and properly depicted in red.

RAI 2.3.3.B.13-8

LR drawing LR-43E-0 depicts the FP water spray system for 1C RFP spray as requiring an AMR. The FP water spray system for RFP's 1A &1B are depicted as not requiring an AMR. This portion of the FP system contains passive long-lived components and is required to perform the system level intended functions. Explain the apparent exclusion of this portion of the FP system from requiring an AMR.

Response

Drawing LR-43E-0 is incorrect. The water spray systems for reactor feed pumps (RFPs) 1A and 1B are in scope and subject to AMR. The drawing should show the piping and components for the RFP 1A and 1B water spray systems in red, exactly as shown for the water spray system for RFP 1C.

RAI 2.3.3.B.13-9

LR drawing LR-43F-0 at location K-4 depicts piping from the FP from the underground to piping located within the condensate storage tank building. A pipe that "T's off" to valve V811 zone 902 NW (W-72) is depicted as not being subject to an AMR for the components in this portion of the system. The line number for this piping is 2-FPW-6-490-4. The change in the AMR requirements is shown by the branch line not being highlighted in "red". There is no AMR boundary flag depicting the change in AMR requirements. The non-highlighted piping appears to support the system level intended functions of the FP system and contains passive, long-lived components. Explain the apparent exclusion of this portion of the FP system from requiring an AMR.

Response

Drawing LR-43F-0 is incorrect. The piping upstream of valve V811 to the tee, downstream of valve V811 to the continuation indication, and to valve V985A, inclusive, is in-scope for LR and subject to AMR. Therefore, it should be highlighted in red.

RAI 2.3.3.B.13-10

LR drawing LR-43F-0 depicts the FP system for zone 902 and 905 at locations K-4 and J-2, respectively. Portions of each of these systems are shown as not requiring an AMR. It appears that the portions of the FP system support the system level intended functions of the FP system and contain passive, long-lived components. Explain the apparent exclusion of the portions of the FP system from requiring an AMR.

Response

Drawing LR-43F-0 is incorrect. For Zone 905, the piping downstream of valve V773 to the continuation indication and to valve V986A, inclusive, is in-scope for LR and subject to AMR. Therefore, it should be highlighted in red. For Zone 902, see the response to RAI 2.3.3.B.13-9.

RAI 2.3.3.B.13-11

LR drawing LR-43G-0 at location E-4 shows piping to valve V1027 as requiring an AMR. The piping to V1027, however, is not highlighted in "red" nor is there an AMR boundary flag shown on the LR drawing. It appears that this portion of the FP system supports the system level intended functions of the FP system and contains passive, long-lived components. Explain the apparent exclusion of this portion of the FP system from requiring an AMR.

Response

Drawing LR-43G-0 is incorrect. The piping to valve V1026 is in-scope for LR and subject to AMR. Therefore, it should be highlighted in red to match the piping for valve V1027, which is highlighted properly.

RAI 2.3.3.B.13-12

LR drawing LR-43H-0 depicts piping to pressure switches 821, 823, 824, and 825 as requiring an AMR and are highlighted in "red". However, piping to similar pressure switches 820, 828, and 822 are not highlighted in "red" nor are there AMR boundary flags shown on the LR drawing. It appears that these portions of the FP system supports the system level intended functions of the FP system and contain passive, long-lived components. Explain the apparent exclusion of this portion of the FP system from requiring an AMR.

Response

Drawing LR-43H-0 is incorrect. The piping up to pressure switches 820, 822, and 828 is in-scope for LR and subject to AMR. Therefore, it should be highlighted in red.

RAI 2.3.3.B.13-13

LR drawing LR-43H-0 depicts piping to valve tamper switches 696, 695, 691, 693, 697, 695, and 717 as requiring an AMR and are highlighted in "red". However, piping to similar tamper switches 716, 719, 762, and 721 are not highlighted in "red" nor are there AMR boundary flags shown on the LR drawing. It appears that these portions of the FP system supports the system level intended functions of the FP system and contain passive, long-lived components. Explain the apparent exclusion of these portions of the FP system from requiring an AMR.

Response

Drawing LR-43H-0 is incorrect. The cited components are limit switches, not valve tamper switches, and the lines in question are the connections to the valves from the limit switches, not piping. Neither the limit switches nor their connections are subject to AMR. Therefore, on any LR drawing, the lines between any valve and a "ZS" component are not subject to AMR and should be depicted in black.

RAI 2.3.3.B.13-14

LR drawing LR-44A-0 at location H10 depicts a section of 1 inch pipe downstream of FCV-164 not highlighted in "red", nor identified by an AMR boundary flags. This 1 inch pipe connects two sections of pipe that are highlighted in "red." It appears that the 1 inch portion of the FP system supports the system level intended functions of the FP system and is passive and long-lived. Explain the apparent exclusion of this portion of the FP system from requiring an AMR.

Response

Drawing LR-44A-0 is incorrect. The piping cited in the RAI is in-scope for LR and subject to AMR. Therefore, it should be highlighted in red.

RAI 2.3.3.B.13-15

LR drawing LR-44A-0 at location H10 depicts pipe to drains P2A and P2B and pipe downstream of V41 at location A10 as requiring an AMR and are highlighted in "red". However, similar piping at locations D10, to drains P1A and P1B and pipe downstream of V90 at location L10 are not highlighted in "red" nor are there AMR boundary flags shown on the LR drawing. It appears that these portions of the FP system support the system level intended functions of the FP system and contain passive, long-lived components. Explain the apparent exclusion of these portions of the FP system from requiring an AMR.

Response

Drawing LR-44A-0 is incorrect. Drain lines that have no valves in the line, and that end in pipe plugs, include the pipe plugs as being in-scope for LR and subject to AMR as part of the Component Type "Piping and Fittings." In drain lines that have isolation valves, the piping up to and including the drain valves is in-scope for LR and subject to AMR. Piping and components downstream of the vent or drain isolation valves are typically not in scope. LR drawing convention is that boundary flags are not included on vent and drain lines. See LR Boundary Notes 2 and 4 on drawing LR-000-2F-0.

RAI 2.3.3.B.13-16

LR drawing LR-44A-0 at location C6 depicts piping to valves V145 and V52 not requiring an AMR. This pipe is connected to a pipe that is highlighted in "red". There is no AMR boundary flag at this location. It appears that these portions of the FP system support the system level intended functions of the FP system and contain passive, long-lived components. Explain the apparent exclusion of these portions of the FP system from requiring an AMR.

Response

Drawing LR-44A-0 is incorrect. The piping up to pressure indicator PI 130, including valve V145, and up to and including valve V52, is in-scope for LR, subject to AMR, and should, therefore, be shown in red.

RAI 2.3.3.B.13-17

LR drawing LR-45C-0 at location H2 depicts valve SV145 as not requiring an AMR. Similar valves such as SV151, SV152 and SV155 are depicted as requiring ARM. Valve SV145 supports the system level intended functions of the FP system and is considered a long lived passive component. Explain the apparent exclusion of valve SV145 from an AMR.

Response

Drawing LR-45C-0 is incorrect. Valve SV145 is in-scope for LR, subject to AMR, and should, therefore, be shown in red. In addition, the correct identification for this component is 2FPL-SV154, not 2FPL-SV145.

RAI 2.3.3.B.13-18

LR drawing LR-45C-0 at location G4 depicts piping downstream of valve SV153 as requiring an AMR. Similar piping configurations such as downstream of valves SV156, SV171 and SV172 are depicted as not AMR. It appears that these portions of the FP system support the system level intended functions of the FP system and contain passive, long-lived components. Explain the apparent exclusion of these portions of the FP system from an AMR.

Response

The piping downstream of valve SV153 is not in-scope for LR and is not subject to AMR, consistent with similar piping configurations shown on drawing LR-45C-0. The depiction of this piping in red on the subject drawing is incorrect. Valves SV153, SV156, SV171, and SV172 function as vent valves that open upon actuation of the corresponding Cardox hose reel. The piping downstream of these vent valves is not required for the vent valves or the Cardox system to perform their intended function for license renewal and should, therefore, be shown in black.

RAI 2.3.3.B.13-19

LR drawing LR-45C-0 depicts piping downstream of valves SV268, SV267 and SV 265 as not requiring an AMR. Similar piping downstream of valves SV255, SV269, SV260, SV261, SV262, SV263, SV264, and SV270 is depicted as requiring an AMR. It appears that the piping downstream of valves SV268, SV267 and SV 265 support the system level intended functions of the FP system and contain passive, long-lived components. Explain the apparent exclusion of these portions of the fire protection FP system from an AMR.

Response

The piping downstream of valves SV260, SV261, SV262, SV263, SV264, SV265, SV266, SV267, SV268, SV269, SV270, and SV271 is not in-scope for LR and is not subject to AMR. These valves function as vent valves that open upon actuation of the corresponding Cardox zone discharge piping. The piping downstream of these vent valves is not required for the vent valves or Cardox system to perform their intended function for license renewal and should, therefore, be shown in black. The depiction of some of the piping in red on LR drawing LR-45C-0 is incorrect.

RAI-2.3.3.B.13-20

LR Drawing 46A-0 at location B9 depicts piping to valve SOV139, at Halon storage bottle TK4B as requiring an AMR. Similar piping to other solenoid valves are depicted as not requiring an AMR. It appears that the piping these other solenoid valves support the system level intended functions of the FP system and contain passive, long-lived components. Explain the apparent exclusion of these portions of the FP subsystem from an AMR.

Response

The piping from the Halon storage bottles to their respective solenoid-operated valves (SOVs) is in-scope for LR and subject to AMR. The SOVs must change position to allow Halon to discharge from the storage bottles during a Halon system actuation. The piping between the SOVs and the storage bottles supports this function. The depiction of the piping between the SOVs and the Halon storage bottles in black on LR drawing LR-46A-0 is incorrect.

RAI-2.3.3.B.13-21

Various LR drawings depict tamper switches for water supply valves as requiring an AMR. Other LR drawings also depict valve tamper switches for the foam and CO_2 subsystems as not requiring an AMR. Valve tamper switches support the system level intended functions of the FP system and are considered long lived passive components. Explain the apparent exclusion of foam and CO_2 valve tamper switches from an AMR.

Response

Tamper switches for the fire protection water, foam, and CO_2 subsystems are in-scope for LR but are not subject to AMR since they are "Active" components. The switches must change state to perform their function of identifying when their corresponding valve is in an open position. Therefore, the tamper switches should be shown in black rather than highlighted in red on the LR drawings.

RAI-2.3.3.B.13-22

NMP 2 UFSAR Section 9A.3.1.2.5, "Detailed Fire Hazard Analysis by Building," includes descriptions of drains and smoke removal for various buildings. NMP 2 UFSAR Section 9A.3.5.12 describes the floor drains that are provided to collect and remove FP system water discharge. This section states that drains are designed for capacity of 70 gpm. It is not clear from review of the LRA that drain capacity is included within the scope of license renewal and require an AMR. Confirm that drains are within scope of license renewal and subject to an AMR or explain their exclusion.

Response

Floor drains are included in the Floor and Equipment Drains (FED) System, which is in-scope for LR and subject to AMR. The scoping and screening results are included in LRA Section 2.3.3.B.14. The AMR results are included in LRA Section 3.3.2.B.14 and Table 3.3.2.B-14. The specific intended function related to drains is "NSR Functional Support."

RAI 2.3.3.B.13-23

NMP 2 UFSAR Section 9A.3.1.2.5.10 describes the reactor building FP program. LR drawing LR-43C-0 at location C5 depicts the dry pipe sprinkler system for RR passage as not highlighted in "red". It appears that this portion of the FP system performs system level intended functions

and contains passive, long-lived components. Explain the apparent exclusion of this portion of the FP system from requiring an AMR.

Response

The referenced dry pipe sprinkler is for the Turbine Building railroad access bay, which is not credited for compliance with 10 CFR 50.48 and is not addressed in the USAR (see USAR Section 9A.3.1.2.5.4 for the Turbine Building). Therefore, it is correctly depicted on drawing LR-43C-0 as not being in-scope for LR and subject to AMR, since it does not perform any LR intended functions that meet the 10 CFR 54.4 criteria.

RAI 2.3.3.B.13-24

NMP 2 UFSAR Section 9.5.1.2.14 describes structural steel FP coating. It is not clear, from review of the LRA, that the FP coatings for structural steel and steel embedded in fire barriers are included within the scope of license renewal and require an AMR. Confirm that structural steel FP coatings are within scope of license renewal and subject to an AMR or explain their exclusion.

Response

Structural steel fire protection coatings are in-scope for LR and subject to AMR. They are included as Component Type "Fire Wrap in Air" in Table 2.4.C.2-1 of the Fire Stops and Seals Commodity described in LRA Section 2.4.C.2. AMR of the fire wrap is addressed in LRA Section 3.5.2.C.2 and Table 3.5.2.C-2.

RAI 2.3.3.B.13-25

NMP2 UFSAR Section 9.5.1.2.16 describes criteria for fire resistance of interior finishes. It is not clear from review of the LRA, that interior finishes are included within the scope of license renewal. Confirm that interior finishes are within the scope of license renewal and subject to an AMR or explain their exclusion.

Response

The NMP2 USAR states that noncombustible and fire-resistive building and interior finish materials are used wherever practical throughout the plant, particularly in structures containing safety-related systems and components. This is a common industry practice. The interior finishes, which consist of paint and floor coverings, serve no intended function and are not in-scope for LR since none of them are credited for prevention of aging effects or protection against fires. Relative to fire protection, none of these finishes would have any effect on the growth or migration of a fire. The materials used to seal structural gaps and joints, that do have an intended function for 10 CFR 50.48, can be found in LRA Section 2.4.C.2, "Fire Stops and Seals."

RAI 2.3.3.B.13-26

LRA Section 2.4.B identifies structures that are included within the scope of license renewal. UFSAR Appendix 9A identifies structures that are included in the FP licensing basis and thus should be considered within the scope of license renewal. The LRA does not include the CST structure and the Normal Switchgear Building that are included in UFSAR Appendix 9A. These structures support FP functions. They are considered long lived passive components. Explain their apparent exclusion from an AMR.

Response

The Normal Switchgear Building and the Condensate Storage Building are located in the protected area and are considered to be non-essential yard structures. They are included in USAR Appendix 9A; however, it indicates that they are non-essential. Just the fact that they are included in the USAR does not mean that they should be within scope for LR. They must meet a LR intended function. These structures do not meet any of the three criteria of 10 CFR 54.4 that would warrant their inclusion within scope of LR. Neither building contains safety-related equipment, equipment required for safe plant shutdown, or radioactive material. Refer to NMP2 USAR Section 9A.3.1.2.5.8 for the Normal Switchgear Building and USAR Table 9A.3-11 for the Condensate Storage Building. The fire protection equipment in these structures is for asset protection only. Neither of these buildings is credited for compliance with 10 CFR 50.48.

RAI 2.3.3.B.13-27

NMP 2 UFSAR Section 9A.3.6.2.6 requires at least 350 gallons of fuel in the fire pump diesel fuel oil storage tank. LR drawing LR-43A-0 shows level instrumentation consisting of air tubing and other components supplying the level indicating instrumentation for fuel oil storage tank 2-FOF-TK1, excluded from the scope of license renewal and from requiring an AMR. Explain the apparent exclusion of these components from the scope of license renewal and from requiring an AMR.

Response

Drawing LR-043A-0 (location E6), identifies the diesel fuel oil storage tank (2FOF-TK1) as subject to AMR. This component is the 650-gallon diesel fire pump fuel oil storage tank. Lines 2-FOF-002-6-4 and 2-FOF-750-7-4 (location D6) are also shown as subject to AMR. These lines run to the fuel oil storage tank level transmitter 2FOF-LT101 (location D6), which is shown as not being subject to AMR. The fuel oil storage tank level indicator 2FOF-LI101 (location B5) and the level switch 2FOF-LSL101 (location D5), which are also shown as not subject to AMR, are electrically connected to the transmitter. The transmitter, level indicator, and level switch are active components that are in-scope for LR but are correctly shown as not being subject to AMR.

LRA Section 3.3, AMR Table 3.3.2.B-13, Auxiliary Systems – NMP2 Fire Detection and Protection System – Summary of Aging Management Evaluation

RAI 2.3.3.B.13-28

NUREG-1801, GALL Report, describes requirements for aging management of the fire protection water system based on the combination of component type, material, and environment.

LRA Table 3.3.2.B-13, Auxiliary Systems, for the NMP 2 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed aging management program has been modified for use or that another aging management program is being used.

For the combination of flow elements, gray cast iron, raw water, and low flow, Note "Q" indicates that the selective leaching program is being used in addition to the fire water system program to manage loss of material.

Additionally, Note "11" indicates that flow elements are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the selective leaching program to manage loss of material. Supply the portions of the selective leaching program that are applicable to the combination of flow elements, gray cast iron, raw water, and low flow. Include program documents and procedures credited for managing the loss of material for this combination.

Response

For the combination of flow elements, gray cast iron, raw water, and low flow, the applicable portion of the Selective Leaching Program is a new activity for inspection for selective leaching of Fire Protection Water System components. The Selective Leaching Program for NMPNS is implemented under the One-Time Inspection Program (see LRA Sections A2.1.33 and B2.1.21). The details of the inspections to be performed for particular components have not been determined. As presented in LRA Sections A2.1.28 and B2.1.20, the One-Time Inspection Program is a new AMP for NMPNS that is to be implemented prior to the period of extended operation. This commitment was made in the original LRA submittal, as supplemented by NMPNS letter NMP1L 1880 dated October 29, 2004. As such, there are no program procedures specific to managing selective leaching of Fire Protection Water System components. The Selective Leaching Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Selective Leaching PAA is available on-site at NMP for review during the AMR Regional Inspection.

RAI 2.3.3.B.13-29

NUREG-1801, GALL Report, describes requirements for aging management of the fire protection water system based on the combination of component type, material, and environment.

LRA Table 3.3.2.B-13, Auxiliary Systems, for the NMP 2 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another AMP is being used.

For the combination of heat exchangers, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, low flow, Note "6" indicates that the fire water system program has been modified to manage loss of material in heat exchangers which are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the fire water system program to manage loss of material for heat exchangers. Supply the fire water system program documents and procedures that are applicable to the combination of heat exchangers, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, low flow that are credited with managing loss of material in heat exchangers.

Response

The heat exchangers fabricated from carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, in an environment of raw water and low flow, are susceptible to LOM from galvanic, general, pitting, and microbiologically influenced corrosion mechanisms. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System flow test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for performing visual inspections to monitor internal corrosion and to detect biofouling. This new activity will include inspections for loss of material in the heat exchangers identified above and will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. The procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System

Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N2-FSP-FPW-5Y001, "FPW System Flow Test," is credited with the possible discovery of corrosion, biofouling, and microbiologically influenced corrosion (MIC) of the Fire Protection Water (FPW) distribution system. The procedure provides for full flow testing of the system in accordance with the NFPA Fire Protection Handbook. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met. The procedure verifies that the system is capable of retaining pressure and is not obstructed or adversely affected by degradation such as corrosion or fouling.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection.

RAI 2.3.3.B.13-30

NUREG-1801, GALL Report, describes requirements for aging management of the fire protection water system based on the combination of component type, material, and environment.

LRA Table 3.3.2.B-13, Auxiliary Systems, for the NMP 2 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another AMP is being used.

For the combination of manifold, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, low flow, Note "26" indicates that the Fire Water System Program has been modified to manage loss of material in manifolds which are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the Fire Water System Program to manage loss of material for manifolds. Supply the Fire Water System Program documents and procedures that are applicable to the combination of manifolds, carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, raw water, and low flow that are credited with managing loss of material in manifolds.

Response

The manifolds fabricated from carbon or low alloy steel (yield strength <100 ksi) and ductile/malleable cast iron, in an environment of raw water and low flow, are susceptible to LOM from galvanic, general, pitting, and microbiologically influenced corrosion mechanisms. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System flow test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for performing visual inspections to monitor internal corrosion and to detect biofouling. This new activity will include inspections for loss of material in the manifolds identified above and will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. The procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N2-FSP-FPW-5Y001, "FPW System Flow Test," is credited with the possible discovery of corrosion, biofouling, and microbiologically influenced corrosion (MIC) of the Fire Protection Water (FPW) distribution system. The procedure provides for full flow testing of the system in accordance with the NFPA Fire Protection Handbook. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met. The procedure verifies that the system is capable of retaining pressure and is not obstructed or adversely affected by degradation such as corrosion or fouling.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection.

RAI 2.3.3.B.13-31

NUREG-1801, GALL Report, describes requirements for aging management of the fire protection water system based on the combination of component type, material, and environment.

LRA Table 3.3.2.B-13, Auxiliary Systems, for the NMP 2 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another AMP is being used.

For the combination of orifices, copper alloys (Zinc ≤15%), raw water, and low flow, Note "7" indicates that the Fire Water System Program has been modified to manage loss of material in manifolds which are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the fire water system program to manage loss of material for manifolds. Supply the Fire Water System

Program documents and procedures that are applicable to the combination of orifices, copper alloys (Zinc ≤15%), raw water, and low flow, that are credited with managing loss of material in manifolds.

Response

The orifices fabricated from copper alloys (Zinc ≤15%), in an environment of raw water and low flow, are susceptible to LOM. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System flow test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for performing visual inspections to monitor internal corrosion and to detect biofouling. This new activity will include inspections for loss of material in the orifices identified above and will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. The procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N2-FSP-FPW-5Y001, "FPW System Flow Test," is credited with the possible discovery of corrosion, biofouling, and microbiologically influenced corrosion (MIC) of the Fire Protection Water (FPW) distribution system. The procedure provides for full flow testing of the system in accordance with the NFPA Fire Protection Handbook. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met. The procedure verifies that the system is capable of retaining pressure and is not obstructed or adversely affected by degradation such as corrosion or fouling.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection.

RAI 2.3.3.B.13-32

NUREG-1801, GALL Report, describes requirements for aging management of the fire protection water system based on the combination of component type, material, and environment.

LRA Table 3.3.2.B-13, Auxiliary Systems, for the NMP 2 fire detection and protection system, summarizes the AMP for each of the combinations mentioned above. When the combinations do not exactly match the requirements of the GALL, the LRA Table includes a note indicating that the prescribed AMP has been modified for use or that another AMP is being used.

For the combination of orifices, wrought austenitic stainless steel, raw water, low flow, Note "H" indicates that the fire water system program has been modified to manage cracking in addition to loss of material.

Additionally, Note "7" indicates that orifices are not specifically identified in GALL Chapter VII for the fire protection system.

For the staff to complete its review, further information is required regarding the use of the fire water system program to manage cracking and loss of material. Supply the Fire Water System Program documents and procedures that are applicable to the combination of orifices, wrought austenitic stainless steel, raw water, and low flow that are credited with managing cracking and loss of material.

Response

The aging effect requiring management (AERM) of material cracking resulting from SCC for wrought austenitic stainless steel components (including the orifices) in low flow, raw water is reassigned to the One-Time Inspection Program for aging management. As presented in LRA Sections A1.1.28 and B2.1.20, the One-Time Inspection Program is a new AMP for NMPNS that is to be implemented prior to the period of extended operation. This commitment was made in the original LRA submittal, as supplemented by NMPNS letter NMP1L 1880 dated October 29, 2004. As such, there are no existing program procedures specific to the One-Time Inspection Program. The One-Time Inspection Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The One-Time Inspection PAA is available on-site at NMP for review during the AMR Regional Inspection.

The above orifices are also susceptible to LOM from galvanic, general, pitting, and microbiologically influenced corrosion mechanisms. A new inspection activity, for which a procedure must be generated, a site chemistry procedure, and a Fire System flow test are credited with managing aging. These credited activities are discussed below:

- The new site activity is identified as an enhancement in "Parameters Monitored/ Inspected" in LRA Sections A1.1.18 and B2.1.17. The enhancement adds procedural guidance for performing visual inspections to monitor internal corrosion and to detect biofouling. This new activity will include inspections for loss of material in the orifices identified above and

will be implemented prior to the period of extended operation. As such, there are no existing procedures implementing these inspections at this time. The Fire Water System Program Attribute Assessment (PAA) addresses program implementation at NMP relative to the requirements of Appendix A of NUREG-1800. The Fire Water System PAA is available on-site at NMP for review during the AMR Regional Inspection.

- Site procedure S-CTP-V632, "Sampling and Analysis of Water Systems for Bacteria," is credited with managing LOM as a result of microbiological activity. The procedure provides guidance for sampling and analysis of raw water systems for the presence of bacteria. Additionally, as presented in LRA Sections A1.1.18 and B2.1.17, the Fire Water System Program will be enhanced prior to the period of extended operation to add specific requirements for periodic sampling of water-based fire protection systems.

- Site procedure N2-FSP-FPW-5Y001, "FPW System Flow Test," is credited with the possible discovery of corrosion, biofouling, and microbiologically influenced corrosion (MIC) of the Fire Protection Water (FPW) distribution system. The procedure provides for full flow testing of the system in accordance with the NFPA Fire Protection Handbook. Acceptance criteria are defined and the site corrective action process is utilized when the criteria are not met. The procedure verifies that the system is capable of retaining pressure and is not obstructed or adversely affected by degradation such as corrosion or fouling.

The existing procedures for the Fire Water System Program are available on-site at NMP for inspection.

LRA Revisions

LRA Table 3.3.2.B-13 (pages 3.3-218 and 3.3-222) is revised as shown on the following pages. "Fire Water System Program" is replaced with "One-Time Inspection Program" for the management of material cracking for wrought austenitic stainless steel components (including the orifices) in a raw water, low flow environment.

Table 3.3.2.B-13 Auxiliary Systems
NMP2 Fire Detection and Protection System – Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
Orifices	NFS	Carbon or Low Alloy Steel (Yield Strength <100 Ksi) and Ductile/ Malleable Cast Iron	Air	Loss of Material	Fire Protection Program			G
		Copper Alloys (Zinc ≤15%)	Raw Water, Low Flow	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	C, 7
		Wrought Austenitic Stainless Steel	Raw Water, Low Flow	Cracking	One-Time Inspection Program			H
				Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	C, 11

See Table 2.0-1 for definitions of Intended Functions, Table 3.0-1 for descriptions of Environments, and Table 3.0-2 for descriptions of Aging Effects.

Table 3.3.2.B-13 Auxiliary Systems
NMP2 Fire Detection and Protection System – Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
Valves	NFS	Carbon or Low Alloy Steel (Yield Strength <100 Ksi) and Ductile/ Malleable Cast Iron	Air	Loss of Material	Fire Protection Program	VII.D.2-a	3.3.1.B-19	E
					Fire Water System Program	VII.D.2-a	3.3.1.B-19	E
			Dried Air or Gas	None	None			None
			Raw Water, Low Flow	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	A
		Copper Alloys (Zinc ≤15%)	Air	None	None			None
			Raw Water, Low Flow	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	A
		Copper Alloys (Zinc > 15%) and Aluminum Bronze	Raw Water, Low Flow	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	A
					Selective Leaching of Materials Program	VII.C1.2-a	3.3.1.B-29	A
		Gray Cast Iron	Air	Loss of Material	Fire Water System Program			F, 27
			Raw Water, Low Flow	Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	A
					Selective Leaching of Materials Program	VII.G.6-b	3.3.1.B-21	E
		Wrought Austenitic Stainless Steel	Raw Water, Low Flow	Cracking	One-Time Inspection Program			H
				Loss of Material	Fire Water System Program	VII.G.6-b	3.3.1.B-21	A

See Table 2.0-1 for definitions of Intended Functions, Table 3.0-1 for descriptions of Environments, and Table 3.0-2 for descriptions of Aging Effects.