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10 CFR 50
10 CFR 51
10 CFR 54

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December 9, 2005

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

Oyster Creek Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Response to NRC Request for Additional Information, dated November 9, 2005, Related to Oyster Creek Generating Station License Renewal Application (TAC No. MC7624)

References:
(1) "Application for Renewed Operating License," Oyster Creek Generating Station, dated July 22, 2005

(2) "Request for Additional Information (RAI) for the Review of the Oyster Creek Generating Station, License Renewal Application (TAC NO. MC7624)," dated November 9, 2005

In Reference (2), the NRC requested additional information related to Section 2.1.5.2 and Section 2.1.5.15 of the Oyster Creek Generating Station License Renewal Application (LRA). In the RAI, the NRC expressed the need for additional information to evaluate certain aspects of the scoping and screening methodology used by AmerGen in the license renewal application process.

The responses to questions related to LRA Section 2.1.5.2 (RAI 2.1.5.2-1 and RAI 2.1.5.2-2) are self-contained and presented as the first items within the Enclosure.

AmerGen's evaluation of RAI 2.5.1.15-1 resulted in the decision to include additional equipment within the scope of license renewal due to its support role in coping with certain Appendix R Fire scenarios. This decision necessitated the performance of scoping, screening, aging management reviews and specification of aging management programs for some SSCs. The results of these evaluations are presented in the Enclosure. For ease of correlation to the LRA, updated sections of the LRA showing areas affected by this response have been included within the Enclosure. These items are listed on the Table of Contents at the front of the Enclosure.

A summary of commitments is presented in Appendix A of the Enclosure.

A114

If you have any questions, please contact Fred Polaski, Manager License Renewal, at 610-765-5935.

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

Respectfully,

Executed on 12/9/2005

C. N. Swenson
Site Vice President
Oyster Creek Generating Station
AmerGen Energy Company, LLC

Enclosure: Response to Request for Additional Information

cc: Regional Administrator, USNRC Region I, w/o Enclosure
USNRC Project Manager, NRR - License Renewal, Safety
USNRC Project Manager, NRR - License Renewal, Environmental, w/o Enclosure
USNRC Project Manager, NRR - Project Manager, Oyster Creek
USNRC Senior Resident Inspector, Oyster Creek, w/o Enclosure
Bureau of Nuclear Engineering, New Jersey Department of Environmental Protection
File No. 05040

# Enclosure

Response to Requests for Additional Information
Oyster Creek Generating Station
License Renewal Application (TAC No. MC7624)

RAI 2.1.5.2-1

RAI 2.1.5.2-2

RAI 2.5.1.15-1

Note: For the response to RAI 2.5.1.15-1, Section and Table numbers within the Appendices of this Enclosure match the numbering protocol used with the License Renewal Application for ease of comparison.

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## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### RAI 2.1.5.2-1

Grouted Penetrations

Section 4.5.1 of Oyster Creek Position Paper PP-03, "Criteria for Scoping Systems and Structures Relied Upon to Demonstrate Compliance With 10 CFR 54.4(a)(2)," Revision 3, provides instructions for establishing system boundaries for nonsafety-related (NSR) piping systems connected directly to safety-related (SR) piping systems. One of the acceptable methods in PP-03 for establishing license renewal (LR) piping system boundaries is to extend the piping system boundary up to a wall or slab past the SR/NSR interface and credit the grouted wall or slab piping penetration as an anchor that is equivalent to a seismic anchor. The applicant stated that thirteen grouted wall or slab piping penetrations were credited as equivalent anchors. Two of the thirteen grouted wall or slab piping penetrations were included in Stress Calculation C-1302-251-5320-004 Revision 4. The remaining 11 grouted wall or slab piping penetrations were not included in Stress Calculation C-1302-251-5320-004 Revision 4, nor were supported by any other technical analysis that demonstrated that grouted wall or slab piping penetrations are equivalent to a seismic anchor. Based on the staff's review of the applicant's scoping evaluation related to the 10 CFR 54.4a(2) criterion, the staff requires additional information to complete its review. Specifically, the staff requests the applicant provide the technical basis for establishing that the 11 grouted wall or slab piping penetrations are equivalent to seismic anchors.

**RAI 2.1.5.2-1 Response:**

The Oyster Creek pipe stress analysis Specification (SP 1302-12-294) defines an anchor as a structural anchor or three mutually perpendicular restraints (equivalent anchor). The Specification further states that the restraints imposed on a pipe run at wall and floor penetrations shall be modeled in the analysis. Grouted penetrations with pipe shear lugs are modeled as anchors. Grouted penetrations without pipe shear lugs are modeled as anchors with the axial and torsional degrees of freedom released. The Specification therefore allows generic use of grouted penetrations as equivalent anchors. For piping that requires a detailed stress analysis the penetration is modeled in the stress analysis as an anchor or a guide depending on penetration seal type and presence of shear lugs. For non-safety related piping systems there are no requirements under the current licensing basis to perform a detailed stress analysis. As a result, an analysis that would explicitly define how a penetration through a wall or slab is treated may not exist. However, the design practice at Oyster Creek is to credit penetrations as anchors, consistent with the requirement of the Specification and industry practice for pipe support design.

During the scoping and screening methodology audit, NRC Staff requested a count of grouted penetrations credited as equivalent anchors. In response to the request, AmerGen stated that 13 penetrations were credited as anchors, two of which are covered by engineering analysis. The remaining 11 penetrations are not specifically covered by a specific analysis but enveloped by the generic criteria provided in the engineering Specification for performing pipe stress analysis.

After the audit, additional reviews of plant design documentation were performed to ascertain that the 11 penetrations are required equivalent anchors. The additional reviews identified 7 of the 11 penetrations are also covered by specific analysis. Two penetrations are associated with non-safety related Fire Protection system piping included in the stress analysis of the safety related Core Spray system piping (see drawing LR-JC-19479 sheet 3, location B5 and G5). These two penetrations are included in the stress model to provide structural support in 2 orthogonal directions to the Fire Protection system piping and Core Spray piping. The support in the third orthogonal direction (axial) is provided by other supports in the piping run thus forming an equivalent anchor as defined in the engineering Specification. The other 5 penetrations are covered by engineering analysis for Instrument Control Air system (see drawing LR-BR-2013 sheet 5 location F8, and LR-BR-2013 sheet 6 location D3, D7, and D8). These reactor building penetrations (designated with cross section double arrow on the above drawings) are credited for support in 2 orthogonal directions for the 4 inch, 3 inch, 2.5 inch and 2 inch diameter air supply headers connected to safety related tubing. The third orthogonal direction support is provided by supports connected to the reactor building structure or the exhaust tunnel concrete.

Thus there are only 4 penetrations that do not have explicit design analysis to demonstrate that they are considered equivalent anchors in the CLB but are credited as equivalent anchors for license renewal. Two of the penetrations (1.5 inch and 3 inch diameter) are associated with Sumps and Waste Collection System pipes that penetrate primary containment (see LR-JC-147434 sheet 2 location C6, and drawing LR-JC-147434 sheet 3 location D7). The pipes are classified non-safety related after the primary containment isolation valves but the piping is assumed to provide structural support to the isolation valves up to and including reactor building penetrations. The reactor building penetrations are credited for support in 2 orthogonal directions consistent with the Specification requirements and penetrations discussed above, which have explicit analysis. The third orthogonal support is provided by the primary containment penetrations, which completes CLB requirements for an equivalent anchor.

The remaining 2 penetrations, 1 associated with a 4-inch diameter Demineralized Water Transfer system pipe (see drawing LR-BR-2004 sheet 1 location E7), and 1 associated with a 6-inch diameter Condensate Transfer System pipe (see drawing LR-BR-2004 sheet 2 location F7) do not have explicit analysis but are credited as equivalent anchors. The 2 pipes are routed through grouted penetrations in the exterior south wall of the reactor building. Because documentation required for establishing the presence of shear lugs could not be found, the penetrations are conservatively assumed not capable of supporting axial load consistent with stress analysis Specification requirements and penetrations discussed above. The penetrations are only credited for vertical and lateral loads and the axial load is resisted by supports in the pipe run; thus forming an equivalent anchor as defined in CLB.

Conclusion: The Oyster Creek pipe stress analysis Specification defines a seismic structural anchor as an anchor or three mutually perpendicular restraints (equivalent anchor). The Specification specifies that grouted pipes without shear lugs should be modeled as anchors with axial and torsonial degree of freedom released. Thirteen penetrations are credited for providing structural support in 2 orthogonal directions consistent with the Specification requirements. The third orthogonal direction is supported by other supports connected to the building structure; thus forming an equivalent anchor consistent with the CLB definition. Explicit analysis that indicates the

penetrations are credited as equivalent anchors has been found for 9 of the 13 penetrations. The 4 penetrations without explicit analysis are credited to provide structural support in 2 orthogonal directions. The technical basis is that Oyster Creek Specification permits the use of grouted penetrations as equivalent anchors consistent with industry practices for pipe support design. The additional technical basis for these 4 penetrations is the fact that the 4 penetrations are bounded in size and construction details by the penetrations that have explicit analysis. The support in the third direction is provided by supports in the pipe run, and the pipe run is included in scope for license renewal and subject to AMR.

**RAI 2.1.5.2-2**

Underground Piping

Section 2.1.5.2 of the Oyster Creek License Renewal Application (LRA) describes the applicant's screening and scoping methodology for NSR systems and structures affecting SR systems or structures. This section of the LRA states that piping that exits a structure and is routed underground is credited as an anchor that is equivalent to a seismic anchor. This same method is described in Section 4.5.1.3 of PP-03. During the audit, the applicant clarified that although this method is described in the LRA and PP-03, it was not used at Oyster Creek. Based on the staff's review of the applicant's scoping evaluation related to the 10 CFR 54.4 a (2) criterion, the staff requires additional information to complete its review. Specifically, the staff requests the applicant verify that underground piping was not credited as an anchor that is equivalent to a seismic anchor.

**RAI 2.1.5.2-2 Response:**

The underground piping method described in the LRA (Section 2.1.5.2, item 4, "A point where the non-safety related line exits a structure and is routed underground") and PP-03 was not used or credited as an anchor. Oyster Creek scoping and screening methodology does not rely on non-safety related piping run underground to provide structural support to safety related piping. The boundary for non-safety related piping that provides structural support to safety related piping terminates at the outside face of the exterior wall of the building. The grouted penetration, not the ground, is credited as an equivalent anchor as defined in the CLB.

**RAI 2.5.1.15-1**

Support Systems

Section 4 of the Oyster Creek Position Paper PP-07, "Systems and Structures Relied upon to Demonstrate Compliance with 10 CFR 54.48 - Fire Protection," Revision 3, states that first-level, primary support systems that are necessary for the functioning of equipment credited in the Fire Hazard Analysis Report or Safe Shutdown Analysis to demonstrate compliance with 10 CFR 54.48 (Fire Protection) are included in scope of LR. Table 1 of PP-07 lists the standby gas engine generator as in scope of LR. However, Section 2.5.1.15, "Radio Communication System," of the Oyster Creek LRA does not list the standby gas engine generator as in scope. The applicant stated during the audit that Section 2.5.1.15 of the LRA is correct and that the standby gas engine generator was removed from the scope of LR because it is not the radio communication system's primary power source.

Section 2.1.3.1.3, "Regulated Events," of NUREG-1800, "Standard Review Plan," states that an applicant need not consider hypothetical failures or second, third or fourth-level support systems in determining the systems, structures, and components (SSCs) within the scope of the rule under 10 CFR 54.4(a)(3). Section 2.1.3.1.3 also states that all SSCs that are relied upon in the plant's current licensing basis (CLB), plant-specific experience, industry-wide experience (as appropriate), and safety analyses or plant evaluations to perform a function that demonstrates compliance with NRC regulations identified under 10 CFR 54.4(a)(3), are required to be included within the scope of LR.

Based on the staff's review of the applicant's scoping evaluation related to the 10 CFR 54.4a(3) criterion, the staff requires additional information to complete its review. Specifically, the staff requests the applicant:

A. Verify that the Oyster Creek CLB, plant-specific experience, industry-wide experience (as appropriate), and safety analyses or plant evaluations do not require the standby gas engine generator to perform a function that demonstrates compliance with NRC regulations identified under 10 CFR 54.4(a)(3), and

B. Verify that second, third or fourth-level support systems were included in scope of LR if the Oyster Creek CLB, plant-specific experience, industry-wide experience (as appropriate), and safety analyses or plant evaluations require the second, third or fourth-level support system to perform a function that demonstrates compliance with NRC regulations identified under 10 CFR 54.4(a)(3).

**RAI 2.5.1.15-1 Response**

A. Standby Gas Engine Generator

One of the reference documents used for scoping the Radio Communications system, Specification SP-1302-06-013, indicated that the repeater located at the Meteorological (Met) Tower was considered redundant to the primary Oyster Creek plant repeater located in the upper cable spreading room. On that basis, the repeater located at the Met Tower and the associated supporting structures and power supplies were not included in scope for license renewal. After receiving this RAI, AmerGen further reviewed the Radio Communications system CLB, with respect to the scope of equipment needed for compliance with 10CFR50.48. AmerGen determined that during normal plant operation the Met Tower repeater is redundant. However, during certain Appendix R fire scenarios, Specification SP-1302-06-013 indicates that the repeater located at the Met Tower is credited for communications capabilities. Therefore, the Met Tower repeater and associated support equipment, including the backup gas (propane) engine generator, should have been included in the scope of license renewal. Enclosed with this response are the scoping and screening results, aging management review results and aging management programs associated with the Radio Communications system repeater located at the Met Tower.

The mechanical components subject to aging management review are included with the Radio Communications system scoping. The structural components are included with the Meteorological Tower Structures. The Structures Monitoring Program (B.1.31) is credited for aging management of the structural components and the external surfaces of the mechanical components. A new aging management program, Buried Piping and Tank Inspection - Met Tower Repeater Engine Fuel Supply (B.1.26B) is credited for aging management of the buried propane tank and associated buried fuel supply piping, both of which are owned by First Energy. The aging management program activities will be coordinated, as necessary, with First Energy pursuant to an Easement, License, and Restrictive Covenant Agreement.

The Radio Communications system Met Tower repeater electrical configuration and electrical commodity groups were reviewed with respect to intended functions and susceptibility to aging effects on long-lived passive components. It was determined that the long-lived passive electrical commodities supporting the Met Tower repeater did not require aging reviews nor aging management programs. This conclusion was based on the Met Tower electrical configuration, which does not include:

- Electrical commodities (e.g., electrical penetrations, phase bus, switchyard bus, transmission conductors and connections),
- Electrical commodities in suspect aging environments (e.g., insulated cables and connection in adverse localized environments), or
- Electrical commodities independent of active components/assemblies (e.g., fuse holders, terminal blocks).

B. Support Systems

The Oyster Creek license renewal methodology ensures that systems, structures and components relied on in safety analyses or plant evaluations to perform functions that demonstrate compliance with the requirements of the fire protection, environmental

qualification, anticipated transients without scram (ATWS), and station blackout (SBO) regulations are included in the scope of license renewal. The methodology includes review of the Oyster Creek current licensing bases, including docketed correspondence addressing compliance with these regulations.

Systems, structures and components (SSC) that are relied upon in the Oyster Creek current licensing bases, safety analyses or plant evaluations to perform a function that demonstrates compliance with NRC regulations identified under 10 CFR 54.4(a)(3), have been included in scope. Plant evaluations for the regulated events include consideration of plant-specific experience and industry-wide experience as appropriate. Operating experience, both internal and external, is used at Oyster Creek to enhance plant programs, prevent repeat events, and prevent events that have occurred at other plants from occurring at Oyster Creek. The Oyster Creek Operating Experience process screens, evaluates, and acts on operating experience documents and information to prevent or mitigate the consequences of similar events.

The identified scope for 10 CFR 54.4(a)(3) includes all SSC specifically relied upon to demonstrate compliance with the applicable NRC regulations, including support systems. Such SSCs include, but are not limited to, auxiliary cooling water systems or other support systems that are required for operability of the credited SSC, supports for the credited equipment, and any applicable power supplies specifically required for proper operation of the credited equipment.

Section 2.1.3.1.3, "Regulated Events," of NUREG-1800, "Standard Review Plan," states that an applicant need not consider hypothetical failures or second, third or fourth-level support systems in determining the systems, structures, and components (SSCs) within the scope of the rule under 10 CFR 54.4(a)(3). When considering these support systems, hypothetical failures that could result from system interdependencies that are not part of the current licensing bases and that have not been previously experienced, need not be considered. Therefore, second, third or fourth-level support systems were included in the scope of license renewal if the Oyster Creek CLB, plant-specific experience, industry-wide experience (as appropriate), and safety analyses or plant evaluations required the second, third or fourth-level support system to perform a function that demonstrates compliance with NRC regulations identified under 10 CFR 54.4(a)(3). No support systems were excluded from scope if they were specifically relied upon for compliance with the applicable NRC regulation.

Enclosure
Appendix A

## Summary of Commitments

The following table identifies and describes commitments made in this response. One commitment from the original LRA, commitment 31, has been updated to reflect the changes associated with this submittal. The updated aspects of commitment 31 are formatted in bold font for ease of identification. The additional commitment being made in this submittal is a new item associated with the new mechanical aging management program for the Meteorological Tower based radio communications system repeater backup gas engine generator supply fuel. The new commitment is numbered to sequentially follow the commitments previously made for Oyster Creek license renewal.

Any other actions discussed in this submittal represent intended or planned actions. They are described to the NRC for the NRC's information and are not regulatory commitments.

| Commitment | Committed Date or Outage | One-Time Action (Yes/No) | Programmatic (Yes/No) |
|---|---|---|---|
| 31) Structures Monitoring Program<br>Existing program is credited. The program includes elements of the Masonry Wall Program and the RG 1.127, Inspection of Water-Control Structures Associated With Nuclear Power Plants aging management program. The Structures Monitoring Program will be enhanced to include:<br>1. Buildings, structural components and commodities that are not in scope of maintenance rule but have been determined to be in the scope of license renewal. These include miscellaneous platforms, flood and secondary containment doors, penetration seals, sump liners, structural seals, and anchors and embedment.<br>2. Component supports, other than those in scope of ASME XI, Subsection IWF.<br>3. Inspection of Oyster Creek external surfaces of mechanical components that are not covered by other programs, HVAC duct, damper housings, and HVAC closure bolting. Inspection and acceptance criteria of the external surfaces will be the same as those specified for structural steel components and structural bolting.<br>4. The visual inspection of insulated surfaces will require the removal of insulation. Removal of insulation will be on a sampling basis that bounds insulation material type, susceptibility of insulated piping or component material to potential degradations that could result from being in contact with insulation, | Prior to period of extended operation | No | Yes |

| Commitment | Committed Date or Outage | One-Time Action (Yes/No) | Programmatic (Yes/No) |
|---|---|---|---|
| and system operating temperature.<br>5. Inspection of electrical panels and racks, junction boxes, instrument racks and panels, cable trays, offsite power structural components and their foundations, and anchorage.<br>6. Periodic sampling, testing, and analysis of ground water to confirm that the environment remains non-aggressive for buried reinforced concrete.<br>7. Periodic inspection of components submerged in salt water (Intake Structure and Canal, Dilution structure) and in the water of the fire pond dam, including trash racks at the Intake Structure and Canal.<br>8. Inspection of penetration seals, structural seals, and other elastomers for change in material properties.<br>9. Inspection of vibration isolators, associated with component supports other than those covered by ASME XI, Subsection IWF, for reduction or loss of isolation function.<br>10. The current inspection criteria will be revised to add loss of material, due to corrosion for steel components, and change in material properties, due to leaching of calcium hydroxide and aggressive chemical attack for reinforced concrete. Wooden piles and sheeting will be inspected for loss of material and change in material properties.<br>11. Periodic inspection of the Fire Pond Dam for loss of material and loss of form.<br>12. Inspection of Station Blackout System structures, structural components, and phase bus enclosure assemblies.<br>13. Inspection of Forked River Combustion Turbine power plant external surfaces of mechanical components that are not covered by other programs, HVAC duct, damper housings, and HVAC closure bolting. Inspection and acceptance criteria of the external surfaces will be the same as those specified for structural steel components and structural bolting.<br>**14. The program will be enhanced to include inspection of Meteorological Tower Structures. Inspection and acceptance criteria will be the same as those specified for other structures in the scope of the program.**<br>**15. The program will be enhanced to include inspection of exterior surfaces of piping and piping components associated with the Radio Communications system, located at the meteorological tower site, for loss of material due to corrosion. Inspection and acceptance criteria will be the same as those specified for other external surfaces of mechanical components.** | | | |

| Commitment | Committed Date or Outage | One-Time Action (Yes/No) | Programmatic (Yes/No) |
|---|---|---|---|
| 61) Buried Piping and Tank Inspection – Met Tower Repeater Engine Fuel Supply<br><br>The Buried Piping and Tank Inspection – Met Tower Repeater Engine Fuel Supply aging management program is a new program that manages the external surface aging effects of loss of material for copper and carbon steel piping, and carbon steel tanks in a soil (external) environment. The program activities consist of preventive and condition-monitoring measures to manage the loss of material due to external corrosion for piping and tanks in the scope of license renewal that are in a soil (external) environment. The program scope includes buried portions of the Met Tower based radio communications system repeater backup engine generator fuel (propane) supply piping and the associated buried fuel supply tank, located at the Meteorological Tower.<br><br>External inspections of buried components will occur opportunistically when they are excavated during maintenance. Within 10 years prior to entering the period of extended operation, inspection of buried piping will be performed unless an opportunistic inspection occurs within this ten-year period. Upon entering the period of extended operation, inspection of buried piping will again be performed within the next ten years, unless an opportunistic inspection occurs during this ten-year period. This program will be implemented prior to entering the period of extended operation. | Prior to period of extended operation | No | Yes |

Enclosure
Appendix B

New Section 2.4.20, Meteorological Tower Structures

New Table 2.4.20, Meteorological Tower Structures – Components Subject to Aging Management Review

Revised Section 2.5.1.15, Radio Communications System

Revised Table 2.5.1.15, Radio Communications System – Components Subject to Aging Management Review

## 2.4.20 Meteorological Tower Structures

System Purpose

The Meteorological Tower Structures are comprised of the meteorological tower, the communications building, and the foundation for the gas engine unit. The Meteorological Tower Structures are located north northwest of the Reactor Building outside the protected area. The communications building consists of prefabricated precast concrete panels supported on concrete footings. The meteorological tower is a carbon steel tube structure with guy wires anchored to concrete footings. The foundation for the gas engine is a reinforced concrete slab located adjacent to the communications building. The Meteorological Tower Structures are classified nonsafety related, non-seismic.

The purpose of the Meteorological Tower Structures is to provide structural support, shelter, and protection for communications components, located at the meteorological tower site, that perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), and for components which support the intended function of the system. The communications building provides structural support, shelter, and protection for the repeater, batteries, conduits, cables, and other components associated with the repeater. The meteorological tower provides structural support for the antenna and the signal cable to the repeater. The foundation for the engine provides structural support to the engine.

Included in the evaluation boundary of the Meteorological Tower Structures are structural elements of the communications building which include precast concrete panels, structural steel, roofing, concrete slab and footings. Also included in the evaluation boundary are structural elements of the meteorological tower (supports antenna and cable) , including structural steel, guy wires, footings, concrete anchors, and miscellaneous steel. Other components in the evaluation boundary include a foundation for the engine, cable trays, conduits, engine supports, vibration isolators, panels and enclosures, racks for the repeater and batteries, seals, structural bolts, and supports for these components and cables. These structures and components are in scope of license renewal because they provide structural support, shelter, and protection for components that perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The additional buildings and components that share the site with the Meteorological Tower Structures are not included in the scope of license renewal. The buildings and structures have been determined not to perform an intended function under 10 CFR 54.4 a (1), a (2), a(3), or support a function of systems and structures credited for 10 CFR 50.48.

Reason for Scope Determination

The Meteorological Tower Structures meet 10 CFR 54.4(a)(3) because they are relied upon in the safety analyses and plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The structures do not meet 10 CFR 54.4(a)(1) because they are not safety related or relied on to remain functional during and following design basis events. The structures do not meet 10 CFR 54.4(a)(2) because failure of non-safety related portions of the structures would not prevent satisfactory accomplishment of function(s) identified for 10 CFR 54.4(a)(1). The

structures are not relied upon in any safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulation for Environmental Qualification (10 CFR 50.49), ATWS (10 CFR 50.62) or Station Blackout (10 CFR 50.63).

System Intended Functions

1. Relied upon 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). 10 CFR 54.4(a)(3)

UFSAR References

2.3.3.1.1, 9.5.2.g

License Renewal Boundary Drawings

N/A

**Table 2.4.20** **Meteorological Tower Structures**
**Components Subject to Aging Management Review**

| Component Type | Intended Functions |
|---|---|
| Cable Tray | Structural Support |
| Concrete anchor | Structural Support |
| Conduits | Enclosure Protection |
| | Structural Support |
| Door | Enclosure Protection |
| Engine supports (support member) | Structural Support |
| Engine Vibration isolators | Vibration Isolation |
| Foundation concrete at locations of expansion and grouted anchors | Structural Support |
| Guy wires | Structural Support |
| Miscellaneous steel (turnbuckles, pins, plate, shackles) | Structural Support |
| Panels and enclosures | Enclosure Protection |
| | Structural Support |
| Precast concrete panel walls, slabs | Enclosure Protection |
| | Structural Support |
| Racks for repeater, batteries | Structural Support |
| Reinforced concrete foundations (above and below grade) | Structural Support |
| Roofing | Enclosure Protection |
| Seals | Enclosure Protection |
| Structural Bolts | Structural Support |
| Structural steel | Structural Support |
| Structural steel (Tower) | Structural Support |
| Supports for conduits and cable | Structural Support |

The aging management review results for these components are provided in
Table 3.5.2.1.20 Meteorological Tower Structures
-Summary of Aging Management Evaluation

## 2.5.1.15 Radio Communications System

System Purpose

The Radio Communications System is an electrical system designed to provide two-way voice communication between operations personnel operating safe shutdown equipment during a fire emergency and Station Blackout. The Radio Communications System accomplishes this by providing the operators with two-way portable radio units supported by repeaters and antennas.

The Radio Communication System is comprised of primary, independent emergency and backup base station transmitter-repeaters, portable radio units with batteries and chargers stored in the Oyster Creek Generating Station control room, and antennas with associated cabling. The radio repeaters are electronic devices. The primary repeater system is located in the Upper Cable Spreading Room. The independent emergency and backup systems are located at the Meteorological Tower and at the Oyster Creek Administration Building (OCAB), respectively. The OCAB repeater is a backup repeater and is not credited for Station Blackout or Appendix R safe shutdown, and therefore is not required to support a license renewal intended function. The Meteorological Tower based repeater system is required to support safe shutdown upon loss of the primary system. The individual portable radios also have a direct mode (talk-around) feature that provides direct communication between radios without utilizing repeaters. Electrical power for the primary base station transmitter and repeater is supplied from the 120VAC Vital Power System. The independent emergency base station / repeater located at the Meteorological Tower communications building is normally powered from offsite power, and is also provided with a battery backup power supply located in the communications building. To ensure operability for Appendix R, an automatic standby propane gas engine generator located outside the Meteorological Tower communications building is available through a transfer switch as a backup AC power supply.

Reason for Scope Determination

The Radio Communications System meets 10 CFR 54.4(a)(3) because it is relied upon in the safety analyses and plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for Fire Protection (10 CFR 50.48) and Station Blackout (10 CFR 50.63).

The system does not meet 10 CFR 54.4(a)(1) because it is not safety related or relied on to remain functional during and following design basis events. The system does not meet 10 CFR 54.4(a)(2) because failure of non-safety related portions of the system would not prevent satisfactory accomplishment of function(s) identified for 10 CFR 54.4(a)(1). The system is not relied upon in any safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulation for Environmental Qualification (10 CFR 50.49) or ATWS (10 CFR 50.62).

System Intended Functions

1. Relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with the commissions regulations for Fire Protection (10 CFR 50.48) (10 CFR 54.4(a)(3)).

2. Relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with the commissions regulations for Station Blackout (10 CFR 50.63) (10 CFR 54.4(a)(3)).

UFSAR References

None

License Renewal Boundary Drawings

None

**Table 2.5.1.15** **Radio Communications System**
**Components Subject to Aging Management Review**

| Component Type | Intended Functions |
|---|---|
| Piping and fittings | Pressure Boundary |
| Tanks | Pressure Boundary |
| Valve Body | Pressure Boundary |

The aging management review results for these components are provided in
Table 3.6.2.1.3 Radio Communications System
-Summary of Aging Management Evaluation

Enclosure
Appendix C

New Summary Section 3.5.2.1.20, Meteorological Tower Structures

New Summary Section 3.6.2.1.10, Radio Communications System

New Oyster Creek LRA Table 1, Table 3.6.1D Summary of Aging Management Evaluations

New Oyster Creek LRA Table 2, Table 3.5.2.1.20, Meteorological Tower Structures

New Oyster Creek LRA Table 2, Table 3.6.2.1.3, Radio Communications System

### 3.5.2.1.20 Meteorological Tower Structures

**Materials**

The materials of construction for the Meteorological Tower Structures are:
- Aluminum
- Carbon and low alloy steel
- Concrete
- Elastomer
- Galvanized Steel
- Polyvinyl Chloride (PVC)
- Stainless Steel

**Environments**

The Meteorological Tower Structures are exposed to the following environments:
- Concrete
- Indoor Air
- Outdoor Air
- Soil

**Aging Effects Requiring Management**

The following aging effects associated with the Meteorological Tower Structures require management:
- Change in Material Properties
- Cracking
- Loss of Material
- Loss of Preload
- Reduction or Loss of Isolation Function
- Reduction in concrete capacity due to local concrete degradation

**Aging Management Programs**

The following aging management programs manage the aging effects for the Meteorological Tower Structures:
- Structures Monitoring Program (B.1.31)

Table 3.5.2.1.20, Summary of Aging Management Evaluation – Meteorological Tower Structures summarizes the results of the aging management review for the Meteorological Tower Structures.

### 3.6.2.1.10 Radio Communications System

**Materials**

The materials of construction for the Radio Communications System components are:

- Brass
- Carbon and low allow steel
- Copper

**Environments**

The Radio Communications System components are exposed to the following environments:

- Outdoor Air
- Propane
- Soil

**Aging Effects Requiring Management**

The following aging effects associated with the Radio Communications System components require management:

- Loss of Material

**Aging Management Programs**

The following aging management programs manage the aging effects for the Radio Communications System components:

- Buried Piping and Tanks Inspection - Met Tower Repeater Engine Fuel Supply
- Structures Monitoring Program

Table 3.6.2.1.3, Summary of Aging Management Evaluation – Radio Communications System summarizes the results of the aging management review for the Radio Communications System.

| Table 3.6.1D - Summary of Aging Management Evaluations | | | | | |
|---|---|---|---|---|---|
| **Item Number** | **Component** | **Aging Effect/Mechanism** | **Aging Management Programs** | **Further Evaluation Recommended** | **Discussion/Further Evaluation** |
| 3.3.1-58 | Steel external surfaces exposed to air – indoor uncontrolled (external), air - outdoor (external), and condensation (external) | Loss of material due to general corrosion | External Surfaces Monitoring | No | The Structures Monitoring Program, B.1.31, will be used to manage the loss of material on the external surfaces of carbon steel piping, piping components, and piping elements exposed to an outdoor air (external) environment. |
| 3.3.1-61 | Elastomer fire barrier penetration seals exposed to air – outdoor or air - indoor uncontrolled | Increased hardness, shrinkage and loss of strength due to weathering | Fire Protection | No | The Structures Monitoring Program, B.1.31, will be used to manage the change in material properties of elastomer seals, roofing, and conduits exposed to an outdoor air environment. |
| 3.3.1-92 | Galvanized steel piping, piping components, and piping elements exposed to air – indoor uncontrolled | None | None | NA - No AEM or AMP | Consistent with NUREG-1801. |
| 3.3.1-96 | Steel and stainless steel piping, piping components, and piping elements in concrete | None | None | NA - No AEM or AMP | Consistent with NUREG-1801. |

| Table 3.6.1D - Summary of Aging Management Evaluations | | | | | |
|---|---|---|---|---|---|
| **Item Number** | **Component** | **Aging Effect/Mechanism** | **Aging Management Programs** | **Further Evaluation Recommended** | **Discussion/Further Evaluation** |
| 3.3.1-97 | Steel, stainless steel, aluminum, and copper alloy piping, piping components, and piping elements exposed to gas | None | None | NA - No AEM or AMP | Consistent with NUREG-1801. |
| 3.4.1-11 | Buried steel piping, piping components, piping elements, and tanks (with or without coating or wrapping) exposed to soil | Loss of material due to general, pitting, crevice, and microbiologically-influenced corrosion | Buried Piping and Tanks Surveillance<br><br>or<br><br>Buried Piping and Tanks Inspection | No<br><br>Yes, detection of aging effects and operating experience are to be further evaluated (See subsection 3.4.2.2.5.1) | NUREG 1800, subsection 3.4.2.2.5.1 states: Loss of material due to general, pitting and crevice corrosion, and MIC could occur in steel (with or without coating or wrapping) piping, piping components, piping elements and tanks exposed to soil. The buried piping and tanks inspection program relies on industry practice, frequency of pipe excavation, and operating experience to manage the effects of loss of material from general corrosion, pitting and crevice corrosion, and MIC. The effectiveness of the buried piping and tanks inspection program should be verified to evaluate an applicant's inspection frequency and operating experience with buried components, ensuring that loss of material is not occurring.<br><br>Further Evaluation: Consistent with NUREG-1801 with exceptions. The new Buried Piping and Tanks Inspection - Met Tower Repeater Engine Fuel Supply, B.1.26B, aging management program will be used to manage the loss of material in copper and carbon steel piping and carbon |

| Table 3.6.1D - Summary of Aging Management Evaluations | | | | | |
|---|---|---|---|---|---|
| Item Number | Component | Aging Effect/Mechanism | Aging Management Programs | Further Evaluation Recommended | Discussion/Further Evaluation |
| | | | | | steel tanks in the repeater engine fuel supply system exposed to a soil environment. The Buried Piping and Tanks Inspection - Met Tower Repeater Engine Fuel Supply aging management program includes the periodic inspection of external surfaces for loss of material to manage the effects of corrosion on the pressure-retaining capacity of piping and tanks exposed to a soil (external) environment. The external inspections of the buried piping and tank will occur opportunistically when excavated during maintenance or excavated and inspected for any other reason. Within 10 years prior to entering the period of extended operation, inspection of the buried piping and tank will be performed unless an opportunistic inspection occurs within this ten-year period. Following commencement of the period of extended operation, inspection of the buried piping and tank will again be performed within the next ten years, unless an opportunistic inspection occurs during this ten-year period. Based on meteorological tower repeater engine fuel supply operating experience, there have been no leaks in the underground portion of the propane piping and tank. Therefore the frequency of inspection, at least once in the 10 years prior to the period of extended operation and at least once in the first 10 years of extended operation, is adequate. The program also includes preventive measures in |

| Table 3.6.1D - Summary of Aging Management Evaluations | | | | | |
|---|---|---|---|---|---|
| **Item Number** | **Component** | **Aging Effect/Mechanism** | **Aging Management Programs** | **Further Evaluation Recommended** | **Discussion/Further Evaluation** |
| | | | | | accordance with standard industry practices for the inspection and maintenance of external coatings and wrappings. Exceptions apply to the NUREG-1801 recommendations for Buried Piping and Tanks Inspection - Met Tower Repeater Engine Fuel Supply aging management program implementation. |
| 3.5.1-23 | All Groups except Group 6: interior and above grade exterior concrete | Cracking, loss of bond, and loss of material (spalling, scaling) due to corrosion of embedded steel | Structures Monitoring Program | Yes, if not within the scope of the applicant's structures monitoring program (See subsection 3.5.2.2.2.1) | Consistent with NUREG-1801. The Structures Monitoring Program, B.1.31, will be used to manage the change in material properties, loss of material, and cracking in precast concrete panels and reinforced concrete foundations exposed to an indoor air or outdoor air environment. |
| 3.5.1-25 | All Groups except Group 6: steel components: all structural steel | Loss of material due to corrosion | Structures Monitoring Program. If protective coatings are relied upon to manage the effects of aging, the structures monitoring program is to include provisions to address protective coating monitoring and maintenance. | Yes, if not within the scope of the applicant's structures monitoring program (See subsection 3.5.2.2.2.1) | Consistent with NUREG-1801. The Structures Monitoring Program, B.1.31, will be used to manage the loss of material in carbon and low alloy steel structural steel, panels and enclosures, cable trays, doors, and structural bolts exposed to an indoor air or outdoor air environment. |
| 3.5.1-26 | All Groups except Group 6: accessible and inaccessible concrete: foundation | Loss of material (spalling, scaling) and cracking due to freeze-thaw | Structures Monitoring Program. Evaluation is needed for plants that are located in moderate to severe weathering conditions (weathering | Yes, if not within the scope of the applicant's structures monitoring program (See subsection 3.5.2.2.2.1) or for inaccessible areas of | Consistent with NUREG-1801. The Structures Monitoring Program, B.1.31, will be used to manage cracking and loss of material the loss of material in precast concrete panels and reinforced |

| Table 3.6.1D - Summary of Aging Management Evaluations | | | | | |
|---|---|---|---|---|---|
| **Item Number** | **Component** | **Aging Effect/Mechanism** | **Aging Management Programs** | **Further Evaluation Recommended** | **Discussion/Further Evaluation** |
| | | | index >100 day-inch/yr) (NUREG-1557). | plants located in moderate to severe weathering conditions (See subsection 3.5.2.2.2.2.1) | concrete foundations exposed to an outdoor air environment. |
| 3.5.1-27 | All Groups except Group 6: accessible and inaccessible interior/exterior concrete | Cracking due to expansion due to reaction with aggregates | Structures Monitoring Program. None for inaccessible areas if concrete was constructed in accordance with the recommendations in ACI 201.2R-77. | Yes, if not within the scope of the applicant's structures monitoring program (See subsection 3.5.2.2.2.1) or concrete was not constructed as stated for inaccessible areas (See subsection 3.5.2.2.2.2.2) | Consistent with NUREG-1801. The Structures Monitoring Program, B.1.31, will be used to manage cracking in precast concrete panels and reinforced concrete foundations exposed to an outdoor air or indoor air environment. |
| 3.5.1-28 | Groups 1-3, 5-9: All | Cracks and distortion due to increased stress levels from settlement | Structures Monitoring Program. If a de-watering system is relied upon for control of settlement, then the licensee is to ensure proper functioning of the de-watering system through the period of extended operation. | Yes, if not within the scope of the applicant's structures monitoring program (See subsection 3.5.2.2.2.1) or a de-watering system is relied upon (See subsection 3.5.2.2.2.2.3) | Consistent with NUREG-1801. The Structures Monitoring Program, B.1.31, will be used to manage cracking in reinforced concrete foundations exposed to a soil environment. |
| 3.5.1-39 | Support members; welds; bolted connections; support anchorage to building structure | Loss of material due to general and pitting corrosion | Structures Monitoring Program | Yes, if not within the scope of the applicant's structures monitoring program (See subsection 3.5.2.2.2.6) | Consistent with NUREG-1801. The Structures Monitoring Program, B.1.31, will be used to manage the loss of material in carbon and low alloy steel engine and conduit supports, concrete anchors, and racks exposed to an indoor air or outdoor air environment. |
| 3.5.1-40 | Building concrete at locations of expansion and | Reduction in concrete anchor capacity due to local concrete | Structures Monitoring Program | Yes, if not within the scope of the applicant's structures monitoring | Consistent with NUREG-1801. The Structures Monitoring Program, B.1.31, |

| Table 3.6.1D - Summary of Aging Management Evaluations | | | | | |
|---|---|---|---|---|---|
| **Item Number** | **Component** | **Aging Effect/Mechanism** | **Aging Management Programs** | **Further Evaluation Recommended** | **Discussion/Further Evaluation** |
| | grouted anchors; grout pads for support base plates | degradation/ service induced cracking or other concrete aging mechanisms | | program (See subsection 3.5.2.2.2.6) | will be used to manage reduction in concrete anchor capacity due to local concrete degradation for foundation concrete around expansion and grouted anchors exposed to an indoor air or outdoor air environment. |
| 3.5.1-41 | Vibration isolation elements | Reduction or loss of isolation function/ radiation hardening, temperature, humidity, sustained vibratory loading | Structures Monitoring Program | Yes, if not within the scope of the applicant's structures monitoring program (See subsection 3.5.2.2.2.6) | Consistent with NUREG-1801. The Structures Monitoring Program, B.1.31, will be used to manage the reduction or loss of isolation function in elastomer engine vibration isolators exposed to an outdoor air environment. |
| 3.5.1-50 | Groups B2, and B4: galvanized steel, aluminum, stainless steel support members; welds; bolted connections; support anchorage to building structure | Loss of material due to pitting and crevice corrosion | Structures Monitoring Program | No | Consistent with NUREG-1801. The Structures Monitoring Program, B.1.31, will be used to manage loss of material in galvanized steel, stainless steel, and aluminum conduits, conduit supports, cable trays, guy wires, roofing, concrete anchors and miscellaneous steel (turnbuckles, pins, plate, shackles) exposed to an outdoor air environment. |

## Table 3.5.2.1.20
## Meteorological Tower Structures
## Summary of Aging Management Evaluation

Table 3.5.2.1.20 Meteorological Tower Structures

| Component Type | Intended Function | Material | Environment | Aging Effect Requiring Management | Aging Management Programs | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|---|---|---|---|---|---|---|---|---|
| Cable Tray | Structural Support | Carbon and low alloy steel | Indoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-12 (T-11) | 3.5.1-25 | C |
| | | Galvanized Steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-7 (TP-6) | 3.5.1-50 | C |
| Concrete anchor | Structural Support | Carbon and low alloy steel | Concrete | None | None | VII.J-21 (AP-3) | 3.3.1-96 | C |
| | | | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-10 (T-30) | 3.5.1-39 | A |
| | | Galvanized Steel | Concrete | None | None | VII.J-21 (AP-3) | 3.3.1-96 | C |
| | | | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-7 (TP-6) | 3.5.1-50 | A |
| Conduits | Enclosure Protection | Elastomer | Outdoor Air | Change in Material Properties | Structures Monitoring Program (B.1.31) | VII.G-2 (A-20) | 3.3.1-61 | E, 1 |
| | | Galvanized Steel | Indoor Air | None | None | VII.J-6 (AP-13) | 3.3.1-92 | C |

Table 3.5.2.1.20 Meteorological Tower Structures (Continued)

| Component Type | Intended Function | Material | Environment | Aging Effect Requiring Management | Aging Management Programs | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|---|---|---|---|---|---|---|---|---|
| Conduits | Enclosure Protection | Galvanized Steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-7 (TP-6) | 3.5.1-50 | C |
| | | | Soil | Loss of Material | Structures Monitoring Program (B.1.31) | | | G |
| | | Polyvinyl Chloride (PVC) | Outdoor Air | Change in Material Properties | Structures Monitoring Program (B.1.31) | | | J |
| | | | Soil | None | None | | | J |
| | Structural Support | Galvanized Steel | Indoor Air | None | None | VII.J-6 (AP-13) | 3.3.1-92 | C |
| | | | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-7 (TP-6) | 3.5.1-50 | C |
| | | | Soil | Loss of Material | Structures Monitoring Program (B.1.31) | | | G |
| | | Polyvinyl Chloride (PVC) | Outdoor Air | Change in Material Properties | Structures Monitoring Program (B.1.31) | | | J |
| | | | Soil | None | None | | | J |
| Door | Enclosure Protection | Carbon and low alloy steel | Indoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-12 (T-11) | 3.5.1-25 | C |

Table 3.5.2.1.20 Meteorological Tower Structures (Continued)

| Component Type | Intended Function | Material | Environment | Aging Effect Requiring Management | Aging Management Programs | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|---|---|---|---|---|---|---|---|---|
| Door | Enclosure Protection | Carbon and low alloy steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-12 (T-11) | 3.5.1-25 | C |
| Engine supports (support member) | Structural Support | Carbon and low alloy steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B4-10 (T-30) | 3.5.1-39 | A |
| Engine Vibration isolators | Vibration Isolation | Elastomer | Outdoor Air | Reduction or Loss of Isolation Function | Structures Monitoring Program (B.1.31) | III.B4-12 (T-31) | 3.5.1-41 | A |
| Foundation concrete at locations of expansion and grouted anchors | Structural Support | Concrete | Indoor Air | Reduction in Anchor Capacity Due to Local Concrete Degradation | Structures Monitoring Program (B.1.31) | III.B2-1 (T-29) | 3.5.1-40 | A |
| | | | Outdoor Air | Reduction in Anchor Capacity Due to Local Concrete Degradation | Structures Monitoring Program (B.1.31) | III.B2-1 (T-29) | 3.5.1-40 | A |
| Guy wires | Structural Support | Galvanized Steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-7 (TP-6) | 3.5.1-50 | C |
| Miscellaneous steel (turnbuckles, pins, plate, shackles) | Structural Support | Galvanized Steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-7 (TP-6) | 3.5.1-50 | C |
| Panels and enclosures | Enclosure Protection | Carbon and low alloy steel | Indoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-12 (T-11) | 3.5.1-25 | A |
| | Structural Support | Carbon and low alloy steel | Indoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-12 (T-11) | 3.5.1-25 | A |

Table 3.5.2.1.20 Meteorological Tower Structures (Continued)

| Component Type | Intended Function | Material | Environment | Aging Effect Requiring Management | Aging Management Programs | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|---|---|---|---|---|---|---|---|---|
| Precast concrete panel walls, slabs | Enclosure Protection | Concrete | Indoor Air | Change in Material Properties | Structures Monitoring Program (B.1.31) | III.A3-9 (T-04) | 3.5.1-23 | A |
| | | | | Cracking | Structures Monitoring Program (B.1.31) | III.A3-2 (T-03) | 3.5.1-27 | A |
| | | | | | | III.A3-9 (T-04) | 3.5.1-23 | A |
| | | | | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-9 (T-04) | 3.5.1-23 | A |
| | | | Outdoor Air | Change in Material Properties | Structures Monitoring Program (B.1.31) | III.A3-9 (T-04) | 3.5.1-23 | A |
| | | | | Cracking | Structures Monitoring Program (B.1.31) | III.A3-2 (T-03) | 3.5.1-27 | A |
| | | | | | | III.A3-6 (T-01) | 3.5.1-26 | A |
| | | | | | | III.A3-9 (T-04) | 3.5.1-23 | A |
| | | | | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-6 (T-01) | 3.5.1-26 | A |
| | | | | | | III.A3-9 (T-04) | 3.5.1-23 | A |

**Table 3.5.2.1.20 Meteorological Tower Structures (Continued)**

| Component Type | Intended Function | Material | Environment | Aging Effect Requiring Management | Aging Management Programs | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|---|---|---|---|---|---|---|---|---|
| Precast concrete panel walls, slabs | Structural Support | Concrete | Indoor Air | Change in Material Properties | Structures Monitoring Program (B.1.31) | III.A3-9 (T-04) | 3.5.1-23 | A |
| | | | | Cracking | Structures Monitoring Program (B.1.31) | III.A3-2 (T-03) | 3.5.1-27 | A |
| | | | | | | III.A3-9 (T-04) | 3.5.1-23 | A |
| | | | | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-9 (T-04) | 3.5.1-23 | A |
| Racks for repeater, batteries | Structural Support | Carbon and low alloy steel | Indoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-10 (T-30) | 3.5.1-39 | A |
| Reinforced concrete foundations (above and below grade) | Structural Support | Concrete | Outdoor Air | Change in Material Properties | Structures Monitoring Program (B.1.31) | III.A3-9 (T-04) | 3.5.1-23 | A |
| | | | | Cracking | Structures Monitoring Program (B.1.31) | III.A3-2 (T-03) | 3.5.1-27 | A |
| | | | | | | III.A3-6 (T-01) | 3.5.1-26 | A |
| | | | | | | III.A3-9 (T-04) | 3.5.1-23 | A |

Table 3.5.2.1.20 Meteorological Tower Structures (Continued)

| Component Type | Intended Function | Material | Environment | Aging Effect Requiring Management | Aging Management Programs | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|---|---|---|---|---|---|---|---|---|
| Reinforced concrete foundations (above and below grade) | Structural Support | Concrete | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-6 (T-01) | 3.5.1-26 | A |
| | | | | | | III.A3-9 (T-04) | 3.5.1-23 | A |
| | | | Soil | Cracking | Structures Monitoring Program (B.1.31) | III.A3-3 (T-08) | 3.5.1-28 | A |
| Roofing | Enclosure Protection | Aluminum | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B4-7 (TP-6) | 3.5.1-50 | C |
| | | Elastomer | Outdoor Air | Change in Material Properties | Structures Monitoring Program (B.1.31) | VII.G-2 (A-20) | 3.3.1-61 | E, 1 |
| Seals | Enclosure Protection | Elastomer | Outdoor Air | Change in Material Properties | Structures Monitoring Program (B.1.31) | VII.G-2 (A-20) | 3.3.1-61 | E, 1 |
| Structural Bolts | Structural Support | Carbon and low alloy steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-12 (T-11) | 3.5.1-25 | A |
| | | | | Loss Of Preload | Structures Monitoring Program (B.1.31) | | | G |
| Structural Steel | Structural Support | Carbon and low alloy steel | Indoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-12 (T-11) | 3.5.1-25 | A |

Table 3.5.2.1.20 Meteorological Tower Structures (Continued)

| Component Type | Intended Function | Material | Environment | Aging Effect Requiring Management | Aging Management Programs | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|---|---|---|---|---|---|---|---|---|
| Structural steel (Tower) | Structural Support | Carbon and low alloy steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.A3-12 (T-11) | 3.5.1-25 | A |
| Supports for conduits and cable | Structural Support | Carbon and low alloy steel | Indoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-10 (T-30) | 3.5.1-39 | A |
| | | Galvanized Steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-7 (TP-6) | 3.5.1-50 | A |
| | | | Soil | Loss of Material | Structures Monitoring Program (B.1.31) | | | G |
| | | Stainless Steel | Outdoor Air | Loss of Material | Structures Monitoring Program (B.1.31) | III.B2-7 (TP-6) | 3.5.1-50 | A |

| Notes | Definition of Note |
|---|---|
| A | Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP. |
| B | Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP. |
| C | Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP. |
| D | Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP. |
| E | Consistent with NUREG-1801 for material, environment, and aging effect, but a different aging management program is credited. |
| F | Material not in NUREG-1801 for this component. |
| G | Environment not in NUREG-1801 for this component and material. |
| H | Aging effect not in NUREG-1801 for this component, material and environment combination. |
| I | Aging effect in NUREG-1801 for this component, material and environment combination is not applicable. |
| J | Neither the component nor the material and environment combination is evaluated in NUREG-1801. |

**Plant Specific Notes:**

1. Structures Monitoring Program is the applicable aging management program for this component.

## Table 3.6.2.1.3
## Radio Communications System
## Summary of Aging Management Evaluation

**Table 3.6.2.1.3 Radio Communications System**

| Component Type | Intended Function | Material | Environment | Aging Effect Requiring Management | Aging Management Programs | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|---|---|---|---|---|---|---|---|---|
| Piping and fittings | Pressure Boundary | Carbon and low alloy steel | Soil (External) | Loss of Material | Buried Piping and Tanks Inspection - Met Tower Repeater Engine Fuel Supply (B.1.26B) | VIII.E-1 (S-01) | 3.4.1-11 | B |
| | | | Outdoor Air (External) | Loss of Material | Structures Monitoring Program (B.1.31) | VII.I-9 (A-78) | 3.3.1-58 | E, 1 |
| | | | Propane (Internal) | None | None | VII.J-23 (AP-6) | 3.3.1-97 | A, 2 |
| | | Copper | Soil (External) | Loss of Material | Buried Piping and Tanks Inspection - Met Tower Repeater Engine Fuel Supply (B.1.26B) | | | G |
| | | | Outdoor Air (External) | Loss of Material | Structures Monitoring Program (B.1.31) | | | G |
| | | | Propane (Internal) | None | None | VII.J-4 (AP-9) | 3.3.1-97 | A, 2 |
| Tanks | Pressure Boundary | Carbon and low alloy steel | Soil (External) | Loss of Material | Buried Piping and Tanks Inspection - Met Tower Repeater Engine Fuel Supply (B.1.26B) | VIII.E-1 (S-01) | 3.4.1-11 | B |
| | | | Propane (Internal) | None | None | VII.J-23 (AP-6) | 3.3.1-97 | A, 2 |

Table 3.6.2.1.3 Radio Communications System (Continued)

| Component Type | Intended Function | Material | Environment | Aging Effect Requiring Management | Aging Management Programs | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|---|---|---|---|---|---|---|---|---|
| Valve Body | Pressure Boundary | Brass | Outdoor Air (External) | Loss of Material | Structures Monitoring Program (B.1.31) | | | G |
| | | | Propane (Internal) | None | None | VII.J-4 (AP-9) | 3.3.1-97 | A, 2 |
| | | Carbon and low alloy steel | Outdoor Air (External) | Loss of Material | Structures Monitoring Program (B.1.31) | VII.I-9 (A-78) | 3.3.1-58 | E, 1 |
| | | | Propane (Internal) | None | None | VII.J-23 (AP-6) | 3.3.1-97 | A, 2 |

| Notes | Definition of Note |
|---|---|
| A | Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP. |
| B | Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP. |
| C | Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP. |
| D | Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP. |
| E | Consistent with NUREG-1801 for material, environment, and aging effect, but a different aging management program is credited. |
| F | Material not in NUREG-1801 for this component. |
| G | Environment not in NUREG-1801 for this component and material. |
| H | Aging effect not in NUREG-1801 for this component, material and environment combination. |
| I | Aging effect in NUREG-1801 for this component, material and environment combination is not applicable. |
| J | Neither the component nor the material and environment combination is evaluated in NUREG-1801. |

**Plant Specific Notes:**

1. The Structures Monitoring Program, B.1.31, is the same program as is used for aging management of external surfaces at the Oyster Creek Nuclear Generating Station, and as such will adequately manage aging of external surfaces for the Radio Communications System components located at the Met Tower.
2. Propane is a non-reactive gas and is therefore equivalent to the environment of "Gas" as defined in NUREG-1801 Section IX.D.

Enclosure
Appendix D

Replacement and new text for Oyster Creek LRA, Appendix A, Final Safety Analysis Report Supplement:

- A.1.26B, Buried Piping and Tank Inspection – Met Tower Repeater Engine Fuel Supply
- A.1.31, Structures Monitoring Program

Replacement and new text for Oyster Creek LRA, Appendix A, Table A.5, License Renewal Commitment List, line items:

- 31, Structures Monitoring Program
- 61, Buried Piping and Tank Inspection – Met Tower Repeater Engine Fuel Supply

Replacement and new text for Oyster Creek LRA, Appendix B, Aging Management Programs:

- B.1.26B, Buried Piping and Tank Inspection – Met Tower Repeater Engine Fuel Supply
- B.1.31, Structures Monitoring Program
-

# FINAL

# SAFETY

# ANALYSIS

# REPORT

# SUPPLEMENT

## A.1.26B BURIED PIPING AND TANK INSPECTION – MET TOWER REPEATER ENGINE FUEL SUPPLY

The Buried Piping and Tank Inspection - Met Tower Repeater Engine Fuel Supply aging management program is a new program that manages the external surface aging effects of loss of material for carbon steel and copper piping and fittings, and carbon steel tank, in a soil (external) environment. The program activities consist of preventive and condition-monitoring measures to manage the loss of material due to external corrosion for the piping, fittings, and tank in the scope of license renewal that are in a soil (external) environment. The program scope includes buried portions of the meteorological tower repeater engine fuel supply (propane) piping and tank located at the Forked River meteorological tower.

External inspections of buried components will occur opportunistically when they are excavated during maintenance. Within 10 years prior to entering the period of extended operation, inspection of buried piping components will be performed unless an opportunistic inspection occurs within this ten-year period. Upon entering the period of extended operation, inspection of buried piping components will again be performed within the next ten years, unless an opportunistic inspection occurs during this ten-year period. This program will be implemented prior to entering the period of extended operation.

## A.1.31 STRUCTURES MONITORING PROGRAM

The Structures Monitoring Program is an existing program that was developed to implement the requirements of 10 CFR 50.65 and is based on NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2 and Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2. The program includes elements of the Masonry Wall Program and the RG 1.127, Inspection of Water-Control Structures Associated With Nuclear Power Plants aging management program.

The program relies on periodic visual inspections to monitor the condition of structures and structural components, structural bolting, component supports, masonry block walls, water-control structures, the Fire Pond Dam, exterior surfaces of mechanical components that are not covered by other programs, and HVAC ducts, damper housings, and HVAC closure bolting. The program relies on procurement controls and installation practices, defined in plant procedures, to ensure that only approved lubricants and proper torque are applied to bolting in scope of the program.

The scope of the program will be enhanced to include structures and structural components that are not currently monitored, including Station Blackout System structures and phase bus enclosure assemblies, **and Meteorological Tower Structures**; but determined to be in the scope of license renewal, submerged structures, component supports not covered by other programs, the Fire Pond Dam, exterior surfaces of Oyster Creek and Forked River Combustion Turbine mechanical components that are not covered by other programs, including exterior surfaces of HVAC ducts, damper housings, and closure bolting. The program will also be enhanced to require removal of piping and component insulation on a sampling basis to allow visual inspection of insulated surfaces. The program will also be enhanced to require sampling and testing of groundwater every 4 years to confirm that the soil environment is non-aggressive to below-grade concrete structures. **Other program scope enhancements include inspection of piping and piping components associated with the Radio Communications system located at the meteorological tower site.** The enhancements will be made prior to entering the period of extended operation.

Inspection criteria will be enhanced to provide reasonable assurance that change in material properties, cracking, loss of material, loss of form, reduction or loss of isolation function, reduction in anchor capacity due local degradation, and loss of preload are adequately managed so that the intended functions of structures and components within the scope of the program are maintained consistent with the current licensing basis during the period of extended operation.

Inspection frequency is every four (4) years; except for submerged portions of the water- control structures, which will be inspected when dewatered or on a frequency not to exceed ten (10) years. The program contains provisions for more frequent inspections to ensure that observed conditions that have the potential for impacting an intended function are evaluated or corrected in accordance with the corrective action process.

# LICENSE

# RENEWAL

# COMMITMENT

# LIST

## A.5 LICENSE RENEWAL COMMITMENT LIST

The items in the table below include a revision to item 31 and new item 61.

| Item Number | COMMITMENT | UFSAR SUPPLEMENT LOCATION (LRA APP. A) | ENHANCEMENT OR IMPLEMENTATION SCHEDULE | SOURCE |
|---|---|---|---|---|
| 31) Structures Monitoring Program | 31) Structures Monitoring Program<br>Existing program is credited. The program includes elements of the Masonry Wall Program and the RG 1.127, Inspection of Water-Control Structures Associated With Nuclear Power Plants aging management program. The Structures Monitoring Program will be enhanced to include:<br>1. Buildings, structural components and commodities that are not in scope of maintenance rule but have been determined to be in the scope of license renewal. These include miscellaneous platforms, flood and secondary containment doors, penetration seals, sump liners, structural seals, and anchors and embedment.<br>2. Component supports, other than those in scope of ASME XI, Subsection IWF.<br>3. Inspection of Oyster Creek external surfaces of mechanical components that are not covered by other programs, HVAC duct, damper housings, and HVAC closure bolting. Inspection and acceptance criteria of the external surfaces will be the same as those specified for structural steel components and structural bolting.<br>4. The visual inspection of insulated surfaces will require the removal of insulation. Removal of insulation will be on a sampling basis that bounds insulation material type, susceptibility of insulated piping or component material to potential degradations that could result from being in contact with insulation, and system operating temperature. | A.1.31 | Prior to the period of extended operation. | Section B.1.31 |

| Item Number | COMMITMENT | UFSAR SUPPLEMENT LOCATION (LRA APP. A) | ENHANCEMENT OR IMPLEMENTATION SCHEDULE | SOURCE |
|---|---|---|---|---|
| | 5. Inspection of electrical panels and racks, junction boxes, instrument racks and panels, cable trays, offsite power structural components and their foundations, and anchorage.<br>6. Periodic sampling, testing, and analysis of ground water to confirm that the environment remains non-aggressive for buried reinforced concrete.<br>7. Periodic inspection of components submerged in salt water (Intake Structure and Canal, Dilution structure) and in the water of the fire pond dam, including trash racks at the Intake Structure and Canal.<br>8. Inspection of penetration seals, structural seals, and other elastomers for change in material properties.<br>9. Inspection of vibration isolators, associated with component supports other than those covered by ASME XI, Subsection IWF, for reduction or loss of isolation function.<br>10. The current inspection criteria will be revised to add loss of material, due to corrosion for steel components, and change in material properties, due to leaching of calcium hydroxide and aggressive chemical attack for reinforced concrete. Wooden piles and sheeting will be inspected for loss of material and change in material properties.<br>11. Periodic inspection of the Fire Pond Dam for loss of material and loss of form.<br>12. Inspection of Station Blackout System structures, structural components, and phase bus enclosure assemblies.<br>13. Inspection of Forked River Combustion Turbine power plant external surfaces of mechanical components that are not covered by other programs, HVAC duct, damper housings, and HVAC closure bolting. Inspection and acceptance criteria of the external surfaces will be the same as those specified for structural steel components and structural bolting.<br>**14. The program will be enhanced to include inspection of Meteorological Tower Structures. Inspection and acceptance criteria will be the same as those specified for other structures in the scope of the program.** | | | |

| Item Number | COMMITMENT | UFSAR SUPPLEMENT LOCATION (LRA APP. A) | ENHANCEMENT OR IMPLEMENTATION SCHEDULE | SOURCE |
|---|---|---|---|---|
| | **15. The program will be enhanced to include inspection of exterior surfaces of piping and piping components associated with the Radio Communications system, located at the meteorological tower site, for loss of material due to corrosion. Inspection and acceptance criteria will be the same as those specified for other external surfaces of mechanical components.** | | | |
| 61) Buried Piping and Tank Inspection – Met Tower Repeater Engine Fuel Supply | 61) The Buried Piping and Tank Inspection – Met Tower Repeater Engine Fuel Supply aging management program is a new program that manages the external surface aging effects of loss of material for copper and carbon steel piping, and carbon steel tanks in a soil (external) environment. The program activities consist of preventive and condition-monitoring measures to manage the loss of material due to external corrosion for piping and piping system components in the scope of license renewal that are in a soil (external) environment. The program scope includes buried portions of the Met Tower based radio communications system repeater backup engine generator fuel (propane) supply piping and the associated buried fuel supply tank, located at the Forked River Meteorological Tower.<br><br>External inspections of buried components will occur opportunistically when they are excavated during maintenance. Within 10 years prior to entering the period of extended operation, inspection of buried piping will be performed unless an opportunistic inspection occurs within this ten-year period. Upon entering the period of extended operation, inspection of buried piping will again be performed within the next ten years, unless an opportunistic inspection occurs during this ten-year period. This program will be implemented prior to entering the period of extended operation. | A.1.26B | Prior to the period of extended operation. | Section B.1.26B |

# AGING

# MANAGEMENT

# PROGRAMS

## B.1.26B BURIED PIPING AND TANK INSPECTION - MET TOWER REPEATER ENGINE FUEL SUPPLY

### Program Description

The Buried Piping and Tank Inspection - Met Tower Repeater Engine Fuel Supply aging management program is a new aging management program that relies on coating, wrapping and periodic inspection as a preventive measure, and to mitigate and manage the effects of corrosion on the pressure-retaining capacity of carbon steel and copper piping and fittings, and carbon steel tank, in a soil (external) environment. External coatings and wrappings are maintained in accordance with standard industry practices. External inspections of buried piping components will occur opportunistically when excavated during maintenance. Within 10 years prior to entering the period of extended operation, inspection of buried piping components will be performed unless an opportunistic inspection occurs within this ten-year period. Upon entering the period of extended operation, inspection of buried piping components will again be performed within the next ten years, unless an opportunistic inspection occurs during this ten-year period. The aging management program activities described below as well as in Section A.1.26B will be coordinated with First Energy, as necessary, pursuant to an Easement, License, and Restrictive Covenant Agreement.

### NUREG-1801 Consistency

The Buried Piping and Tank Inspection - Met Tower Repeater Engine Fuel Supply aging management program is consistent with the ten elements of aging management program XI.M.34, "Buried Piping and Tanks Inspection," specified in NUREG-1801, with exceptions.

### Exceptions to NUREG-1801

- NUREG-1801, Section X1.M.34 Buried Piping and Tanks Inspection AMP relies on preventive measures such as coatings and wrappings, however portions of this piping may not be coated or wrapped. Inspections of buried piping that is not wrapped will inspect for loss of material due to general, pitting, crevice, and microbiologically influenced corrosion.

- The Corrective Actions (Element 7), Confirmation Process (Element 8), and Administrative Controls (Element 9) are not accomplished in accordance with the AmerGen quality assurance (QA) program and are not in accordance with the requirements of 10 CFR Part 50, Appendix B, but do meet the guidance in Branch Technical Position IQMB-1, Quality Assurance for Aging Management Programs.

**Enhancements**

The Buried Piping and Tank Inspection – Met Tower Repeater Engine Fuel Supply aging management program is a new program to be implemented for the buried piping and tank located at the meteorological tower.

**Evaluation and Technical Basis**

1. **Scope of Program**

This program relies on coating, wrapping and periodic inspection as a preventive measure, and to mitigate and manage loss of material caused by corrosion of the external surface of the buried piping and tank. These activities will be used to manage external aging effects of the underground steel and copper piping, fittings, and tank. The buried components are exposed to a soil environment that may be sufficiently aggressive to result in loss of material caused by general, pitting, and crevice corrosion, and microbiologically-influenced corrosion (MIC). Periodic inspections are performed when the components are excavated for maintenance or for any other reason. The scope of the program covers buried carbon steel and copper portions of the meteorological tower repeater engine fuel supply (propane) piping and tank at the meteorological tower that is within the scope of license renewal.

2. **Preventive Actions**

In accordance with industry practice, portions of the underground piping and tank at the meteorological tower were either procured with coating or coated during installation with a protective coating system to protect the piping and tank from contacting the potentially aggressive soil environment. Portions of the piping may not be coated or wrapped.

3. **Parameters Monitored/Inspected**

This program monitors parameters such as coating and wrapping integrity directly related to corrosion damage of the external surface of buried steel piping and tanks. The program also directly monitors, for indications of corrosion, the external surfaces of buried steel and copper piping that are not coated or wrapped. Coatings and wrappings, and the external surface of buried piping components that are not coated or wrapped, are inspected by visual techniques. Coatings and wrappings will be inspected for any evidence of damaged wrapping or coating defects, such as coating perforation, holidays, or other damage, that is an indicator of possible corrosion damage to the external surface of the piping or tank. The external surfaces of buried piping components that are not coated or wrapped will be inspected directly for any evidence of corrosion.

**4. Detection of Aging Effects**

Inspections will be performed to confirm that coating and wrapping are intact, and to determine the extent of potential corrosion of buried piping components that are not coated or wrapped. These inspections are an effective method to ensure that corrosion of external surfaces has not occurred and the intended function is maintained. The buried piping and tank will be opportunistically inspected whenever excavated for maintenance. The inspections will be performed on all of the areas made accessible to support the maintenance activity.

It is anticipated that one or more opportunistic inspections may occur within a ten-year period. Within 10 years prior to entering the period of extended operation, inspection of the buried piping and tank will be performed unless an opportunistic inspection occurs within this ten-year period. Upon entering the period of extended operation, inspection of the buried piping and tank will again be performed within the next ten years, unless an opportunistic inspection occurs during this ten-year period. Inspections will be performed in areas with the highest likelihood of corrosion problems, and in areas with a history of corrosion problems, if any. The meteorological tower repeater engine fuel supply has not had a history of corrosion problems on the exterior surfaces of buried piping or the tank to date.

**5. Monitoring and Trending**

Results of any previous inspections will be used to identify susceptible locations for future inspections.

**6. Acceptance Criteria**

Any coating and wrapping degradations, and any associated or other piping or tank degradation, will be reported and evaluated in accordance with corrective actions procedures. External component degradation is reported and evaluated whenever buried commodities are uncovered during yard excavation activities. Leakage detected through periodic testing and visual inspections will be evaluated in accordance with the corrective actions procedures. Evaluations will consider system and component ability to perform their intended functions. The extent of surface corrosion and meteorological tower repeater engine fuel supply operating experience will determine corrective actions and the need and scope for extent of condition and future inspections.

**7. Corrective Actions**

The meteorological tower repeater and supporting systems are non-safety related and are not subject to 10 CFR 50 Appendix B requirements in the current licensing basis (CLB). AmerGen has elected not to include this program under the Oyster Creek 10 CFR 50 Appendix B Program. Instead, processes and procedures will be established to assure that conditions adverse to quality are promptly identified and corrected. Identified conditions that do not satisfy acceptance criteria will be documented, evaluated, and corrected as required to maintain the intended function of the meteorological tower repeater engine fuel supply during the period of extended operation. In the case of significant conditions adverse to quality, the procedures will require that the cause of the condition be determined, actions to preclude repetition be taken, and the condition be reported to the appropriate level of management.

**8. Confirmation Process**

The confirmation process for the meteorological tower repeater engine fuel supply will focus on follow-up actions that must be taken to verify effective implementation of corrective actions and preclude repetition of significant conditions adverse to quality. The process and procedures established will include the requirements that measures be taken to preclude repetition of significant conditions adverse to quality. These measures will include actions to verify effective implementation of the proposed corrective actions, determination of root cause, tracking open corrective actions to completion, and reviews of corrective action effectiveness.

**9. Administrative Controls**

The meteorological tower repeater engine fuel supply procedures will include administrative controls that provide for formal review and approval of aging management activities.

**10. Operating Experience**

The Buried Piping and Tank Inspection – Met Tower Repeater Engine Fuel Supply aging management program is a new program that will be effective in managing aging degradation for the period of extended operation by providing timely detection of aging effects and implementation of appropriate corrective actions prior to loss of system or component intended functions. The buried piping and tank at the meteorological tower that is included in the scope of license renewal is the below grade propane filled piping and tank next to the meteorological tower.

**Conclusion**

The Buried Piping and Tank Inspection - Met Tower Repeater Engine Fuel Supply aging management program will provide reasonable assurance that the aging effects on the external surfaces of buried piping components are adequately managed so that the intended functions of components within the scope of license renewal are maintained consistent with the current licensing basis during the period of extended operation.

## B.1.31 STRUCTURES MONITORING PROGRAM

### Program Description

The Structures Monitoring Program provides for aging management of structures and structural components, including structural bolting, within the scope of license renewal. The program was developed based on guidance in Regulatory Guide 1.160 Revision 2, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and NUMARC 93-01 Revision 2, "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," to satisfy the requirement of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,"

The scope of the program also includes condition monitoring of masonry walls and water-control structures as described in the Masonry Wall Program and in the RG 1.127, Inspection of Water-Control Structures Associated With Nuclear Power Plants, aging management program. As a result, the program elements incorporate the requirements of NRC IEB 80-11, "Masonry Wall Design", the guidance in NRC IN 87-67, "Lessons learned from Regional Inspections of Licensee Actions in Response to IE Bulletin 80-11", and the requirements of NRC Regulatory Guide 1.127, "Inspection of Water-Control Structures Associated with Nuclear Power Plants."

The program relies on periodic visual inspections by qualified personnel to monitor structures and components for applicable aging effects. Specifically, concrete structures are inspected for loss of material, cracking, and a change in material properties. Steel components are inspected for loss of material due to corrosion. Masonry walls are inspected for cracking, and elastomers will be monitored for a change in material properties. Earthen structures associated with water-control structures and the Fire Pond Dam will be inspected for loss of material and loss of form. Component supports will be inspected for loss of material, reduction or loss of isolation function, and reduction in anchor capacity due to local concrete degradation. Exposed surfaces of bolting are monitored for loss of material, due to corrosion, loose nuts, missing bolts, or other indications of loss of preload. The program relies on procurement controls and installation practices, defined in plant procedures, to ensure that only approved lubricants and proper torque are applied consistent with the NUREG-1801 bolting integrity program.

The scope of the program will be enhanced to include structures that are not monitored under the current term but require monitoring during the period of extended operation. Details of the enhancements are discussed below.

Inspection frequency is every four (4) years; except for submerged portions of water- control structures, which will be inspected when the structures are dewatered, or on a frequency not to exceed 10 years. The program contains provisions for more frequent inspections to ensure that observed conditions that have the potential for impacting an intended function are evaluated or corrected in accordance with the corrective action process

**NUREG-1801 Consistency**

The Structures Monitoring Program is consistent with the ten elements of aging management program XI.S6,"Structures Monitoring Program," specified in NUREG-1801.

**Exceptions to NUREG-1801**

None.

**Enhancements**

The scope of the program will be increased to add buildings, structural components and commodities that are not in scope of maintenance rule but have been determined to be in the scope of license renewal. These include miscellaneous platforms, flood and secondary containment doors, penetration seals, liner for sumps, structural seals, and anchors and embedment.

The scope of the program will be enhanced to include Station Blackout System Structures, structural components, and phase bus enclosure assemblies. Inspection frequency, inspection methods, and acceptance criteria will be the same as those specified for other structures in scope of the program.

The scope of the program will be increased to include component supports, other than those in scope of ASME XI, Subsection IWF.

The scope of the program will be enhanced to include inspection of external surfaces of Oyster Creek and Forked River Combustion Turbine mechanical components that are not covered by other programs, including exterior surfaces of HVAC duct, damper housings, and HVAC closure bolting. Inspection and acceptance criteria of the exterior surfaces will be the same as those specified for structural steel components and structural bolting.

The program will be enhanced to require removal of piping and component insulation to permit visual inspection of insulated surfaces. Removal of insulation will be on a sampling basis that bounds insulation material type, susceptibility of insulated piping or component material to potential degradations that could result from being in contact with insulation, and system operating temperature.

The program will provide for inspections of, electrical panels and racks, junction boxes, instrument racks and panels, cable trays, offsite power structural components and their foundations, and anchorage.

The program will provide for periodic sampling and testing of ground water and review its chemistry data to confirm that the environment remains non-aggressive for buried reinforced concrete.

The program will provide for periodic inspection of components submerged in salt water (Intake Structure and Canal, Dilution structure) and in the water of the fire pond dam, including trash racks at the Intake Structure and Canal.

The program will require inspection of penetration seals, structural seals, and other elastomers for change in material properties by inspecting the elastomers for cracking and hardening.

The program will require inspection of vibration isolators, associated with component supports other than those covered by ASME XI, Subsection IWF, for reduction or loss of isolation function by inspecting the isolators for cracking and hardening.

The current inspection criteria will be enhanced to add loss of material, due to corrosion for steel components, and change in material properties, due to leaching of calcium hydroxide and aggressive chemical attack for reinforced concrete. Accessible wooden piles and sheeting will be inspected for loss of material and a change in material properties. Concrete foundations for Station Blackout System structures will be inspected for cracking and distortion due to increased stress level from settlement that may result from degradation of the inaccessible wooden piles.

The program will be enhanced to include periodic inspection of the Fire Pond Dam for loss of material and loss of form.

**The program will be enhanced to include inspection of Meteorological Tower Structures. Inspection and acceptance criteria will be the same as those specified for other structures in the scope of the program.**

**The program will be enhanced to include inspection of exterior surfaces of piping and piping components associated with the Radio Communications system, located at the meteorological tower site, for loss of material due to corrosion. Inspection and acceptance criteria will be the same as those specified for other external surfaces of mechanical components.**

Enhancements will be implemented prior to the period of extended operation.

**Operating Experience**

The review of program documentation, and other plant operating experience before the program was implemented, identified cracking of reinforced of exterior walls of the reactor building, drywell shield wall above elevation 95', and the spent fuel pool support beam. Cracking of the reactor building exterior walls was generally minor and attributed to early shrinkage of concrete and temperature changes. Engineering evaluation concluded that the structural integrity of the walls is unaffected by the cracks. Repairs to areas of concern were made to prevent water intrusion and corrosion of concrete rebar. The cracks and repaired areas are monitored under the program to detect any changes that would require further evaluation and corrective action.

Cracking of the drywell shield wall was attributed to high temperature in the upper elevation of the containment drywell. Engineering analysis concluded that stresses are well below allowable limits taking into consideration the existing cracked condition. The shield wall cracking was addressed in NRC SEP review of the plant under Topic III-7B. The cracks have been mapped and inspected

periodically under the program. Recent inspections identified no significant change in the cracked area.

Cracking of the spent fuel storage pool concrete support beams was identified in mid-1980. Subsequently crack monitors were installed to monitor crack growth and an engineering evaluation was performed. Based on the evaluation results and additional non-destructive testing to determine the depth of the cracks, it was concluded that the beams would perform their intended function, and that continued monitoring with crack monitors is not required. The cracks are examined periodically under the program and have shown little change.

Inspection of the intake canal, performed in 2001, identified cracks and fissures, voids, holes, and localized washout of coatings that protect embankment slopes from erosion. The degradations were evaluated and determined not to impact the intended function of the intake canal (UHS). However the inspector recommended repair of the degradations to prevent further deterioration. A project to repair the canal banks has been initiated.

Inspections conducted in 2002, concluded that degradations discussed above have not become worse and remains essentially the same as identified in previous inspections. In addition minor cracking, rust stains, water stains, localized exposed rebars and rebar corrosion, and damage to siding were observed. The degradations were evaluated and determined not to have an impact on the structural integrity of affected structures. Operating experience review concluded that the program is effective for managing aging effects of structures, structural components, and water-control structures.

**Conclusion**

The Structures Monitoring Program was developed to implement the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The program relies on periodic visual inspections to monitor the condition of structures and structural components. Inspection frequency is every four (4) years (except for water-control structures) with provisions for more frequent inspections to ensure that observed conditions that have the potential for impacting an intended function are evaluated or corrected in accordance with the corrective action process. Submerged portions of water-control structures will be inspected when dewatered or on a frequency not to exceed ten (10) years.

The scope of the program will be enhanced to include all structures, and component supports not covered by other programs, the Fire Pond Dam, and exterior surfaces of mechanical components in the scope of license renewal that are not covered by other programs. Inspection criteria will also be enhanced to provide reasonable assurance that the aging effects are adequately managed so that the intended functions of structures and components within the scope of license renewal are maintained consistent with the current licensing basis during the period of extended operation.