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DTE Energy

10 CFR 54

October 24, 2014
NRC-14-0070

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) DTE Electric Company Letter to NRC, "Fermi 2 License Renewal Application," NRC-14-0028, dated April 24, 2014 (ML14121A554)

3) NRC Letter, "Requests for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 1 (TAC No. MF4222)," dated September 26, 2014 (ML14258A094)

Subject: Response to NRC Request for Additional Information
for the Review of the Fermi 2 License Renewal Application – Set 1

In Reference 2, DTE Electric Company (DTE) submitted the License Renewal Application (LRA) for Fermi 2. In Reference 3, NRC staff requested additional information regarding the Fermi 2 LRA. The Enclosure to this letter provides the DTE response to the request for additional information.

No new commitments are being made in this submittal. A clarification has been made to a commitment previously identified in Section A.4 of the LRA as indicated in the Enclosure.

Should you have any questions or require additional information, please contact Lynne Goodman at 734-586-1205.

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

Executed on October 24, 2014

Vito A. Kaminskas
Site Vice President
Nuclear Generation

Enclosure: DTE Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 1

cc: NRC Project Manager
NRC License Renewal Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 5, Region III
Regional Administrator, Region III
Michigan Public Service Commission,
Regulated Energy Division (kindschl@michigan.gov)

Enclosure to
NRC-14-0070

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

DTE Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 1

RAI 2.4-1

Background:
Table 2.3.2-2, "Residual Heat Removal System," of the license renewal application (LRA), does not list expansion joint bellows as a component type subject to an Aging Management Review (AMR).

Issue:
However, Table 2.4-4, "Bulk Commodities," lists "compressible joints and seals" as a component type subject to an AMR.

Request:
Please confirm that this component type includes the use of expansion joint bellows. If installed in the residual heat removal system, provide the locations where they are covered, and whether they are subject to an AMR, pursuant to Title 10 of the Code of Federal Regulations (10 CFR) 54.21(a)(1)(i).

Response:

There are no bellows in the Residual Heat Removal (RHR) system. In the License Renewal Application (LRA), containment penetration bellows are considered part of the related structure rather than the process system. This is why there is no entry for bellows in LRA Table 2.3.2-2 for the RHR system. Instead, the containment penetration bellows are described in LRA Section 2.4.1 (on page 2.4-7) and covered under the component type "penetration bellows" which is listed in LRA Table 2.4-1. The aging management review results for this component type are provided in LRA Table 3.5.2-1.

The bulk commodities listed in LRA Section 2.4.4 and shown in LRA Table 2.4-4 are those that are common to in-scope structures, systems, and components. Therefore, the entry in LRA Table 2.4-4 for "compressible joints and seals" is not related to the containment penetration bellows discussed above.

LRA Revisions:

None.

RAI 2.4-2

Background:
In the Updated Final Safety Analysis Report (UFSAR) Section 3.4.4, "Flood Protection," and Section 3.4.4.1, "Reactor Building Structure," discuss the use of watertight seals and water stops for flood protection of Category I structures.

Issue:
However, a review of the tables in the LRA did not identify such components for in-scope structures as credited for flood protection and subject to an AMR.

Request:
If present, clarify the location within the LRA where they are covered and the corresponding AMR. If not included in the LRA, please justify their exclusion from the scope of license renewal, pursuant to 10 CFR 54.4.

Response:

Consistent with discussions in Fermi 2 Updated Final Safety Analysis Report (UFSAR) Sections 3.4.4 and 3.4.4.1, watertight seals and water stops are credited for providing flood protection of Category I structures. Accordingly, they are included in the scope of license renewal. The watertight seals are elastomeric components used in doors and penetrations through the outside walls below the design flood elevation. They are included in License Renewal Application (LRA) Table 3.5.2-4 line items "Penetration seals" and "Seals and gaskets (doors, manways and hatches)" with an intended function of flood barrier (FLB). The water stops are polymer components embedded in concrete at construction joints. They are inaccessible and protected from the environment by concrete (in the same manner as reinforcing steel). The water stops are treated as a subcomponent of reinforced concrete as is reinforcing steel. Therefore, water stops are not listed as a separate line item in an LRA table.

LRA Revisions:

None.

RAI 2.4-3

Background:
Section 2.4.2, "Water-Control Structures," of the LRA, and UFSAR Section 9.2.1, "General Service Water (GSW) System," state that ... "Traveling screens and stationary racks are provided to keep floating debris from entering the GSW intake pit."

Issue:
However, such components are not included in Table 2.4-2, "Water-Control Structures," or Table 2.4-4, "Bulk Commodities."

Request:
If such components are relied upon and perform an intended function, please identify the section of the LRA where they are covered, as well as their applicable aging effects, and the Aging Management Program (AMP) related to these components. If not included in the LRA, please justify their exclusion from the scope of license renewal. Also, please clarify if there are any additional trash racks, basket strainers, traveling screens or any other debris prevention or removing mechanisms that are part of any in-scope structures, subject to 10 CFR 54.4.

Response:

The General Service Water (GSW) pump house is described in License Renewal Application (LRA) Section 2.4.2. The traveling screens and stationary racks are also discussed in LRA Section 2.4.2 as part of a general discussion of what is contained within the GSW pump house. The traveling screens and stationary racks (and any other debris prevention or removing mechanisms) are not considered part of the structure of the GSW pump house. These components are nonsafety-related and their failure could not impact any safety-related function since there is no safety-related equipment inside the GSW pump house. Therefore, the traveling screens and racks are not in-scope for 10 CFR 54.4 (a)(1) or (a)(2). The GSW system does not perform a function that demonstrates compliance with the Commission's regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout and is therefore not in scope for 10 CFR 54.4 (a)(3). For this reason, the components were not included in either LRA Tables 2.4-2 or 2.4-4.

The Residual Heat Removal (RHR) Complex and Shore Barrier are the other water-control structures addressed in LRA Section 2.4.2. There are no additional trash racks, basket strainers, traveling screens or other debris prevention or removal mechanisms that are part of these in-scope structures.

LRA Revisions:

None.

RAI 2.4-4

Background:
In UFSAR Section 6.2.5.2.5, "Containment Purge," states that "Debris screens have been provided for the purge valves inside the drywell to prevent debris from becoming entrained in the valves."

Issue:
However, Section 2.4.1, "Reactor/Auxiliary Building and Primary Containment," of the LRA, does not discuss or include such component in Table 2.4-1, "Reactor/Auxiliary Building and Primary Containment Components Subject to Aging Management Review."

Request:
If such component is relied upon to perform an intended function, please identify the section of the LRA where it is covered, as well as the applicable aging effects and the AMP related to this component. If not included in the LRA, please justify its exclusion from the scope of license renewal, pursuant to 10 CFR 54.4.

Response:

As indicated in the Updated Final Safety Analysis Report (UFSAR) Section 6.2.5.2.5, debris screens are provided for the purge valves inside the drywell to prevent debris from becoming entrained in the valves. There are two debris screens that are part of the Containment Atmospheric Control (CAC) system (T48).

The CAC system is described in License Renewal Application (LRA) Section 2.3.3.13. Debris screens are identified under the "strainer" component type in LRA Table 2.3.3-13. The aging management evaluation is provided in LRA Table 3.3.2-13 under the "strainer" component type. As shown in LRA Table 3.3.2-13, strainers are stainless steel in an indoor air environment. Thus there is no aging effect requiring management. The material for the debris screens was determined to be stainless steel based on information from the vendor that the screens may be either carbon or stainless steel supplemented by photographs of the screens that showed a shiny surface indicative of stainless steel.

However, as described in LRA Section 2.3.3.13, one drywell exhaust isolation valve of the CAC system is reviewed as part of the Standby Gas Treatment (SGT) system in LRA Section 2.3.2.7. One of the debris screens is located near this valve and was intended to be reviewed as part of the SGT as indicated on drawing LRA-M-2709. The discussion in LRA Section 2.3.2.7 does not include the debris screen and no "strainer" component type is included in LRA Tables 2.3.2-7 and 3.2.2-7. Therefore, LRA Tables 2.3.2-7 and 3.2.2-7 will be revised to include the "strainer" component type.

Following the LRA revision described above, one of the debris screens will be addressed in the section and tables associated with the CAC system and the other will be addressed in the section

and tables associated with the SGT system. This will ensure consistency with the LRA drawings. As described above, the debris screens are stainless steel in an indoor air environment such that there are no aging effects requiring management and thus no impact on any aging management program.

LRA Revisions:

LRA Tables 2.3.2-7 and 3.2.2-7 will be revised as shown on the following pages.

Table 2.3.2-7
Standby Gas Treatment System
Components Subject to Aging Management Review

Component Type	Intended Function
Bolting	Pressure boundary
Chamber	Pressure boundary
Damper housing	Pressure boundary
Duct	Pressure boundary
Fan housing	Pressure boundary
Filter housing	Pressure boundary
Flex connection	Pressure boundary
Flow element	Pressure boundary
Moisture separator	Filtration
Orifice	Pressure boundary
Piping	Pressure boundary
Pump casing	Pressure boundary
Sight glass	Pressure boundary
Strainer	Filtration
Tubing	Pressure boundary
Valve body	Pressure boundary

Table 3.2.2-7
Standby Gas Treatment System
Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Item	Table 1 Item	Notes
Pump casing	Pressure boundary	Stainless steel	Air – indoor (ext)	None	None	V.F.EP-18	3.2.1-63	A
Pump casing	Pressure boundary	Stainless steel	Air – indoor (int)	None	None	V.F.EP-82	3.2.1-63	A
Sight glass	Pressure boundary	Glass	Air – indoor (ext)	None	None	V.F.EP-15	3.2.1-60	A
Sight glass	Pressure boundary	Glass	Air – indoor (int)	None	None	VII.J.AP-48	3.3.1-117	C
Sight glass	Pressure boundary	Stainless steel	Air – indoor (ext)	None	None	V.F.EP-18	3.2.1-63	A
Sight glass	Pressure boundary	Stainless steel	Air – indoor (int)	None	None	V.F.EP-82	3.2.1-63	A
Strainer	Filtration	Stainless steel	Air – indoor (ext)	None	None	V.F.EP-18	3.2.1-63	A
Strainer	Filtration	Stainless steel	Air – indoor (int)	None	None	V.F.EP-82	3.2.1-63	A
Tubing	Pressure boundary	Stainless steel	Air – indoor (ext)	None	None	V.F.EP-18	3.2.1-63	A
Tubing	Pressure boundary	Stainless steel	Air – indoor (int)	None	None	V.F.EP-82	3.2.1-63	A

RAI 3.5.2.2.2.1-1

Background:
SRP-LR Section 3.5.3.2.2.1, item 1, associated with SRP-LR Table 3.5-1, item 42, states that loss of material and cracking due to freeze-thaw could occur in inaccessible concrete areas of Groups 1-3, 5, and 7-9 structures. Structure monitoring programs may not be sufficient for plants located in moderate to severe weathering conditions; for these situations further evaluation is needed. The SRP-LR further states that a plant-specific program is not required if documented evidence confirms that the existing concrete has air content between 3 and 8 percent and inspections have not identified degradation related to freeze-thaw.

Issue:
In LRA Table 3.5.1, item 3.5.1-42, the applicant stated that freeze-thaw does not require management. In the associated further evaluation section (3.5.2.2.2.1, item 1), the applicant stated that Fermi 2 Groups 1-3, 5, and 7-9 concrete structures are located in a region where weathering conditions are considered severe. The "severe weather" condition means that freeze-thaw is a credible aging mechanism that should be managed by the applicant. LRA Section 3.5.2.2.2.1, item 1, also states that Fermi 2 specifications require an air-entraining agent to be used in concrete subject to weathering; therefore, the specifications provide a durable concrete that is not subject to freeze-thaw aging effects. Pursuant to 10 CFR 54.21(a)(3) the NRC requires the applicant to demonstrate that the effects of aging for structures and components subject to an AMR will be adequately managed so that the intended function will be maintained consistent with the current licensing basis for the period of extended operation. However, the applicant did not provide documented evidence which confirms the existing concrete has air content of 3 to 8 percent, nor discuss results of past inspections that demonstrate freeze-thaw degradation is not an issue.

Request:
1. *Confirm whether the air content values on Groups 1-3, 5, and 7-9 structures are between 3 and 8 percent.*
2. *If evidence is unavailable that demonstrates air content between 3 and 8 percent, provide an alternative technical basis for not proposing a plant-specific program or provide a description of a plant-specific program to manage the aging effects of freeze-thaw on Groups 1-3, 5, and 7-9 structures.*
3. *Describe the results of past inspections and whether or not past inspections have identified degradation that was attributed to freeze-thaw degradation.*

Response:

1. The above-grade concrete of Groups 1-3, 5, and 7-9 structures used an air-entraining agent such that air content values are between 3 and 8 percent. However, it could not be confirmed that the air content values are between 3 and 8 percent for below-grade inaccessible concrete of Groups 1-3, 5, and 7-9 structures. It was confirmed that the air

content values for below-grade inaccessible concrete areas of Groups 1-3, 5, and 7-9 structures are less than 3% by reviewing test results. This is consistent with the mix design for these below-grade locations, which does not call for the use of air entrainment admixture. Therefore, the air content of the below-grade concrete (less than 3%) is consistent with the original site-specific design.

2. As stated in License Renewal Application (LRA) Section 3.5.2.2.2.1, the Structures Monitoring Program, described in LRA Section B.1.42, will manage the aging effects due to freeze thaw (loss of material and cracking) in below-grade inaccessible concrete. Accordingly, the 'discussion' column of LRA Table 3.5.1, item 3.5.1-42 shall be revised as indicated below in the "LRA Revisions" section. New items will then be added to LRA Tables 3.5.2-1 and 3.5.2-3 to reference the revised item 3.5.1-42. The discussion in LRA Section 3.5.2.2.2.1 will be revised to indicate that these aging effects are applicable. Because the aging effects also apply to Group 6 structures, the discussion in LRA Section 3.5.2.2.2.3 will also be revised.

   The nominal plant grade elevation at Fermi 2 is 583'. As is described in the Fermi 2 Updated Final Safety Analysis Report (UFSAR), the natural ground water level at the site is on the order of elevation 575' (October 2014 data shows 574'). The frost line as recognized in the Michigan Building Code is 42 inches below finish grade (Elevation 579'-6"). The fact that the groundwater table is approximately 4'-6" below the frost line shows that the soil above the frost line is in the unsaturated zone. The only inaccessible below-grade structures that could be subject to freeze-thaw would be the 42 inches of concrete above the frost line. Because the soil in this zone is unsaturated, any effects of freeze-thaw would only be due to the natural moisture in the unsaturated soil. The above-grade portion of the same structure would be subject to year-round weathering events, and would experience higher levels of freeze-thaw degradation than the below-grade portion of the structure that is shielded by the unsaturated soil. Because of this, the approach for inspecting the above-grade structures for freeze-thaw degradation through the Structures Monitoring Program and correlating these above-grade findings to the condition of the below-grade structure is valid. As stated in LRA Section 3.5.2.2.2.1, the Structures Monitoring Program will manage the loss of material and cracking due to freeze-thaw in below-grade inaccessible concrete of Groups 1-3, 5, and 7-9 structures through inspection when accessible as a result of excavation activity, and inspections will be performed of inaccessible areas in environments where observed conditions in accessible areas exposed to the same environment indicate that significant degradation is occurring. It is possible that below-grade inaccessible concrete is in a soil or outdoor air environment. Regardless of the environment, the Structures Monitoring Program will manage the aging effects due to freeze-thaw. For this reason, the discussion in LRA Section 3.5.2.2.2.1, and corresponding descriptions of the enhancements in Appendices A and B, will be revised to remove discussion of the same environment when correlating accessible and inaccessible areas.

3. Past inspections of the Fermi 2 structures under the Structures Monitoring Program have not revealed concrete structural degradation attributed to freeze-thaw. Recent site projects where below-grade exterior walls of the structures were exposed also did not identify degradation attributed to the freeze-thaw mechanism.

LRA Revisions:

LRA Section 3.5.2.2.2.1 item 1, LRA Section 3.5.2.2.2.3 item 1, LRA Table 3.5.1 item 3.5.1-42, LRA Table 3.5.2-1, LRA Table 3.5.2-3, LRA Appendix A.1.42, LRA Appendix A.4, and LRA Appendix B.1.42 will be revised as shown on the following pages.

3.5.2.2.2.1 Aging Management of Inaccessible Areas

1. Loss of Material (Spalling, Scaling) and Cracking Due to Freeze-Thaw in Below-Grade Inaccessible Concrete Areas of Groups 1-3, 5, and 7-9 Structures

   The Fermi 2 Groups 1-3, 5 and 7-9 concrete structures are located in a region where weathering conditions are considered severe as shown in ASTM C33-90, Fig. 1. The concrete structures are designed in accordance with ACI 318-63 and/or ACI 318-71 and constructed in accordance with the recommendations in ACI 318-63 and ACI 318-71 using ingredients/materials conforming to ACI, CSA, Michigan Department of State Highways, and ASTM standards. The concrete mix uses Portland cement conforming to ASTM C150 (Types II and V) or CSA Standard A5 along with flyash (ASTM C618). Concrete aggregates conform to the requirements of Michigan Department of State Highways Standard Specifications for Road and Bridge Construction, Article 8.02. Fine aggregates are of the natural sand designation 2NS. Coarse aggregates are of the designation 6AA; these requirements equal or exceed those of ASTM Specification C33. The type and size of aggregate, slump, cement and additives have been established to produce durable concrete in accordance with ACI. ~~Additionally, water/cement ratios were within the acceptable range defined in ACI 318. Fermi 2 specifications require an air-entraining agent to be used in concrete subject to weathering.~~ Fermi 2 specifications provide a durable concrete~~ that is not subject to freeze-thaw aging effects~~.

   ~~Nevertheless, the~~The Structures Monitoring Program will manage loss of material (spalling, scaling) and cracking due to freeze-thaw in below-grade inaccessible concrete of Groups 1-3, 5 and 7-9 structures. These structures will be inspected when accessible as a result of excavation for any reason. Additionally, inspections will be performed of inaccessible areas in environments where observed conditions in accessible areas ~~exposed to the same environment~~ indicate that significant degradation ~~is~~ may be occurring in the inaccessible areas.

3.5.2.2.2.3 Aging Management of Inaccessible Areas for Group 6 Structures

For inaccessible areas of certain Group 6 structures, aging effects are covered by inspections in accordance with the Structures Monitoring Program.

1. Loss of Material (Spalling, Scaling) and Cracking Due to Freeze-thaw in Below-Grade Inaccessible Concrete Areas of Group 6 Structures

   Fermi 2 is located in a region where weathering conditions are considered severe as shown in ASTM C33-90, Fig. 1. The Group 6 concrete structures are designed in accordance with ACI 318-63 or ACI 318-71 and constructed in accordance with the recommendations in ACI 318-63 and ACI 318-71 using ingredients/materials conforming to ACI, CSA, Michigan Department of State Highways and ASTM standards. The concrete mix uses Portland cement conforming to ASTM C150 (Types II and V) or CSA Standard A5 along with flyash (ASTM C618). Concrete aggregates conform to the requirements of Michigan Department of State Highways Standard Specifications for Road and Bridge Construction, Article 8.02. Fine aggregates are of the natural sand designation 2NS. Coarse aggregates are of the designation 6AA; these requirements equal or exceed those of ASTM Specification C33. The type and size of aggregate, slump, cement and additives have been established to produce durable concrete in accordance with ACI. ~~Additionally, water/cement ratios were within the acceptable range defined in ACI 318. Fermi 2 specifications require an air-entraining agent to be used in concrete subject to weathering.~~ Fermi 2 specifications provide a durable concrete~~ that is not subject to freeze-thaw aging effects~~.

   ~~Therefore, loss of material (spalling, scaling) and cracking due to freeze-thaw in below-grade inaccessible concrete are not aging effects that require aging management. Nevertheless, the~~The RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants Program manages loss of material (spalling, scaling) and cracking due to freeze-thaw in below-grade (above the frost line) concrete for Fermi 2 Group 6 concrete structures. These structures will be inspected when accessible as a result of excavation for any reason. Additionally, inspections will be performed of inaccessible areas in environments where observed conditions in accessible areas ~~exposed to the same environment~~ indicate that significant degradation ~~is~~ may be occurring in the inaccessible areas.

Table 3.5.1: Structures and Component Supports					
Item Number	**Component**	**Aging Effect/ Mechanism**	**Aging Management Programs**	**Further Evaluation Recommended**	**Discussion**
Safety-Related and Other Structures; and Component Supports					
3.5.1-42	Groups 1-3, 5, 7-9: Concrete (inaccessible areas): foundation	Loss of material (spalling, scaling) and cracking due to freeze-thaw	Further evaluation is required for plants that are located in moderate to severe weathering conditions (weathering index >100 day-inch/yr) (NUREG-1557)	Yes, for plants located in moderate to severe weathering conditions	~~Listed aging effects for Fermi 2 concrete foundation do not require management. Fermi 2 concrete is designed and constructed in accordance with ACI 318 with air entrainment. Concrete structures and concrete components are constructed of a dense, well-cured concrete with an amount of cement suitable for strength development and achievement of a water-to-cement ratio which is characteristic of concrete having low permeability. The design and construction of these structures at Fermi 2 prevents the effect of this aging from occurring; therefore, this aging effect does not require management. Aging effects are not significant for accessible and inaccessible areas. Nonetheless, the concrete foundation component is included in the~~The Structures Monitoring Program manages ~~to verify the absence of these~~ the listed aging effects. For further discussion, see Section 3.5.2.2.2.1 Item 1.

Table 3.5.2-1: Reactor/Auxiliary Building and Primary Containment								
Component Type	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801 Item**	**Table 1 Item**	**Notes**
Concrete (accessible areas): exterior above- and below-grade; foundation	EN, FLB, MB, SNS, SRE, SSR	Concrete	Air – outdoor	Loss of material	Structures Monitoring	III.A2.TP-23	3.5.1-64	A
Concrete (accessible areas): exterior above- and below-grade; foundation	EN, FLB, MB, SNS, SRE, SSR	Concrete	Air – outdoor	Cracking	Structures Monitoring	III.A2.TP-25	3.5.1-54	A
Concrete (inaccessible areas): foundation	EN, FLB, MB, SNS, SRE, SSR	Concrete	Air – outdoor	Loss of material (spalling, scaling) and cracking due to freeze-thaw	Structures Monitoring	III.A1.TP-108 III.A2.TP-108 III.A3.TP-108 III.A5.TP-108	3.5.1-42	E
Drywell floor slab	SSR	Concrete	Air – indoor uncontrolled	Cracking, loss of bond, loss material (spalling, scaling)	Structures Monitoring	III.A2.TP-26	3.5.1-66	A
Drywell floor slab	SSR	Concrete	Air – indoor uncontrolled	Increase in porosity and permeability, cracking, loss of material (spalling, scaling)	Structures Monitoring	III.A2.TP-28	3.5.1-67	A

Table 3.5.2-3: Turbine Building, Process Facilities and Yard Structures								
Structure and/or Component or Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Program**	**NUREG-1801 Item**	**Table 1 Item**	**Notes**
Concrete (accessible areas): exterior above- and below-grade; foundation	EN, FLB, MB, SNS, SRE	Concrete	Air – outdoor	Loss of material (spalling, scaling) and cracking	Structures Monitoring	III.A3.TP-23	3.5.1-64	A
Concrete (accessible areas): exterior above- and below-grade; foundation	EN, FLB, MB, SNS, SRE	Concrete	Air – outdoor	Cracking	Structures Monitoring	III.A3.TP-25	3.5.1-54	A
Concrete (inaccessible areas): foundation	EN, FLB, MB, SNS, SRE	Concrete	Air – outdoor	Loss of material (spalling, scaling) and cracking due to freeze-thaw	Structures Monitoring	III.A3.TP-108 III.A8.TP-108	3.5.1-42	E
Cable tunnel	SRE	Concrete	Soil	Cracking, loss of bond, and loss material (spalling, scaling)	Structures Monitoring	III.A3.TP-212	3.5.1-65	A
Cable tunnel	SRE	Concrete	Air – indoor uncontrolled	Cracking, loss of bond, and loss material (spalling, scaling)	Structures Monitoring	III.A2.TP-26	3.5.1-66	A

A.1.42 Structures Monitoring Program

- Revise plant procedures to include the following for detection of aging effects:
  - Personnel (Inspection Engineer and Program Administrator or Responsible Engineer) involved with the inspection and evaluation of structures and structural components, including masonry walls and water-control structures, meet the qualifications guidance identified in ACI 349.3R.
  - Visual inspection of elastomeric material should be supplemented by feel or touch to detect hardening if performance of the intended function of the elastomeric material is suspect. Include instructions to augment the visual examination of elastomeric material with physical manipulation of at least ten percent of available surface area.
  - Structures will be inspected at least once every five years.
  - Submerged structures will be inspected at least once every five years.
  - If normally inaccessible areas become accessible due to plant activities, an inspection of these areas shall be conducted. Additionally, inspections will be performed of inaccessible areas in environments where observed conditions in accessible areas ~~exposed to the same environment~~ indicate that significant degradation ~~is~~ may be occurring in the inaccessible areas.
  - Sampling and chemical analysis of ground water at least once every five years. The Structures Monitoring Program owner will review the results and evaluate any anomalies and perform trending of the results.
  - Masonry walls will be inspected at least once every five years, with provisions for more frequent inspections in areas where significant aging effects (i.e., missing blocks, cracking, etc.) is observed to ensure there is no loss of intended function between inspections.
  - Inspection of water-control structures should be conducted under the direction of qualified personnel experienced in the investigation, design, construction, and operation of these types of facilities.
  - Inspections of water-control structures on an interval not to exceed five years.
  - Perform special inspections of water-control structures immediately (within 30 days) following the occurrence of significant natural phenomena, such as large floods, earthquakes, hurricanes, tornadoes, and intense local rainfalls.

A.4 LICENSE RENEWAL COMMITMENT LIST

No.	Program or Activity	Commitment	Implementation Schedule	Source
34	Structures Monitoring	Enhance Structures Monitoring Program as follows: j. Revise plant procedures to include the following for detection of aging effects: • Personnel (Inspection Engineer and Program Administrator or Responsible Engineer) involved with the inspection and evaluation of structures and structural components, including masonry walls and water-control structures, meet the qualifications guidance identified in ACI 349.3R. • Visual inspection of elastomeric material should be supplemented by feel or touch to detect hardening if performance of the intended function of the elastomeric material is suspect. Include instructions to augment the visual examination of elastomeric material with physical manipulation of at least ten percent of available surface area. • Structures will be inspected at least once every five years. • Submerged structures will be inspected at least once every five years. • If normally inaccessible areas become accessible due to plant activities, an inspection of these areas shall be conducted. Additionally, inspections will be performed of inaccessible areas in environments where observed conditions in accessible areas ~~exposed to the same environment~~ indicate that significant degradation ~~is~~ may be occurring in the inaccessible areas. • Sampling and chemical analysis of ground water at least once every five years. The Structures Monitoring Program owner will review the results and evaluate any anomalies and perform trending of the results.	Prior to September 20, 2024	A.1.42

B.1.42 STRUCTURES MONITORING

Element Affected	Enhancement
4. Detection of Aging Effects	Revise plant procedures to include the following: • Personnel (Inspection Engineer and Program Administrator or Responsible Engineer) involved with the inspection and evaluation of structures and structural components, including masonry walls and water-control structures, meet the qualifications guidance identified in ACI 349.3R. • Visual inspection of elastomeric material should be supplemented by feel or touch to detect hardening if performance of the intended function of the elastomeric material is suspect. Include instructions to augment the visual examination of elastomeric material with physical manipulation of at least ten percent of available surface area. • Structures will be inspected at least once every five years. • Submerged structures will be inspected at least once every five years. • If normally inaccessible areas become accessible due to plant activities, an inspection of these areas shall be conducted. Additionally, inspections will be performed of inaccessible areas in environments where observed conditions in accessible areas ~~exposed to the same environment~~ indicate that significant degradation ~~is~~ may be occurring in the inaccessible areas.