Constellation Energy
Nine Mile Point Nuclear Station

P.O. Box 63
Lycoming, New York 13093

January 10, 2005
NMP1L 1913

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 Structures (TAC Nos. MC3272 and MC3273)

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 December 9, 2004, the NRC requested additional information regarding the structures that are described in Sections 2.4.A, 2.4.B, and 3.5 of the License Renewal Application. The NMPNS responses to these requests for additional information are provided in Attachment 1. Attachment 2 provides a list of the regulatory commitments associated with this submittal.

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

Very truly yours,

Timothy J. O'Connor
Plant General Manager

TJO/DEV/jm

A107

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

I, Timothy J. O'Connor, being duly sworn, state that I am Nine Mile Point Plant General Manager, 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 10 day of January, 2005.

WITNESS my Hand and Notarial Seal:

Notary Public

JOHN C JOSH
NOTARY PUBLIC, STATE OF NEW YORK
NO 4837303
QUALIFIED IN OSWEGO COUNTY
COMMISSION EXPIRES 2/28/06

My Commission Expires: 2/28/06

1/10/05
Date

Attachment:
1. Responses to NRC Requests for Additional Information (RAI) Regarding the Structures Described in Sections 2.4.A, 2.4.B, and 3.5 of the License Renewal Application
2. List of Regulatory Commitments

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 Structures Described in

Sections 2.4.A, 2.4.B, and 3.5 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 December 9, 2004, regarding structures. 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 2.4.A, NMP1 Structures

RAI 2.4.A-1

LRA Table 2.4.A.1-1 identifies the NMP1 primary containment component types requiring aging management review and the associated component intended function(s). The staff reviewed LRA Table 2.4.A.1-1 and was not able to locate the following component types that may perform safety-related functions as per 10 CFR 50.54(a)(1):

- *(a) Reactor Vessel to Biological Shield Stabilizers*
- *(b) Biological Shield to Containment Stabilizer*
- *(c) Reactor Pressure Vessel (RPV) Male Stabilizer Attached to Outside of Drywell Shell*
- *(d) PV Female Stabilizer and Anchor Rods (also referred to as Gib) embedded in Reactor Building concrete wall*
- *(e) Biological Shield Wall and Anchor Bolts*
- *(f) Reactor Vessel Support Skirt and Anchor bolts*
- *(g) Reactor Vessel Support Ring Girder and Anchor Bolts and Reactor Vessel Support Pedestal*
- *(h) Drywell internal steel shear ring*
- *(i) Drywell steel support skirt and anchor bolts*
- *(j) The drywell head closure bolts and double gasket, tongue-and-groove seal arrangement.*

Please provide additional information to identify the location in the LRA where these specific components are addressed. If these specific components are not considered to be within the scope of license renewal, please provide the technical bases for their exclusion.

Response

LRA Section 2.4.A.1 addresses not only the primary containment (drywell, pressure suppression chamber, and the vent system connecting the two structures), but also the structures inside the primary containment, attachments to the containment, and the containment supports which are not integrally attached to the vessel. Below is the list of components in question and the component type that they fall under in Table 2.4.A.1-1. Note that the Reactor Vessel Support Skirt is part of LRA Section 2.3.1.A.1, "NMP1 Reactor Pressure Vessel." All component types listed in *italics* are located in Table 2.4.A.1-1 unless otherwise noted.

(a) Reactor Vessel to Biological Shield Stabilizers – *Structural Steel (Carbon and Low Alloy Steel) in Air*

(b) Biological Shield to Containment Stabilizer – *Structural Steel (Carbon and Low Alloy Steel) in Air*

(c) Reactor Pressure Vessel (RPV) Male Stabilizer Attached to Outside of Drywell Shell – *Structural Steel (Carbon and Low Alloy Steel) in Air*

(d) RPV Female Stabilizer and Anchor Rods (also referred to as Gib) embedded in Reactor Building concrete wall – *Structural Steel (Carbon and Low Alloy Steel) in Air*

(e) Biological Shield Wall and Anchor Bolts – *Concrete in Air; Fasteners (Carbon and Low Alloy Steel) in Air*

(f) Reactor Vessel Support Skirt and Anchor bolts – *Support Skirt and Attachment Welds (LRA Table 2.3.1.A.1-1); Fasteners (Carbon and Low Alloy Steel) in Air*

(g) Reactor Vessel Support Ring Girder and Anchor Bolts and Reactor Vessel Support Pedestal – *Structural Steel (Carbon and Low Alloy Steel) in Air; Fasteners (Carbon and Low Alloy Steel) in Air; Concrete in Air*

(h) Drywell internal steel shear ring – *Structural Steel (Carbon and Low Alloy Steel) in Air*

(i) Drywell steel support skirt and anchor bolts – *Structural Steel (Carbon and Low Alloy Steel) in Air; Fasteners (Carbon and Low Alloy Steel) in Air*

(j) Drywell head closure bolts and double gasket, tongue-and-groove seal arrangement – *Stainless Steel (Wrought Austenitic Stainless Steel) in Air; Polymer in Air*

RAI 2.4.A-2

LRA Table 2.4.A.1-1 does not include refueling seals within the scope of the license renewal scope and related aging management program. These seals perform its safety-related function to maintain the required reactor water level during refueling. Please provide the following information:

- *Verification that the refueling seals are included in the license renewal scope with related aging management program(s) credited to manage aging effect of the seals, or provide a detailed explanation for their exclusion.*
- *A detailed description of the plant-specific operating experience for the refueling seals, including incidences of degradation, method of detection, root cause, corrective actions, and current inspection procedures.*

- *A detailed description of the scoping, screening, and aging management review for the refueling seals.*

Response

The NMP1 refueling seals are within the scope of license renewal (LR) and subject to aging management review (AMR). The refueling seal is basically comprised of five components. Two of the components are the two stainless steel bellows permanently welded in place. One of these is between the liner and the drywell shell. The other is between the refueling seal platform and the reactor vessel flange. The third component is the carbon steel refueling seal platform. During normal operation, the refueling seal platform has twenty-four openings to the drywell for ventilation. During refueling, the fourth component, the carbon steel refueling seal platform cover, is installed in twenty-four pieces to cover each of the openings, with gaskets between the covers and the platform. The fifth component is the gasket between the refueling seal platform and the refueling seal platform cover. This component is also in twenty-four pieces corresponding with the number of pieces in the refueling seal platform cover. The two bellows, the refueling seal platform, and the refueling seal platform covers are within the scope of LR and subject to AMR. The gaskets between the cover pieces and the platform are not in-scope for LR. The in-scope components are, therefore, addressed in LRA Table 2.4.A.1-1 as follows: (1) the bellows are included in the component type "Structural Steel (Wrought Austenitic Stainless Steel) in Air;" and (2) the refueling seal platform and the refueling seal platform covers are included in the component type "Structural Steel (Carbon and Low Alloy Steel) in Air." The environment is air because these components are in an air environment during normal operation. They are only wetted during refueling operations. The in-scope components are addressed by the same component types in LRA Section 3.5.2.A.1 and Table 3.5.2.A-1. As seen in the table, for the stainless steel bellows in air, there are no aging effects requiring management (AERMs) and, therefore, no aging management program (AMP) required. For the refueling seal platform and the platform covers, there is an AERM of Loss of Material, which is managed by the Structures Monitoring Program.

There has been no plant operating experience that indicates that there has been leakage from the refueling seals at NMPNS. Further, any corrosion of the drywell in visible areas would be detected and mitigated each refueling outage when the refueling cavity is filled. Any potential leakage would be observed prior to its settling in an inaccessible area of the drywell.

Additionally, NRC Information Notice 86-99 and Generic Letter 87-05 requested that utilities mitigate and/or identify potential degradation of Mark I containments. This degradation occurred at Oyster Creek as a result of water intrusion in the air gap due to leakage past the refueling seal and subsequent wetting of the sand cushion at the bottom of the air gap. Nine Mile Point (NMP) conducted several investigations and inspections which determined that water intrusion into the NMP1 sand cushion had not occurred and that periodic examination of the sand cushion area drain lines is not warranted.

RAI 2.4.A-3

Based on information provided in LRA Section 2.4.A.1, it is not clear to the staff if all drywell and torus supports are within the scope of license renewal. If they are in scope for license *renewal, please provide a description of its scoping and aging management review. If they are covered somewhere else in the LRA, please indicate the location. If they are excluded from the scope of license renewal, please provide the basis for their exclusion.*

Response

Drywell supports are included in LRA Section 2.4.A.1. The drywell supports are listed under the component type "Structural Steel (Carbon and Low Alloy Steel) in Air" in LRA Table 2.4.A.1-1. The torus supports (i.e., Torus Support Columns) are included in LRA Section 2.4.A.2, "NMP1 Reactor Building." They are listed in LRA Table 2.4.A.2-1 under the component type "Torus Support Columns." These two component types encompass all drywell and torus supports.

The aging management of the drywell supports is addressed under the component type "Structural Steel (Carbon and Low Alloy Steel) in Air" in LRA Table 3.5.2.A-1. These supports are managed by the Structures Monitoring Program, which is consistent with GALL Report Item III.A4.2-a. Aging management of the Torus Support Columns is addressed in LRA Table 3.5.2.A-2 under the component type "Torus Support Columns." These supports are managed by the ASME Section XI Inservice Inspection (Subsection IWF) Program, consistent with GALL Report Item III.B1.3.1-a.

RAI 2.4.A-4

From LRA Table 2.4.A.2-1, it is not clear if the entire enclosure building of the BWR reactor building with steel superstructure (including the metal structure, metal panels) is within the scope of license renewal. Please clarify the extent to which items of the enclosure building are within the scope of license renewal, and indicate the location(s) where its components are included in the aging management review (AMR) in Table 3.5.2.A-2.

Response

The Reactor Building (RB) is a concrete structure up to the refueling floor elevation. Above this elevation, it is a steel-framed structure with metal wall and panels. The concrete structure of the RB is included under the component type "Concrete in Air" in LRA Tables 2.4.A.2-1 and 3.5.2.A-2. The steel structural members above the refueling floor are included under the component type "Structural Steel (Carbon and Low Alloy Steel) in Air" in LRA Tables 2.4.A.2-1 and 3.5.2.A-2. The metal panels are included under the component type "Siding in Air" in LRA Table 2.4.A.2-1 and under the component type "Metal Siding in Air" in LRA Table 3.5.2.A-2. The concrete, steel, and metal siding are all within the scope of LR. The last sentence on LRA page 2.4-5 states: "The entire RB is made up of components that require AMR." This was meant to indicate that all of the components that comprise the RB are within the scope LR and subject to AMR.

RAI 2.4.A-5

Section 2.4.A.5 of the LRA states that the only components that require an AMR are the screenhouse gate hoists and the 125-ton capacity reactor building (RB) crane. No rails and crane associated components appear to be included within the scope requiring an AMR.

Please provide clarification on the treatment of cranes and hoists in the scoping and screening, and in the aging management review. In this regard, please submit the following information:

(a) A list of all cranes/hoists/rails and associated components in the scope of license renewal.

(b) A list of all cranes/hoists/rails and associated components requiring an aging management review (i.e., passive, long-lived).

(c) A list of all cranes/hoists/rails and associated components requiring aging management and/or time-limited aging analysis (TLAA).

Response

(a) The NMP1 125-ton capacity RB overhead crane and the screenhouse gate hoists are the only cranes/hoists that meet the 10 CFR 54.4(a) criteria for inclusion within the scope of LR. These components perform safety-related intended functions. From LRA Section 2.4.A.5, the crane rails and girders are included as part of the structural steel component type for the building in which the crane is located. Other associated components, such as annunciators, circuit breakers, switches, motors, relays, resistors, and transformers, are classified as active components and, therefore, are not subject to AMR.

(b) The list of components requiring AMR, along with their corresponding LRA table location, is provided below.

- 125-ton RB Crane – Table 3.5.2.A-5
- Screenhouse Gate Hoists – Table 3.5.2.A-5
- 125-ton RB Crane Girders and Rails – Table 3.5.2.A-2, under the component type "Structural Steel (Carbon and Low Alloy Steel) in Air"
- Screenhouse Gate Hoists Girders and Rails – Table 3.5.2.A-8, under the component type "Structural Steel (Carbon and Low Alloy Steel) in Air"

(c) LRA Section 2.4.A.5 and Table 2.4.A.5-1 list those component types that are within the scope of LR and subject to AMR. No cranes at NMP1 met the fatigue analysis requirement for a time-limited aging analysis (TLAA) due to the Service Class A designation for the in-scope cranes from the Crane Manufacturer's Association of America. Service Class A represents "Standby or Infrequent Service."

RAI 2.4.A-6

Based on information provided in some of the tables of Section 2.4.A of the LRA, the staff cannot identify the insulation and insulation jacketing included in the license renewal scope nor the specific subsets of insulation and insulation jacketing that are included in the Section 2.4.A tables. It is also unclear whether insulation and jacketing on the reactor coolant system has been included. Insulation and jacketing are commodities that may perform safety-related function as per 10 CFR 50.54(a)(1).

Please provide the following information:

(a) *Identify the structures and structural components designated as within the scope of license renewal that have insulation and/or insulation jacketing.*

(b) *List all insulation and insulation jacketing materials associated with the item (a) above that require an aging management review and the results of the aging management review for each.*

(c) *For insulation and insulation jacketing materials associated with the item (a) above that do not require aging management, submit the technical basis for this conclusion, including plant-specific operating experience.*

(d) *For insulation and insulation jacketing materials associated with the item (a) above that require aging management, indicate the applicable LRA sections that identify the aging management program(s) credited to manage aging.*

Response

NMP1 does not have any structures or structural components designated as within the scope of LR that have insulation and/or insulation jacketing. Therefore, insulation is not included in any LRA Section 2.4.A table. The NMP1 design does not require insulation of structural steel or concrete, based upon a review of current licensing basis documents, including safety analyses and plant evaluations.

RAI 2.4.A-7

With respect to the NMP1 Screen and Pump House, please confirm that items, such as, hatches and plugs; structural steel embedments; reinforced concrete foundation footings; grouted concrete; and water proofing membrane materials, are within the scope of license renewal and requiring an aging management review (AMR). If these components are within the scope of license renewal, please provide additional information in the format of LRA Table 2.4.A.9-1. If they are not within the scope of license renewal, please provide the basis for their exclusion.

Response

The items listed in the RAI are within the scope of LR and subject to AMR. The component types listed in LRA Table 2.4.A.9-1 that represent these items are:

- There are no "hatches" in the NMP1 Screen and Pump House. All doors are included under the component type "Door."
- Plugs are concrete and included in the component type "Concrete in Air."
- Embedded portions of structural steel embedments are integral with the concrete and included with the component type "Concrete in Air" or "Concrete in Raw Water," depending on the location of the embedment. The portion of the structural steel which is exposed to atmosphere is included under the component type "Structural Steel (Carbon and Low Alloy Steel) in Air" or "Structural Steel (Carbon and Low Alloy Steel) in Raw Water," depending on the location of the embedment.

- Reinforced concrete foundation footings are included in the component type "Concrete in Soil Above the GWT" or "Concrete in Soil Below the GWT," depending on the footing depth.

- Grouted concrete is not used at NMP1. Structural concrete is included in the various concrete component types, depending on its environment.

- Waterproofing membranes are not included because they are applied as coatings. NMPNS does not credit coatings to mitigate aging effects.

LRA Section 2.4.B, NMP2 Structures

RAI 2.4.B-1

NMP2 primary containment encloses the reactor vessel and a number of other structures, such as the biological shield wall, concrete pedestal, and the barrier floor between the drywell and the suppression chamber. Table 2.4.B.1-1 does not indicate these structures to be in the scope of license renewal, though they perform safety-related functions per 10 CFR 50.54(a)(l). If they are within the scope of license renewal, please provide a description of its scoping and aging management review. If they are covered somewhere else in the LRA, please indicate the location. If they are excluded from the scope of license renewal, please provide the basis for their exclusion.

Response

The components listed in the RAI are within the scope of LR and subject to AMR. They are included within the component types listed in LRA Table 2.4.B.1-1. The biological shield wall, concrete pedestal, and the barrier floor are contained under the component type "Concrete in Air." Any structural steel components associated with those structures are included in the various Structural Steel component types on LRA page 2.4-27 depending on the type of steel. Since the structures in question are comprised of multiple materials, they have been captured in LRA Table 2.4.B.1-1 as a function of their materials of construction instead of their functional names.

RAI 2.4.B-2

LRA Section 2.4.B.1 does not indicate that the steel liners of both the drywell and the suppression chambers, steel down-comers pipes, lateral support frames for down-comer piping, all drywell and torus supports and steel embedments are included within the scope of license renewal, though they perform safety-related functions per 10 CFR 50.54(a)(1). If they are within the scope of license renewal, please provide a description of its scoping and aging management review. If they are covered somewhere else in the LRA, please indicate the location. If they are excluded from the scope of license renewal, please provide the basis for their exclusion from the scope of license renewal.

Response

The steel liners of both the drywell and the suppression pool are in-scope for LR. Liners are included in the following component types, depending on their type of steel and the environment in which they are found (i.e., either in the drywell or in the suppression pool): "Structural Steel (Carbon and Low Alloy Steel) in Air," "Structural Steel (Carbon/Low Alloy Clad with Stainless Steel) in Air," "Structural Steel (Carbon/Low Alloy Clad with Stainless Steel) in Demineralized Untreated Water," "Structural Steel (Wrought Austenitic Stainless Steel) in Air," or "Structural Steel (Wrought Austenitic Stainless Steel) in Demineralized Untreated Water." Steel downcomer pipes are included in the component types "Structural Steel (Wrought Austenitic Stainless Steel) in Air" and "Structural Steel (Wrought Austenitic Stainless Steel) in Demineralized Untreated Water," since portions of the pipes are in air and water environments. The NMP2 design does not include lateral support frames for the downcomer piping.

The drywell is a massive concrete structure that is supported vertically by a ten-foot thick mat foundation. The foundation mat is included in the component type "Concrete in Soil Below the GWT" in LRA Table 2.4.B.2-1. Lateral support is provided by the Reactor Building concrete floors which are included in the component type "Concrete in Air" in LRA Table 2.4.B.2-1. Specific "drywell supports" do not exist because the drywell is poured monolithically with the Reactor Building.

NMP2 is a Mark II containment design that does not utilize a torus; therefore, no torus supports exist at NMP2.

Embedded portions of structural steel embedments are integral with the concrete and included in the component type "Concrete in Air." The portion of the structural steel that is exposed to air is included in the component type "Structural Steel (Carbon and Low Alloy Steel) in Air" or "Structural Steel (Wrought Austenitic Stainless Steel) in Air," depending on the type of steel.

RAI 2.4.B-3

From Table 2.4.B.2-1, it is not clear if the entire enclosure building (including the steel framing, metal siding, sealer materials, the overhead crane and its railing) is within the scope of license renewal. Please clarify the extent to which items of the enclosure building above the operating floor are within the scope of license renewal, and provide a description of scoping and aging management review for the applicable components in the format of Table 2.4.B.2-1.

Response

The Reactor Building (RB) is a concrete structure up to the refueling floor elevation. Above this elevation, it is a steel-framed structure with metal wall panels. The steel framing members above the refueling floor are included in LRA Table 2.4.B.2-1 in the component type "Structural Steel (Carbon and Low Alloy Steel) in Air." The metal panels are included in LRA Table 2.4.B.2-1 in the component type "Metal Siding in Air." Sealer materials are included in the component type "Polymer in Air" in LRA Table 2.4.B.2-1. The Reactor Building overhead crane is included in LRA Table 2.4.B.9-1 as the component type "Polar Crane." The crane rails are included in LRA Table 2.4.B.2-1 in the component type "Structural Steel (Carbon and Low Alloy Steel) in Air." The aforementioned components and component types are within the scope of LR and subject to

AMR. The last sentence on LRA page 2.4-28 states: "The entire RB is made up of components that require an AMR." This is meant to indicate that all of the components that comprise the RB are within the scope of LR and subject to AMR.

RAI 2.4.B-4

LRA Section 2.4.B.6 states that the NMP2 Essential Yard structures (EYS) include items such as electrical equipment, piping, and vent tunnels; manholes; underground duct banks; and earth berms and ditches used for flood control. The EYS is said to also include the structures that support the equipment and high voltage lines in the switch switchyard and Scriba substation for Station Blackout (SBO). LRA Table 2.4.B.6-1 does not indicate that some structural steel supports or embedments associated with the above listed structures are in the scope of license renewal, though they perform safety-related functions per 10 CFR 50.54(a)(1). If they are included within the scope of license renewal, please provide a description of its scoping and include the structural steel items in the format of Table 2.4.B.6-1. If they are excluded from the scope of license renewal, please provide the basis for its exclusion.

Response

The equipment and high voltage line supports in the switchyard and Scriba substation are within the scope of LR under criterion 10 CFR 54.4(a)(3) for station blackout (10 CFR 50.63). In LRA Section 2.4.B.6 and Table 2.4.B.6-1, structures that support the equipment and high voltage lines in the switchyard and the Scriba substation are included in the component types "Structural Steel (Carbon and Low Alloy Steel) in Air," "Treated Wood in Air," "Treated Wood in Soil Above the GWT," and "Treated Wood in Soil Below the GWT." Embedments are included as part of the "Concrete in Air" component type, with the exposed portion of anchor bolts included in the component type "Fasteners (Carbon and Low Alloy Steel) in Air." Hilti bolts are included in the "Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air" component type.

RAI 2.4.B-5

LRA Table 2.4.B.11-1 lists structural steel foundation piles (carbon and low alloy steel) in undisturbed soil as one of the component types in the NMP2 screenwell building requiring an AMR. Since these piles are inaccessible, please discuss NMP2's results of the AMR of the piles and indicate the location in the LRA where the aging management of the piles is discussed.

With respect to the NMP2's Table 2.4.B.11-1, Screenwell Building, please confirm that items, such as, hatches and plugs; structural steel embedments; reinforced concrete foundation footings; grouted concrete; and water proofing membrane materials, are within the scope of license renewal. If they are within the scope of license renewal, please indicate location in the LRA that indicates these components are designated as requiring an AMR or provide additional information in the format of the above noted table. If they are excluded from the scope of license renewal, please provide the basis for its exclusion.

Response

The structural steel foundation piles in undisturbed soil are subject to AMR. However, the component type "Structural Steel Foundation Piles (Carbon and Low Alloy Steel) in Undisturbed

Soil" has no aging effects. As stated in Section 4.3.1.1 of Electric Power Research Institute (EPRI) TR-103842, undisturbed soils are so deficient in oxygen at levels a few feet below the ground surface or below the water table, that steel piles are not appreciably affected by corrosion, regardless of the soil type or the soil properties. NMPNS is situated on a site where the ground water and soil are both non-aggressive in nature as defined by NUREG-1800. Previous LRAs (e.g., Fort Calhoun) have also not identified any aging effects requiring management for carbon steel foundation piles.

With respect to the LRA Table 2.4.B.11-1, the items listed in the RAI are in-scope for LR and subject to AMR, with the exception of the waterproofing membranes. Waterproofing membranes are not included because they are applied as coatings. NMPNS does not credit coatings to mitigate aging effects. The component types listed in LRA Table 2.4.B.11-1 that represent these items are:

- There are no "hatches" in the NMP2 Screenwell Building. All doors are included in the component type "Door."
- Plugs are concrete and included in the component type "Concrete in Air."
- Embedded portions of structural steel embedments are integral with the concrete and included in the component type "Concrete in Air" or "Concrete in Raw Water," depending on the location of the embedment. The portion of the structural steel that is exposed to atmosphere is included under the component type "Structural Steel (Carbon and Low Alloy Steel) in Air" or "Structural Steel (Carbon and Low Alloy Steel) in Raw Water," depending on the location of the embedment.
- Reinforced concrete foundation footings are included in the component type "Concrete in Soil Above the GWT" or "Concrete in Soil Below the GWT," depending on the footing depth.
- Grouted concrete is not used at NMP2. Structural concrete is included in the various concrete component types, depending on its environment.

RAI 2.4.B-6

Based on information provided in some of the tables of Section 2.4.B of the LRA, the staff cannot identify the insulation and insulation jacketing included in the license renewal scope nor the specific subsets of insulation and insulation jacketing that are included in the Section 2.4.B tables. It is also unclear whether insulation and jacketing on the reactor coolant system has been included.

Please provide the following information:

(a) Identify the structures and structural components designated as within the scope of license renewal that have insulation and/or insulation jacketing.

(b) List all insulation and insulation jacketing materials associated with the item (a) above that require an aging management review and the results of the aging management review for each.

(c) *For insulation and insulation jacketing materials associated with the item (a) above that do not require aging management, submit the technical basis for this conclusion, including plant-specific operating experience.*

(d) *For insulation and insulation jacketing materials associated with the item (a) above that require aging management, indicate the applicable LRA sections that identify the aging management program(s) credited to manage aging. (Similar to RAI 2.4.A-6)*

Response

NMP2 does not have any structures and structural components designated as within the scope of LR that have insulation and/or insulation jacketing. Therefore, insulation is not included in any LRA Section 2.4.B table. The NMP2 design does not require insulation of structural steel or concrete, based upon a review of current licensing basis documents, including safety analyses and plant evaluations.

RAI 2.4.B-7

With respect to the NMP2 Screenwell Building, please confirm that items, such as, hatches and plugs; structural steel embedments; reinforced concrete foundation footings; grouted concrete; and water proofing membrane materials, are within the scope of license renewal and requiring an aging management review (AMR). If these components are within the scope of license renewal, please provide additional information in the format of LRA Table 2.4.B.11-1. If they are not within the scope of license renewal, please provide the basis for their exclusion. (Similar to RAI 2.4.A-7)

Response

The items listed in the RAI are within the scope of LR and subject to AMR with the exception of the waterproofing membranes. Waterproofing membranes are not included because they are applied as coatings. NMPNS does not credit coatings to mitigate aging effects. The component types listed in LRA Table 2.4.B.11-1 that represent these items are:

- There are no "hatches" in the NMP2 Screenwell Building. All doors are included in the component type "Door."

- Plugs are concrete and included in the component type "Concrete in Air."

- Embedded portions of structural steel embedments are integral with the concrete and included in the component type "Concrete in Air" or "Concrete in Raw Water," depending on the location of the embedment. The portion of the structural steel that is exposed to atmosphere is included in the component type "Structural Steel (Carbon and Low Alloy Steel) in Air" or "Structural Steel (Carbon and Low Alloy Steel) in Raw Water," depending on the location of the embedment.

- Reinforced concrete foundation footings are included in the component type "Concrete in Soil Above the GWT" or "Concrete in Soil Below the GWT," depending on the footing depth.

- Grouted concrete is not used at NMP2. Structural concrete is included in the various concrete component types, depending on its environment.

LRA Section 3.5, Aging Management of Structures and Component Supports (NMP1)

RAI 3.5.A-1

The applicant asserts in items 3.5.1.A-3 and 3.5.1.A-17 of LRA Table 3.5.1.A that the aging management review (AMR) results are consistent with NUREG-1801 with the exceptions described in AMP B.2.1.23. NUREG-1801 under item B1.1.1-d (page II B1.5) recommends further evaluation regarding the stress corrosion cracking of containment bellows. In the discussion of these items with the staff, the applicant asserts that crack initiation and growth due to stress corrosion cracking (SCC) are not applicable to NMP1 vent line bellows. In similar environmental conditions, NRC Information Notice 92-20 indicates the existence of thermal growth SCC of pressure boundary bellows. Please provide additional information to address the effectiveness of the applicable aging management program(s) that detect (or would detect) degradation of vent line as well as other containment penetration bellows.

Response

Although the vent line bellows, vent line headers, and downcomers at NMP1 are not normally subjected to conditions that cause cracking due to cyclic loading and crack growth due to stress corrosion cracking (SCC), the LRA will be revised to reflect the recommendations in NUREG-1611, Table 2, Item 12. The recommendations in NUREG-1611 identify stress corrosion cracking as an aging effect requiring management by examination categories E-B and E-F of the ASME Section XI Inservice Inspection (Subsection IWE) Program (LRA Section B2.1.23) and by the 10 CFR 50 Appendix J Program (LRA Section B2.1.26). In addition, per NUREG-1611, an augmented VT-1 visual examination will be performed using enhanced techniques qualified for detecting SCC. This augmented inspection will be included as an enhancement to the IWE inspection program.

LRA Revisions

LRA Section A1.1.2 (page A1-1) is revised to add the following paragraph to that section:

> "The NMP1 ASME Section XI Inservice Inspection (Subsection IWE) Program is being enhanced to add an augmented VT-1 visual examination of the NMP1 containment penetration bellows. This inspection will be performed using enhanced techniques qualified for detecting SCC per NUREG-1611, Table 2, Item 12."

LRA Section A2.1.2 (page A2-1) is revised to add the following paragraph to that section:

> "The NMP2 ASME Section XI Inservice Inspection (Subsection IWE) Program is being enhanced to add an augmented VT-1 visual examination of the NMP2 containment penetration bellows. This inspection will be performed using enhanced techniques qualified for detecting SCC per NUREG-1611, Table 2, Item 12."

LRA Section B2.1.23 (page B-46), under the "Enhancements" heading, is revised to replace "None" with the following:

Enhancements

An augmented VT-1 visual examination of the NMP1 and NMP2 containment penetration bellows will be performed using enhanced techniques qualified for detecting SCC, per NUREG-1611, Table 2, Item 12.

RAI 3.5.A-2

Item number 3.5.1.A-06 of LRA Table 3.5.1.A states that containment ISI (AMP B.2.1.23) and containment leak rate test (AMP B.2.1.26) are programs for managing aging of seals, gaskets, and moisture barriers. LRA Table 3.5.2.A discusses these components under a generic category of "polymer in air." However, based on exception taken in AMP B.2.1.23, this AMP will not be applicable for aging management of containment seals and gaskets. Please explain this discrepancy.

For seals and gaskets of equipment hatches and air-locks at NMP1, the staff recognizes that the leak rate testing program will monitor aging degradation of seals and gaskets, as they are leak rate tested after each opening. Please provide information to justify that Type B leak rate testing frequency is adequate for monitoring aging degradation of containment pressure boundary penetrations (mechanical and electrical) with seals and gaskets.

Response

The inspection of the component type "Polymer in Air" is included in the ASME Section XI Inservice Inspection (Subsection IWE) Program (LRA Section B2.1.23). The exception described in LRA Section B2.1.23 identifies that the Subsection IWE inservice inspection (ISI) program for NMP1 is based on the 1998 Edition of ASME Section XI, rather than the 1992/1995 editions and addenda. This was found acceptable by the NRC in a safety evaluation report dated August 17, 2000. There is no exception taken to the performance of examinations for the subject polymeric components.

The aging management of the electrical penetrations and their associated polymeric components is addressed in the NMPNS LRA supplemental letter NMP1L 1912, dated January 10, 2005. These components are managed by the ASME Section XI Inservice Inspection Program (LRA Section B2.1.23) and the 10 CFR 50 Appendix J Program (LRA Section B2.1.26). The mechanical primary containment penetrations for NMP1 are seal-welded to the containment shell and do not utilize polymeric seals or gaskets for pressure retention.

NMP1 uses Option B for testing of the containment under 10 CFR 50, Appendix J. Type B testing of containment penetrations follows the guidance provided in NRC Regulatory Guide 1.163 and Nuclear Energy Institute (NEI) 94-01. The testing frequency for these components is at least once per 30 months. However, under Option B, the test frequency may be extended to 60 months and then 120 months based upon component testing performance, service conditions and environment, penetration design, and safety impact of penetration failure. For those components with extended testing frequencies, an approximately even distribution is tested during each interval (i.e., 30 months) to minimize the impact of unanticipated random failures and increase the likelihood of detecting common-mode failures. Based on the above attributes, there is reasonable assurance that the Type B testing frequency is adequate for monitoring aging degradation of containment penetrations with seals and gaskets.

RAI 3.5.A-3

The applicant is taking exceptions in the containment ISI program (AMP B.2.1.23) to preclude examinations of seals, gaskets, and bolting of pressure boundary joint points. Occasional SRV discharges, sustained elevated temperatures (may be less than 150°F), and high humidity, could contribute to degradation of containment pressure boundary. Only Type A leak rate testing and associated visual examination requirements of Appendix J program (AMP B.2.1.26) can be relied upon to detect defects and degradation of containment pressure boundary joint points. The test interval for Type A leak rate testing can be 10 to 15 years. Based on the above information, please provide information regarding the activities and programs that are used for aging management and functional integrity of these pressure boundary joints for NMP1 primary containment.

Response

The exceptions noted by the NRC for the Containment ISI program (LRA Section B.2.1.23) do not preclude examinations of seals, gaskets, and bolting of pressure boundary joint points. By letter dated October 28, 1999, NMP submitted a relief request (RR-IWE/IWL-1) to the NRC which proposed the use of the 1998 Edition of ASME Section XI, Subsection IWE, in lieu of the 1992 Edition with the 1992 Addenda of Subsection IWE. The use of the 1998 Edition provides more practical requirements for the performance, training, qualification, and scheduling of examinations and provides a uniform set of requirements that eliminates the need for multiple relief requests. The NRC approved the relief request in a safety evaluation report (SER) dated August 17, 2000. As noted in the NRC SER, Examination Category E-D (Seals, Gaskets, and Moisture Barriers) and Examination Category E-G (Pressure Retaining Bolting) were eliminated from the 1998 Code. However, the examination of the pressure retaining bolting and moisture barriers is now included in Examination Category E-A, footnote (1)(d) and Item E1.30, respectively. The NRC also determined that the verification of containment leak-tight integrity through 10 CFR 50, Appendix J testing provides an adequate method to verify the pressure integrity of bolted connections, seals, and gaskets.

Containment pressure boundary joint points are examined and leak tested every two years in accordance with NMP1 instrument surveillance procedure N1-ISP-LRT-TYB. This procedure measures leakage of Type B Appendix J Containment boundaries, which include Containment penetrations whose design incorporates resilient seals, gaskets or sealing compounds, piping penetrations fitted with expansion bellows, electrical penetrations fitted with flexible metal seal assemblies, air lock door seals, and doors with resilient seals or gaskets. This surveillance verifies that the leakage through resilient seals, gaskets, sealant compounds, piping penetrations, and electrical penetrations is maintained within specified values in accordance with the NMP1 Technical Specifications and the NMP1 Appendix J Testing Program Plan.

RAI 3.5.A-4

LRA Table 3.5.2.A does not address load resisting reinforced concrete structures within the drywell shell that are likely to be subjected to temperatures higher than the established threshold of 150°F. LRA item 3.5.1.A-27 indicates that the operating temperatures are not sufficient to result in the aging effects/mechanism for these components. Please provide additional information to address the following questions that are related to these structures:

(1) Are these structures kept within the threshold temperature 150°F by a cooling system? If yes, please provide a summary of the operating experience related to the reliability of the cooling ventilation system. If no, provide the method of monitoring the temperatures of these structures.

In addition, please provide a summary of the results of the last inspections performed on (1) RPV pedestal supports, (2) the foundation and floor slabs, and (3) the sacrificial shield wall under the existing Structural Monitoring Program.

Response

Load resisting reinforced concrete structures within the drywell shell are not subjected to temperatures higher than the established threshold of 150°F. NMP1 UFSAR Section VI.E.1.2 states that 150°F is the design basis maximum temperature limit for the drywell bulk ambient temperature under normal operation. The reinforced concrete primary containment structure is addressed in LRA Table 3.5.2.A-1 in the component type "Concrete in Air."

Drywell temperatures are maintained by the safety-related Primary Containment Area Cooling System which is in-scope for LR and is described in LRA Section 2.3.3.A.5. The system must be in service to support plant operation; there is no acceptable unavailability. There are six containment cooling units of which five must be in operation to maintain the containment below its temperature limits. All six units in operation maintain the containment at or below 135°F.

The results of the last inspections performed on (1) RPV pedestal supports, (2) the foundation and floor slabs, and (3) the sacrificial shield wall under the existing Structural Monitoring Program show the structures to be in good to excellent condition.

RAI 3.5.A-5

LRA Table 3.5.2.C-1 does not address aging effects and aging management program (AMP) for fasteners and structural steel that are made of martensitic precipitation hardenable material. Please provide a discussion regarding the stress corrosion potential of these fasteners and structural steel, considering the hardness of these materials, and that the fasteners are subjected to 100% moisture or occasional water environment due to pipe or valve leakage. Please also provide operating experience related to these items at NMP1.

Response

LRA Table 3.5.2.C-1 identifies fasteners (precipitation hardenable) in air (for NMP1 only) with no aging effect requiring management. The material for these fasteners is A-193, Grade B-6

(AISI Type 410). Martensitic stainless steels are hardened by quenching and tempering similar to high strength carbon and low alloy stainless steels, but have better corrosion resistance than carbon and low alloy steels. Precipitation hardenable stainless steels are typically used for parts requiring high strength applications. The minimum specified tempering temperature for A-193, Grade B-6 (AISI Type 410) is 1100°F, resulting in a yield strength of approximately 100 ksi. Throughout NMP1, these fasteners are in-scope due to two intended functions: (1) structural support for NSR and (2) structural/functional support. For stress corrosion cracking to occur, significant moisture must be present. Martensitic, precipitation hardenable stainless steels are susceptible to stress corrosion cracking in most waters. However, stress corrosion cracking will not occur at temperatures <140°F even in a moist or occasionally wet environment. Many of the component supports are for heating, ventilation, and air conditioning (HVAC) equipment, with these fasteners exposed to indoor air in the Turbine Building, the Waste Disposal Building, and the Offgas Building, which do not see sustained temperatures ≥140°F. In addition, susceptibility to stress corrosion cracking increases with increasing yield strength, with most failures occurring at yield strengths ≥140 ksi. Since the yield strength of A-193, Grade B-6 (AISI Type 410) is approximately 100 ksi, it is very unlikely that stress corrosion cracking will occur. NUREG-1801, Section XI.M18, "Bolting Integrity," states that cracking must be monitored for bolts with yield strengths exceeding 150 ksi. Therefore, the fact that stress corrosion cracking is not identified as an aging effect requiring management for the fasteners is consistent with NUREG-1801. A review of the operating experience for NMP1 for the stress corrosion cracking of martensitic precipitation hardenable stainless steels found no instances of this occurring.

LRA Table 3.5.2.C-1 identifies structural steel (precipitation hardenable) in air (for NMP2 only) with no aging effect requiring management. This is addressed in the response to RAI 3.5.B-6 below.

RAI 3.5.A-6

LRA Table 3.5.2.C-1 and AMP B2.1.25 do not address aging management review related to Class MC supports. NUREG-1801, Section XI.S3, recommends the use of Subsection IWF for examination of supports of MC components. Please provide information on the results of the aging management review for (1) MC component supports within the NMP1 containment (including the supports submerged in water), (2) MC component supports outside the containments (i.e., drywell and torus), and (3) supports for piping penetrating through the containments designated as MC piping (if any). Please also provide a summary of program(s) that will be used for managing the aging effect of these supports, including sample size, inspection frequency, and personnel qualification, etc.

Response

Class MC supports are addressed in LRA Table 3.5.2.C-1. Several line items in the table correspond to NUREG-1801, Volume 2, Item III.B1.3.1-a, which is for loss of material for carbon steel ASME Class MC supports. The description of the scope of the ASME Section XI Inservice Inspection (Subsection IWF) Program in LRA Section B2.1.25 inadvertently omitted Class MC supports. The LRA will be corrected to include Class MC supports in the scope description.

All NMP1 Class MC supports are included in the ASME Section XI Inservice Inspection (Subsection IWF) Program. Class MC supports fall into three component types: (1) "Structural Steel (Carbon and Low Alloy Steel) in Air;" (2) "Structural Steel (Wrought Austenitic Stainless Steel) in Air;" and (3) "Wrought Stainless Steel in Treated Water." Therefore, the only aging effect is loss of material due to general corrosion, applicable only to the carbon/low alloy steel supports.

All component supports at NMP1 are examined in accordance with the requirements of Code Case N-491-1. The sample size and inspection frequency are as specified in Table 2500-1 of Code Case N-491-1, which requires 100 percent of Class MC supports to be examined each inspection interval, except that for multiple components other than piping, within a system of similar design, function, and service, the supports of only one of the multiple components are required to be examined. The examination method is a visual VT-3 examination.

Nondestructive examination personnel at NMP1 are qualified by examination, and so certified, in accordance with SNT-TC-1A, per ASME Section XI. Level I and Level II personnel are recertified by qualification examinations every 3 years. Level III personnel are recertified by qualification examinations once every 5 years.

LRA Revision

The first sentence of LRA Sections A1.1.3 (page A1-2) and A2.1.3 (page A2-2) is revised as follows:

> "The ASME Section XI Inservice Inspection (Subsection IWF) Program (referred to herein as the IWF ISI Program) manages aging of carbon steel component and piping supports, including ASME Class MC supports, due to general corrosion and wear."

In LRA Section B2.1.25 (page B-49), under the "Program Description" heading, the first sentence is revised as follows:

> "The ASME Section XI Inservice Inspection (Subsection IWF) Program (referred to herein as the IWF ISI Program) is an existing program that manages aging of carbon steel component and piping supports, including ASME Class MC supports, due to general corrosion and wear."

RAI 3.5.A-7

(Not used)

RAI 3.5.A-8

In LRA Tables 3.5.2.A-2, 3.5.2.A-6, 3.5.2.A-8, 3.5.2.A-9 and 3.5.2.A-1, the structures monitoring program (SMP) is credited to monitor the loss of anchor capacity of expansion/grouted anchors (carbon and low alloy steel) in air. Please discuss the methods used for checking of anchor bolt torque or bolt tightness to assure that there is no loss of anchor capacity for the above anchors and to ensure that the structures monitoring program will stipulate clearly methods for monitoring the anchor capacity of expansion/grouted anchors.

Response

With respect to LRA Tables 3.5.2.A-2, 3.5.2.A-6, 3.5.2.A-8, 3.5.2.A-9, and 3.5.2.A-11, the Structures Monitoring Program (SMP) is credited with monitoring the loss of anchor capacity of expansion/grouted anchors (carbon and low alloy steel) in air. Two AERMs are identified in the LRA and NUREG-1801 for carbon steel expansion or grouted anchors: (1) loss of material due to general corrosion and (2) loss of anchor capacity due to local concrete aging mechanisms. The inspection method to determine if there is a potential for loss of anchor capacity of an expansion or grouted anchor is the identification of concrete degradation local to the anchor. If local concrete degradation is identified, additional inspections may be required as determined by evaluations performed under the NMPNS corrective action program.

Checking of anchor bolt torque or bolt tightness is not routinely performed unless the potential for loss of anchor capacity due to local concrete aging mechanisms is identified.

RAI 3.5.A-9

LRA Tables 3.5.2.A-2 and 3.5.2.A-4 state that no aging management program is needed for fasteners/structural steel (wrought austenitic stainless steel) exposed to low flow treated water with temperature less than 140 degree F. Item A5.2.b of section III of GALL report (NUREG 1801) recommends the use of an appropriate water chemistry program to manage aging of stainless steel liners exposed to water. Please explain the meaning of the "treated water" referred to above and explain the NMP1's criteria (e.g., a water chemistry control program or equivalent) used in quality control of the treated water. Also, please provide information to justify the NMP1's finding that no AMP is needed for the listed items subject to the above stipulated environment.

Response

NMP will revise LRA Tables 3.5.2.A-2 and 3.5.2.A-4 to include crack initiation and growth due to SCC and loss of material due to crevice corrosion as an AERM for the following component types: (1) "fasteners (wrought austenitic stainless steel) exposed to low flow treated water with temperature less than 140°F," and (2) "structural steel (wrought austenitic stainless steel) exposed to low flow treated water with temperature less than 140°F," and will credit the Water Chemistry Control Program described in LRA Section B2.1.2. NMP1 also monitors the spent fuel pool water level; therefore, NMP1 will be consistent with NUREG-1801 Item III.A5.2-b. The supplemental letter that NMPNS has previously committed to submit by February 28, 2005 (reference NMPNS letter NMP1L 1902 dated December 21, 2004) will include the above-described table changes.

"Treated water" is defined in LRA Table 3.0-1 (footnote on page 3.0-9), as follows:

> The water source is demineralized water that is chemically treated to remove oxygen. Corrosion inhibitors can be added to the water. Administrative limits are placed on dissolved oxygen and contaminants, and in some cases suspended solids. The concentration of contaminants is controlled by a combination of filtration, ion exchangers, or feed-and bleed (dilution) operations.

RAI 3.5.A-10

Item 3.5.1.A-21 in LRA Table 3.5.1.A states under its discussion column that "ground water test data confirm that a below grade aggressive environment does not exist." Please provide a quantitative summary of NMP1's past ground water test data to support the above assertion. Please also provide, if available, both the phosphate and phosphoric acid contents of the NMP1 ground water.

Response

NMP1 and NMP2 are situated adjacent to a very large inland fresh water lake. Groundwater testing is currently performed every six (6) months for the NMP site. No evidence of aggressive ground water (pH<5.5, >550 ppm chlorides, or sulfates >1500 ppm) has been found at NMP. Groundwater test data is consistently within the acceptable ranges for non-aggressive ground water as defined by NUREG-1801. Results from the ground water tests performed in April and October of 2003 from the two site test wells were as follows: pH 6.79-7.83; chloride 7.7-49 ppm; and sulfate 28-60 ppm. Due to the non-aggressive nature of the subsurface conditions, phosphate and phosphoric acid concentrations have not been part of the chemical analysis.

RAI 3.5.A-11

LRA Tables 3.5.2.A-2, 3.5.2.A-3, 3.5.2.A-6, 3.5.2.A-7, 3.5.2.A-9, 3.5.2.A-10 and 3.5.2.A-11 state that the structures monitoring program (SMP) is credited to manage aging of concrete in soil both above and below the ground water table (GWT) and concrete lean fill in soil below the GWT. Since these concrete elements are inaccessible because of the presence of soil, please discuss the specific provisions or methods stipulated in the NMP1's SMP that will be used to inspect or manage aging effect of these inaccessible concrete.

Response

In LRA Tables 3.5.2.A-2, 3.5.2.A-3, 3.5.2.A-6, 3.5.2.A-7, 3.5.2.A-9, 3.5.2.A-10 and 3.5.2.A-11, the Structures Monitoring Program (SMP) is credited with managing aging of concrete in soil (both above and below the ground water table (GWT)) and of concrete lean fill in soil below the GWT. Although no AERMs are expected due to the design of the reinforced concrete and the non-aggressive condition of the ground water and soil, the SMP implementing procedure provides instructions for the performance of inspections of opportunity when the inaccessible surface(s) of a buried structure is excavated or exposed. In addition to these inspections of opportunity, the inspections of similar accessible surfaces or accessible surfaces in the vicinity of the inaccessible surfaces are used to gauge the condition of the inaccessible surfaces.

RAI 3.5.A-12

Item 3.5.1.A-12 in LRA Table 3.5.1.A states, under the discussion column, that inaccessible areas are compared against accessible areas and where warranted, additional inspections are performed. Please provide examples of past NMP1 operating/inspection experience related to the above statement and discuss the types of deficiencies found and how the use of additional inspections was relied upon in resolving the deficiencies.

Response

The AERMs for LRA Table Item 3.5.1.A-12, Primary Containment (BWR), are addressed in the ASME Section XI Inservice Inspection (Subsection IWE) Program described in LRA Section B2.1.23. As stated in Section B2.1.23, both industry and plant-specific operating experience relating to the IWE ISI Program were reviewed. The review of plant-specific operating experience revealed that no deficiencies were identified that warranted further evaluation for applicability to adjacent inaccessible areas.

RAI 3.5.A-13

LRA Tables 3.5.2.A-1, 3.5.2.A-2 and 3.5.2.A-7 list the aging management review (AMR) results for polymers in air and treated water. Both 10 CFR 50 Appendix J Program and ASME Section XI, IWE Inservice Inspection Program are credited to manage the aging effects of polymers. For NMP1 Category I structures, the LRA does not indicate that polymers (e.g., compressive joints and seals, elastomer sealer or caulking material, fibre, forms and resin sealing compound, etc.) that are exposed to soil, ground water and/or other aggressive environments, are within the scope of license renewal requiring aging effect management during the period of extended operation. Please provide basis for its exclusion and also provide the aging management review results for these polymer materials exposed to the soil, ground water and/or other aggressive environments.

Response

There are no in-scope polymers (e.g., compressive joints and seals, elastomer sealer or caulking material, fiber, forms and resin sealing compound, etc.) in the NMP1 Primary Containment, Reactor Building, or Radwaste Building that are exposed to soil, ground water, and/or aggressive environments which would require aging management during the period of extended operation. This is reflected in LRA Sections 2.4.A.1, 2.4.A.2, 2.4.A.8, 3.5.2.A.1, 3.5.2.A.2, 3.5.2.A.7 and in Tables 2.4.A.1-1, 2.4.2.A.2-1, 2.4.A.8-1, 3.5.2.A-1, 3.5.2.A-2, and 3.5.2.A-7.

RAI 3.5.A-14

LRA Tables 3.5.2.A-2 and 3.5.2.C-2 list aluminum alloys exposed to either air or treated water as items having no aging effects and no AMP is credited to manage their aging. Since items such as cable trays, conduits, ducts, and tube tracks that are made of aluminum alloys might be exposed to a chemically aggressive or acidic outside environment resulting in aging of these components. Please provide past operating/inspection experience with respect to aging management of the above listed components and justify NMP1's position that no AMP is needed during the period of extended operation.

Response

Cable trays, conduits, ducts, and tube tracks are not constructed of aluminum alloys at NMP1. For NMP1, "Aluminum Alloy in Air" is the component type for fire stops and seals. A review of the NMP plant-specific operating experience did not identify any occurrences of degradation of aluminum alloy components in air or treated water. Therefore, no specific aging management program is required.

RAI 3.5.A-15

LRA Table 3.5.2.A-1 lists structural steel (wrought austenitic stainless steel) exposed to air as having no aging effect, and thus requiring no aging management program (AMP) to manage its aging effect. LRA Tables 3.5.2.A-2, 3.5.2.A-6 and 3.5.2.A-11 also list fasteners (wrought austenitic stainless steel) exposed to air as having no aging effect, thus requiring no AMP to manage their aging effect. However, sustained exposure to a chemically aggressive or acidic outside air environment might result in aging of these components. Please discuss the past operating/inspection experience with respect to aging management of the above listed components and justify the above stated position that no AMP is needed during period of extended operation.

Response

The review of NMP plant-specific operating experience for degradation of wrought austenitic stainless steel structural steel and fasteners in air did not identify any occurrences of such degradation. Thus, there have been no events that would cause NMP to identify AERMs for wrought austenitic stainless steel in air and provide an AMP for their management. Additionally, there are no environments that NMP has been able to postulate to which the stainless steel components in question could be exposed for extended periods of time that would result in an AERM. Since such an environment, if one could be postulated, would be an abnormal environmental condition and would represent a very short term exposure compared to the current licensing period and the period of extended operation, considering it for license renewal would not be warranted. For these reasons, the exclusion of any AERMs for these material/environment combinations is justified.

LRA Section 3.5, Aging Management of Structures and Component Supports (NMP2)

RAI 3.5.B-1

The applicant asserts in item 3.5.1.B-17 of LRA Table 3.5.1.B that the age management review (AMR) results are consistent with NUREG-1801 with the exceptions described in AMP B.2.1.23. NUREG-1801 under item B1.1.1-d (page II B1.5) recommends further evaluation regarding the stress corrosion cracking of containment bellows. In the discussion of these items with the staff, the applicant asserts that crack initiation and growth due to stress corrosion cracking (SCC) are not applicable to NMP1 vent line bellows. The staff also notes that NMP2 containment does not have vent line bellows. However, in similar environmental conditions, NRC Information Notice 92-20 indicates the existence of thermal growth SCC of pressure boundary bellows. Please provide additional information to address the effectiveness of the applicable aging management program(s) that detect (or would detect) degradation of stainless steel bellows in drywell and suppression chamber of the NMP2 containment. (Similar to RAI 3.5.A-1)

Response

Although the penetration sleeves, penetration bellows, and dissimilar metal welds at NMP2 are not normally subjected to conditions that cause cracking due to cyclic loading and crack growth due to stress corrosion cracking, the LRA will be revised to reflect the recommendations in

NUREG-1611, Table 2, Item 12. The recommendations in NUREG-1611 identify stress corrosion cracking as an AERM by examination categories E-B and E-F of the ASME Section XI Inservice Inspection (Subsection IWE) Program (LRA Section B2.1.23) and by the 10 CFR 50 Appendix J Program (LRA Section B2.1.26). In addition, per NUREG-1611, an augmented VT-1 visual examination will be performed using enhanced techniques qualified for detecting SCC. This augmented inspection will be included as an enhancement to the ASME Section XI Inservice Inspection (Subsection IWE) Program. The associated LRA revisions are shown in the response to RAI 3.5.A-1.

RAI 3.5.B-2

Item number 3.5.1.B-06 of LRA Table 3.5.1.B states that containment ISI (AMP B.2.1.23) and containment leak rate test (AMP B.2.1.26) are programs for managing aging of seals, gaskets, and moisture barriers. LRA Table 3.5.2.B discusses these components under a generic category of "polymer in air." However, based on exception taken in AMP B.2.1.23, this AMP will not be applicable for aging management of containment seals and gaskets. Please explain this discrepancy.

For seals and gaskets of equipment hatches and air-locks at NMP2, the staff recognizes that the leak rate testing program will monitor aging degradation of seals and gaskets, as they are leak rate tested after each opening. Please provide information to justify that Type B leak rate testing frequency is adequate for monitoring aging degradation of containment pressure boundary penetrations (mechanical and electrical) with seats and gaskets. (Similar to RAI 3.5.A-2)

Response

The inspection of the component type "Polymer in Air" is included in the ASME Section XI Inservice Inspection (Subsection IWE) Program (LRA Section B2.1.23). The exception described in LRA Section B2.1.23 identifies that the Subsection IWE inservice inspection (ISI) program for NMP2 is based on the 1998 Edition of ASME Section XI, rather than the 1992/1995 editions and addenda. This was found acceptable by the NRC in a safety evaluation report dated August 17, 2000. There is no exception taken to the performance of examinations for the subject polymeric components.

The aging management of the electrical penetrations and their associated polymeric components is addressed in the NMPNS LRA supplemental letter NMP1L 1912, dated January 10, 2005. These components are managed by the ASME Section XI Inservice Inspection Program (LRA Section B2.1.23) and the 10 CFR 50 Appendix J Program (LRA Section B2.1.26). The mechanical primary containment penetrations for NMP2 are seal-welded to the liner and do not utilize polymeric seals or gaskets for pressure retention.

NMP2 uses Option B for testing of the containment under 10 CFR 50, Appendix J. Type B testing of containment penetrations follows the guidance provided in NRC Regulatory Guide 1.163 and Nuclear Energy Institute (NEI) 94-01. The testing frequency for these components is at least once per 30 months. However, under Option B, the test frequency may be extended to 60 months and then 120 months based upon component testing performance, service conditions and environment, penetration design, and safety impact of penetration failure. For those components with extended testing frequencies, an approximately even distribution is tested during each interval (i.e., 30 months) to minimize the impact of unanticipated random failures and increase the likelihood of detecting common-mode failures. Based on the above attributes, there is reasonable assurance that the Type B testing frequency is adequate for monitoring aging degradation of containment penetrations with seals and gaskets.

RAI 3.5.B-3

The applicant is taking exceptions in the containment ISI program (AMP B.2.1.23) to preclude examinations of seals, gaskets, and bolting of pressure boundary joint points. Occasional SRV discharges, sustained elevated temperatures (may be less than 150°F), and high humidity, could contribute to degradation of containment pressure boundary. Only Type A leak rate testing and associated visual examination requirements of Appendix J program (AMP B.2.1.26) can be relied upon to detect defects and degradation of containment pressure boundary joint points. The test interval for Type A leak rate testing can be 10 to 15 years. Based on the above information, please provide information regarding the activities and programs that are used for aging management and functional integrity of these pressure boundary joints for NMP2 primary containment. (Similar to RAI 3.5.A-3)

Response

The exceptions noted by the NRC for the Containment ISI program (LRA Section B.2.1.23) do not preclude examinations of seals, gaskets, and bolting of pressure boundary joint points. By letter dated October 28, 1999, NMP submitted a relief request (RR-IWE/IWL-1) to the NRC which proposed the use of the 1998 Edition of ASME Section XI, Subsection IWE, in lieu of the 1992 Edition with the 1992 Addenda of Subsection IWE. The use of the 1998 Edition provides more practical requirements for the performance, training, qualification, and scheduling of examinations and provides a uniform set of requirements that eliminates the need for multiple relief requests. The NRC approved the relief request in a safety evaluation report (SER) dated August 17, 2000. As noted in the NRC SER, Examination Category E-D (Seals, Gaskets, and Moisture Barriers) and Examination Category E-G (Pressure Retaining Bolting) were eliminated from the 1998 Code. However, the examination of the pressure retaining bolting and moisture barriers is now included in Examination Category E-A, footnote (1)(d) and Item E1.30, respectively. The NRC also determined that the verification of Containment leak-tight integrity through 10 CFR 50, Appendix J testing provides an adequate method to verify the pressure integrity of bolted connections, seals, and gaskets.

Containment pressure boundary joint points are examined and leak tested every two years in accordance with an NMP2 instrument surveillance procedure. This procedure measures leakage of Type B Appendix J Containment boundaries, which include Containment penetrations whose design incorporates resilient seals, gaskets or sealing compounds, piping penetrations fitted with expansion bellows, electrical penetrations fitted with flexible metal seal assemblies, air lock door seals, and doors with resilient seals or gaskets. This surveillance verifies that the leakage through resilient seals, gaskets, sealant compounds, piping penetrations, and electrical penetrations is maintained within specified values in accordance with the NMP2 Technical Specifications and the NMP2 Appendix J Testing Program Plan.

RAI 3.5.B-4

NMP2 primary containment structure is a steel lined reinforced concrete structure. LRA item3.5.1.B-12 related to the primary containment liner, states that "Inaccessible areas are compared against accessible areas and where warranted, additional inspections are performed." Please (1) describe the operating experience related to the liner corrosion in the accessible as well as inaccessible areas, (2) provide acceptance criteria used when the liner is left without repair, and (3) provide information regarding any augmented inspections that had been implemented as required by IWE-1240. Please also provide this information for containment wall liner in drywell and suppression chamber, barrier slab liners, and for the liners above the insulation concrete.

Response

The NMP2 primary containment liner is comprised of the drywell and suppression pool liners. The AERM associated with LRA Table Item 3.5.1.B-12, "Primary Containment (BWR)," is addressed in the ASME Section XI Inservice Inspection (Subsection IWE) Program (LRA Section B2.1.23). As stated in LRA Section B2.1.23, both industry and NMP plant-specific operating experience relating to the IWE ISI Program was reviewed.

(1) The review of plant-specific operating experience revealed no deficiencies adjacent to inaccessible areas that warranted further evaluation. As a result of the latest inspection, the liner was found to be in good to excellent condition. The IWE inspections noted the existence of minor areas of surface corrosion and degraded coatings on the liner. Since the noted corrosion was very minor in nature, there was no structural integrity impact as a result of the corrosion. The degraded coatings were addressed via the NMPNS corrective action program.

(2) For acceptance for continued service, components must comply with the rules of Article IWE-3000, which provides acceptance standards for components of steel containments and liners of concrete containments. For the containment steel shell or liner, material loss exceeding 10 percent of the nominal containment wall thickness, or material loss that is projected to exceed 10 percent of the nominal containment wall thickness before the next examination, must be documented. Such areas where conditions exceed this acceptance criteria are either: (1) subjected to a further detailed visual examination, (2) submitted to engineering for an acceptance evaluation, or (3) corrected by repair or replacement, in accordance with IWE-3000, IWE-3122, and 10 CFR 50.55a.

(3) Containment surface areas requiring augmented examination are identified in Table IWE-2500-1, Examination Category E-C, which are those required by IWE-1240. When required, augmented ultrasonic examinations will be performed on Class MC components. These augmented exams will be performed and accepted to the requirements of the 1998 Edition of ASME Section XI, Subsection IWE. Detailed visual examinations of surface areas are identified by IWE-1242. The extent of examination shall be 100 percent for each inspection period until the areas examined remain essentially unchanged for the next inspection period. No augmented examinations have been identified for NMP2.

A general inspection of the suppression pool from the platform found the area to be in excellent condition. Platform beams located above the drywell floor where found to be in excellent condition. The containment liner, reactor pedestal liner, and pre-cast concrete beam liner appeared to be in excellent condition.

RAI 3.5.B-5

LRA Table 3.5.2.B does not address load resisting reinforced concrete and steel structures within the drywell and suppression pool. These structures are likely to be subjected to high temperatures, water environment, and very limited accessibility (it is not clear, if the inside surfaces of pedestals are accessible). Please provide the following information related to these structures:

- *What is the range of actual temperatures recorded (1) in the drywell, (2) in the inner suppression pool, and (3) in the outer suppression pool?*
- *Provide a summary of the results of the last inspections performed on (1) RPV pedestal (inside and outside), (2) the star truss, and (3) the reactor support skirt and its anchorages in the pedestal concrete.*

Response

The normal operating temperature for the drywell is less than 150°F. The average drywell air temperature is maintained between 100°F and 150°F by the Drywell Cooling System.

The normal operating temperature for the suppression pool is less than 111°F. The suppression pool air temperature is maintained less than 111°F and the water temperature is maintained less than 85°F. If either of these values is reached, suppression pool cooling is placed in service.

The results of the last inspections performed on (1) the RPV pedestal (inside and outside), (2) the star truss, and (3) the reactor support skirt and its anchorages in the pedestal concrete, under the existing Structures Monitoring Program, show the structures to be in good condition. There were no instances of degradation reported for these components.

RAI 3.5.B-6

LRA Table 3.5.2.C-1 does not address aging effects and aging management program (AMP) for fasteners and structural steel that are made of martensitic precipitation hardenable material. Please discuss the stress corrosion potential of these fasteners and structural steel considering the hardness of these materials, and that the fasteners are subjected to 100% moisture or occasional water environment due to pipe or valve leakage. Please also provide operating experience related to these items at NMP2. (Similar to RAI 3.5.A-5)

Response

LRA Table 3.5.2.C-1 identifies fasteners (precipitation hardenable) in air (for NMP1 only) with no aging effect requiring management. This is addressed in the response to RAI 3.5.A-5 above.

LRA Table 3.5.2.C-1 identifies structural steel (precipitation hardenable) in air (for NMP2 only) with no aging effect requiring management. The structural steel material is SA-564, Grade 630 (17-4PH). Precipitation hardened stainless steels contain alloying elements that form strengthening precipitates (particles) when heat treated for a specified time period, allowing these alloys to be hardened by heat treatment. Alloy 17-4PH is strengthened by forming martensite and by precipitation hardening. For nuclear applications, the typical minimum specified tempering temperature for SA-564, Grade 630 (17-4PH) is 1100°F, resulting in a yield strength of approximately 115 ksi. Throughout NMP2, the structural steel is in-scope for LR due to two intended functions: (1) structural support for NSR and (2) structural/functional support. The structural steel provides no safety-related functions for NMP2. For stress corrosion cracking to occur, significant moisture must be present. Martensitic, precipitation hardenable stainless steels are susceptible to stress corrosion cracking in most waters. However, stress corrosion cracking will not occur at temperatures <140°F even in a moist or occasionally wet environment. Many of the component supports are for HVAC equipment with the structural steel exposed to indoor air in various plant buildings, which will not see temperatures ≥140°F. In addition, susceptibility to stress corrosion cracking increases with increasing yield strength, with most failures occurring at yield strengths ≥140 ksi. Since the yield strength of SA-564, Grade 630 (17-4PH) is approximately 115 ksi, it is very unlikely that stress corrosion cracking will occur. A review of the operating experience for NMP2 for the stress corrosion cracking of martensitic, precipitation hardenable stainless steels found no instances of this occurring.

RAI 3.5.B-7

LRA Table 3.5.2.C-1 and AMP B2.1.25 do not address aging management review related to Class MC supports. NUREG-1801, Section XI.S3, recommends the use of Subsection IWF for examination of supports of MC components. Please provide the results of the aging management review for (1) MC component supports within the NMP2 containment (including the supports submerged in water), and (2) supports for piping penetrating through the containments designated as MC piping (if any). Please also provide a summary of program(s) that will be used for managing the aging of these supports, including sample size, inspection frequency, and personnel qualification, etc.

Response

Class MC supports are addressed in LRA Table 3.5.2.C-1. Several line items in the table correspond to NUREG-1801, Volume 2, Item III.B1.3.1-a, which is for loss of material for carbon steel ASME Class MC supports. The description of the scope of the ASME Section XI Inservice Inspection (Subsection IWF) Program in LRA Section B2.1.25 inadvertently omitted Class MC supports. The LRA will be revised to include Class MC supports in the scope description. The LRA revisions are provided in the response to RAI 3.5.A-6 above.

All NMP2 Class MC supports are included in the ASME Section XI Inservice Inspection (Subsection IWF) Program. Class MC supports fall into two component types: (1) "Structural Steel (Carbon and Low Alloy Steel) in Air," and (2) "Structural Steel (Wrought Austenitic Stainless Steel) in Air." Therefore, the only aging effect is loss of material due to general corrosion applicable only to the carbon/low alloy steel supports. NMP2 has no submerged Class MC supports.

All component supports at NMP2 are examined in accordance with the requirements of Code Case N-491-1. The sample size and inspection frequency are as specified in Table 2500-1 of Code Case N-491-1, which requires 100 percent of Class MC supports to be examined each inspection interval, except that for multiple components other than piping, within a system of similar design, function, and service, the supports of only one of the multiple components are required to be examined. The examination method is a visual VT-3 examination.

Nondestructive examination personnel at NMP2 are qualified by examination and so certified, in accordance with SNT-TC-1A, per ASME Section XI. Level I and Level II personnel are recertified by qualification examinations every 3 years. Level III personnel are recertified by qualification examinations once every 5 years.

RAI 3.5.B-8

In LRA Tables 3.5.2.B-2, 3.5.2.B-3, 3.5.2.B-4, 3.5.2.B-5, 3.5.2.B-6, 3.5.2.B-8, 3.5.2.B-10, 3.5.2.B-11, 3.5.2.B-12 and 3.5.2.B-13, the structures monitoring program (SMP) is credited to manage aging of concrete, concrete lean fill and treated wood in soil (both above and below the GWT), and polymer in soil below the GWT. Since these concrete elements and treated wood are inaccessible because of the presence of soil, please discuss the specific provisions or methods stipulated in the SMP that will be used to inspect or manage aging of these inaccessible components.

Response

NMP LRA Tables 3.5.2.B-2, 3.5.2.B-3, 3.5.2.B-4, 3.5.2.B-5, 3.5.2.B-6, 3.5.2.B-8, 3.5.2.B-10, 3.5.2.B-11, 3.5.2.B-12, and 3.5.2.B-13 credit the Structures Monitoring Program (SMP) to manage aging of concrete, concrete lean fill and treated wood in soil (both above and below the GWT), and polymer in soil below the GWT.

The SMP implementing procedure provides instructions for the performance of inspections of opportunity when the inaccessible surface(s) of a buried structure is excavated or exposed. The use of NMP site-specific characteristics, industry experience data, and/or testing records of items under similar conditions is also employed.

Inspections of accessible areas adjacent to inaccessible areas are also utilized. As an example, the inspection of interior areas below grade can provide indications of degradation for polymer sealing materials if ground water in-leakage is starting to occur. As stated in LRA Section B2.1.28, enhancements to the SMP will include water tight penetration inspections.

RAI 3.5.B-9

In LRA Tables 3.5.2.B-2, 3.5.2.B-4, 3.5.2.B-5, 3.5.2.B-6, 3.5.2.B-8, 3.5.2.B-10, 3.5.2.B-11, 3.5.2.B-13 and 3.5.2.C-1, the structures monitoring program (SMP) is credited to monitor the loss of anchor capacity of expansion/grouted anchors (carbon and low alloy steel) in air. Please discuss the methods used for checking of anchor bolt torque or bolt tightness to assure that there are no loss of anchor capacity for the above anchors and to ensure that the structures monitoring program will stipulate clearly methods for monitoring the anchor capacity of expansion/grouted anchors. (Similar to RAI 3.5.A-8)

Response

With respect to LRA Tables 3.5.2.B-2, 3.5.2.B-4, 3.5.2.B-5, 3.5.2.B-6, 3.5.2.B-8, 3.5.2.B-10, 3.5.2.B-11, 3.5.2.B-13, and 3.5.2.C-1, the SMP is credited with monitoring the loss of anchor capacity of expansion/grouted anchors (carbon and low alloy steel) in air. Two AERMs are identified in the LRA and NUREG-1801 for carbon steel expansion or grouted anchors: (1) loss of material due to general corrosion and (2) loss of anchor capacity due to local concrete aging mechanisms. The inspection method to determine if there is a potential for loss of anchor capacity of an expansion or grouted anchor is the identification of concrete degradation local to the anchor. If local concrete degradation is identified, additional inspections may be required as determined by evaluations performed under the NMPNS corrective action program.

Checking of anchor bolt torque or bolt tightness is not routinely performed unless the potential for loss of anchor capacity due to local concrete aging mechanisms is identified.

RAI 3.5.B-10

LRA Tables 3.5.2.B-2, 3.5.2.B-7 and 3.5.2.C-1 state that no aging management program is needed for fasteners/structural steel (wrought austenitic stainless steel) exposed to low flow treated water with temperature less than 140 degree F. Item A5.2.b of section III of GALL report (NUREG-1801) recommends the use of an appropriate water chemistry program to manage aging of stainless steel liners exposed to water. Please explain the meaning of the "treated water" referred to above and explain the NMP1's criteria (e.g., a water chemistry control program or equivalent) used in quality control of the treated water. Also, please provide information to justify the NMP2's conclusion that no AMP is needed for the listed items subject to the above stipulated environment. (Similar to RAI 3.5.A-9)

Response

NMP will revise LRA Tables 3.5.2.B-2, 3.5.2.B-7, and 3.5.2.C-1 to include crack initiation and growth due to SCC and loss of material due to crevice corrosion as an AERM for the following component types: (1) "fasteners (wrought austenitic stainless steel) exposed to low flow treated water with temperature less than 140°F," and (2) "structural steel (wrought austenitic stainless steel) exposed to low flow treated water with temperature less than 140°F," and will credit the Water Chemistry Control Program described in LRA Section B2.1.2. The supplemental letter that NMPNS has previously committed to submit by February 28, 2005 (reference NMPNS letter NMP1L 1902 dated December 21, 2004) will include the above-described table changes.

"Treated water" is defined in LRA Table 3.0-1 (footnote on page 3.0-9), as follows:

> The water source is demineralized water that is chemically treated to remove oxygen. Corrosion inhibitors can be added to the water. Administrative limits are placed on dissolved oxygen and contaminants, and in some cases suspended solids. The concentration of contaminants is controlled by a combination of filtration, ion exchangers, or feed-and bleed (dilution) operations.

RAI 3.5.B-11

LRA Item 3.5.1.B-21 in Table 3.5.1.B and item 3.5.1.B-07 in Table 3.5.1.B state under its discussion columns that "ground water test data confirm that a below grade aggressive environment does not exist." Please provide a quantitative summary of NMP2's past ground water test data to support the above assertion. Please also provide, if available, both the phosphate and phosphoric acid contents of the NMP2 ground water. (Similar to RAI 3.5.A-10)

Response

NMP1 and NMP2 are situated adjacent to a very large inland fresh water lake. Groundwater testing is currently performed every six (6) months for the NMP site. No evidence of aggressive ground water (pH<5.5, >550 ppm chlorides, or sulfates >1500 ppm) has been found at NMP. Groundwater test data is consistently within the acceptable ranges for non-aggressive ground water as defined by NUREG-1801. Results from the ground water tests performed in April and October of 2003 from the two site test wells were as follows: pH 6.79-7.83; chloride 7.7-49 ppm; and sulfate 28-60 ppm. Due to the non-aggressive nature of the subsurface conditions, phosphate and phosphoric acid concentrations have not been part of the chemical analysis.

RAI 3.5.B-12

LRA Table 3.5.2.B-6 credits NMP2's structures monitoring program (SMP) to manage aging of polymers situated in soil below the ground water table. Since these polymers are inaccessible, please explain as to how and at what frequency the structures monitoring program is used to manage both the cracking and the loss of strength aging effects of the polymers in soil below the GWT.

Response

The SMP is designed to perform periodic inspections of station structures and structural components to identify degradation and correct conditions prior to loss of function. The periodic inspections are performed on the accessible portions of the structures and structural components. Inspections of accessible areas adjacent to inaccessible areas provide an indirect assessment of the condition of the inaccessible areas. For example, if the inspection of interior areas below grade identifies ground water in-leakage, this condition could be an indication of degradation of polymer sealing materials. In this case, the evaluation of the in-leakage condition would include both the accessible and inaccessible areas and corrective actions would be taken as appropriate.

The SMP also has a specific requirement to inspect inaccessible areas when the opportunity presents itself. When the inaccessible area becomes exposed or excavated, an inspection is performed under the SMP. The parameters monitored and acceptance criteria applied to the inaccessible area are the same as those applied to the accessible areas.

Based upon the above, the SMP provides reasonable assurance that the intended functions of the inaccessible portions of structures and structural components, including polymers below the ground water table, are maintained within the current licensing basis requirements.

RAI 3.5.B-13

LRA Tables 3.5.2.B-2 and 3.5.2.B-6 list aluminum alloys exposed to either air or treated water as items having no aging effects and no AMP is credited to manage their aging. Since items such as cable trays, conduits, ducts, and tube tracks that are made of aluminum alloys might be exposed to a chemically aggressive or acidic outside environment resulting in aging of these components. Please provide past operating/inspection experience with respect to aging management of the above listed components and justify NMP2's conclusion that no AMP is needed during the period of extended operation. (Similar to RAI 3.5.A-14)

Response

Cable trays, conduits, ducts, and tube tracks are not constructed of aluminum alloys at NMP2. For NMP2, "Aluminum Alloy in Air" is the component type for overpressurization vent panels in the Reactor Building and the phase bus duct enclosure, which is part of Essential Yard Structures. A review of the NMP plant-specific operating experience did not identify any occurrences of degradation of aluminum alloy components in air or treated water. Therefore, no specific aging management program is required.

ATTACHMENT 2

List of Regulatory Commitments

The following table identifies those actions committed to by Nine Mile Point Nuclear Station, LLC (NMPNS) in this submittal. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

REGULATORY COMMITMENT	DUE DATE
Implement an enhanced ASME Section XI Inservice Inspection (Subsection IWE) Program to include an augmented VT-1 visual examination of the NMP1 and NMP2 containment penetration bellows per NUREG-1611, Table 2, Item 12, using enhanced techniques qualified for detecting stress corrosion cracking.	NMP1: August 22, 2009 NMP2: October 31, 2026