



L-2019-106  
10 CFR 54.17

May 21, 2019

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

Re: Florida Power & Light Company  
Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
Turkey Point Units 3 and 4 Subsequent License Renewal Application  
Safety Review Requests for Additional Information (RAI) Set 10  
RAI No. B.2.3.28-1b Revised Response

References:

1. FPL Letter L-2018-004 to NRC dated January 30, 2018, Turkey Point Units 3 and 4 Subsequent License Renewal Application (ADAMS Accession No. ML18037A812)
2. FPL Letter L-2018-082 to NRC dated April 10, 2018, Turkey Point Units 3 and 4 Subsequent License Renewal Application – Revision 1 (ADAMS Accession No. ML18113A134)
3. FPL Letter L-2019-071 to NRC dated April 10, 2019, Turkey Point Units 3 and 4 Subsequent License Renewal Application Safety Review Requests for Additional Information (RAI) Set 10 Response (ADAMS Accession No. ML19102A065)

Florida Power & Light Company (FPL) submitted a subsequent license renewal application (SLRA) for Turkey Point Units 3 and 4 to the NRC on January 30, 2018 (Reference 1) and SLRA Revision 1 on April 10, 2018 (Reference 2).

The purpose of this letter is to provide the attached revised response to the safety review Set 10 RAI No. B.2.3.28-1b response submitted by FPL on April 10, 2019 (Attachment 1 of Reference 3). The attachment identifies revisions amending the SLRA.

If you have any questions, or need additional information, please contact me at 561-691-2294.

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NRR

Turkey Point Units 3 and 4  
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I declare under penalty of perjury that the foregoing is true and correct.

Executed on May 21, 2019.

Sincerely,

A handwritten signature in black ink, appearing to read 'William Maher', with a long horizontal flourish extending to the right.

William Maher  
Senior Licensing Director  
Florida Power & Light Company

WDM/RFO

Attachment: FPL Revised Response to NRC RAI No. B.2.3.28-1b

cc:

Senior Resident Inspector, USNRC, Turkey Point Nuclear  
Regional Administrator, USNRC, Region II  
Project Manager, USNRC, Turkey Point Nuclear  
Plant Project Manager, USNRC, SLRA  
Plant Project Manager, USNRC, SLRA Environmental  
Ms. Cindy Becker, Florida Department of Health

**NRC RAI Letter Nos. ML19087A209 and ML19087A211 Dated March 28, 2019**

**1. Buried and Underground Piping and Tanks, GALL AMP XI.M41**

**RAI B.2.3.28-1b**

Regulatory Basis:

Section 54.21(a)(3) of Title 10 of the *Code of Federal Regulations* (10 CFR) requires an applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the subsequent period of extended operation. One of the findings that the staff must make to issue a renewed license (10 CFR 54.29(a)) is that actions have been identified and have been or will be taken with respect to managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under 10 CFR 54.21, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis (CLB). As described in SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the NUREG-2191, Rev. 0, "Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report," dated July 2017. In order to complete its review and enable making a finding under 10 CFR 54.29(a), the staff requires additional information in regard to the matters described below.

Background:

By letter dated February 6, 2019, (ADAMS Accession No. ML19037A398) the staff issued follow-up RAI B.2.3.28-1a requesting that a basis be provided for why Preventive Action Category F is appropriate for buried steel piping during the 10-year period prior to the subsequent period of extended operation (SPEO). The basis for issuing this RAI was that: (a) operating experience (OE) at Turkey Point has indicated several instances of leaks/significant degradation of buried steel piping; and (b) Preventive Action Category F is limited to instances where plant-specific OE identifies only a few (i.e., as opposed to several) instances of leaks/significant degradation. The staff's assertion that there have been several instances of leaks/significant degradation of buried steel piping due to external corrosion is based on the following:

- SLRA Section B.2.3.28, "Buried and Underground Piping and Tanks," states:

Turkey Point has experienced a number of pipe leaks and/or breaks in buried piping. Most of these pipe breaks have been in the piping for the fire water and service water systems. These breaks have been documented in the corrective action program (CAP). A review of the documentation in the CAP indicates that typically they have been caused by localized corrosion.

- During the audit the staff noted that: (a) several leaks and locations of localized external corrosion have occurred in buried service water and fire water system piping; (b) an action report (AR) from 2008 documents that corrosion of buried carbon steel piping is a known problem at the station; and (c) the Structures Monitoring program basis report documents that groundwater/soil at Turkey Point is aggressive with chlorides greater than 500 parts per million (ppm), which indicates an aggressive groundwater/soil classification.

Follow-up RAI B.2.3.28-1 was responded to by letter dated March 6, 2019, (ADAMS Accession No. ML19070A113). Each of the ARs that were cited by the staff in the OE audit report (ADAMS Accession No. ML18183A445) were addressed. For several of the ARs which identified leaks, the response states that the buried piping is not within the scope of subsequent license renewal (SLR) and is therefore not related to the Buried and Underground Piping and Tanks program. The overall conclusion stated in the response was that: (a) there has not been significant degradation and only one minor leak was identified; and (b) no additional inspections beyond those currently planned are required for buried steel piping during the 10-year period prior to the SPEO.

Issue:

The response to follow-up RAI B.2.3.28-1a focused on addressing each of the ARs that were cited by the staff in the OE audit report. The staff has two issues with the response:

1. The staff does not agree with the claim that leaks/degradation in out-of-scope buried piping are not relevant to the Buried and Underground Piping and Tanks program. In-scope piping would be just as susceptible to degradation as out-of-scope piping unless a technical justification is provided for why the two are not representative of each other (e.g., similar material composition, degradation mechanisms, coatings, environmental conditions, age of installation, operational history of cathodic protection if installed). GALL-SLR Report Aging Management Report (AMP) XI.M41 states:

If cathodic protection is not provided for any reason, the applicant reviews the most recent 10 years of plant-specific operating experience (OE) to determine if degraded conditions that would not have met the acceptance criteria of this AMP have occurred. This search includes components that are not in-scope for license renewal if, when compared to in-scope piping, they are similar materials and coating systems and are buried in a similar soil environment.

Although cathodic protection will be installed at least 7 years prior to the SPEO, AMP XI.M41 clearly establishes the purpose of using plant-specific operating experience related to buried components that are not in-scope.

2. The response addressed each of the ARs listed in the OE audit report; however, this listing of ARs was not intended to be an exhaustive list documenting all instances of buried piping leaks/degradation at Turkey Point. The staff's review of operating experience spans approximately 10 years, not the entire life of the plant. The staff also notes that corrosion of buried carbon steel piping was known to be an issue in 2008 (approximately 10 years ago). Therefore, there could be examples of buried steel piping leaks/degradation that were not included in the OE audit report.

Request:

State the basis for why additional inspections, beyond those recommended for Preventive Action Category F, are not appropriate for buried steel piping during the 10-year period prior to the SPEO.

**FPL Revised Response:**

This revised response supersedes in its entirety the RAI response in Attachment 1 of Ref. 4 based on NRC audit breakout sessions conducted on April 25 and May 8, 13 and 15, 2019. The number of inspections planned during the 10-year period prior to the SPEO conforms to the guidance for Preventive Action Category F in NUREG-2191, Table XI.M41-2. This initial plan for SLR is justified by consideration of current LR programs, a more in-depth (holistic) review of operating experience, documented soil conditions, and a commitment to install cathodic protection. Each consideration is further discussed below.

Current LR and SLR Program Inspection Plans

The buried steel piping systems included in the scope of the PTN Buried and Underground Piping and Tanks AMP for SLR are intake cooling water (ICW), fire protection (FP) and plant air (PA). Per the piping design specifications, the buried piping materials for these systems are as follows:

- ICW – Cast iron piping, cement lined (double thickness), coated
- FP – Cast iron piping, small bore carbon steel piping, wrapped and coated
- PA – Carbon steel, galvanized, wrapped and coated

For current license renewal, aging management for these systems is performed by the Intake Cooling Water Inspection Program, the Fire Protection Program, and the Systems and Structures Monitoring Program, respectively. To address NEI 09-014, Rev. 4 (Ref. 1), PTN more recently implemented the Turkey Point Nuclear Station Underground Piping and Tank Integrity Program, which includes periodic external inspections of buried piping. Activities under these programs will continue to be performed throughout the balance of the current period of extended operation (PEO) in conjunction with the pre-SPEO inspections for SLR described below.

The PTN plan for SLR is to follow the guidance in NUREG-2191, Table XI.M41-2, Preventive Action Category F, and perform eleven buried steel piping inspections of a combination of ICW, FP and PA. These inspections will begin no earlier than ten years

and no later than six months prior to the SPEO, regardless of the effectiveness of the cathodic protection discussed below. Consistent with the requirements of XI.M41, piping inspection locations will be selected based on risk (i.e., susceptibility to degradation and consequences of failure). Plant specific OE can also be used as an input for selecting inspection locations. Additionally, there are provisions in Element 7, Corrective Actions, of the PTN Buried and Underground Piping and Tanks AMP to expand the number of inspections based on the extent of degradation found consistent with XI.M41 requirements. Item 7.c of XI.M41 of NUREG-2191 indicates the following:

“c. Where the coatings, backfill, or the condition of exposed piping does not meet acceptance criteria, the degraded condition is repaired or the affected component is replaced. In addition, where the depth or extent of degradation of the base metal could have resulted in a loss of pressure boundary function when the loss of material is extrapolated to the end of the subsequent period of extended operation, an expansion of sample size is conducted. The number of inspections within the affected piping categories are doubled or increased by five, whichever is smaller. If the acceptance criteria are not met in any of the expanded samples, an analysis is conducted to determine the extent of condition and extent of cause. The number of follow-on inspections is determined based on the extent of condition and extent of cause.”

FPL is committed to implementing cathodic protection at PTN that satisfies the criteria described in NUREG-2191, Section XI.M41, no later than nine years prior to the SPEO which will ultimately reduce the number of required inspections. As part of that commitment, FPL will also perform soil corrosivity testing as described in the “Buried Piping Soil Classification” section below. However, the cathodic protection system is not credited in establishing the number of steel piping inspections to be performed prior to the SPEO. If after five years of operation the cathodic protection system does not meet the effectiveness acceptance criteria defined by NUREG-2191, Tables XI.M41-2 and -3 (-850 mV relative to a copper/copper sulfate (CSE) reference electrode, instant off, for at least 80% of the time, and in operation for at least 85% of the time), the number of inspections will be as follows:

- If soil testing has determined the soil is not corrosive per Item E.b.iii of Table XI.M41-2 of NUREG-2191 (including a minimum soil resistivity value of 10,000 ohm-cm), FPL commits to performing two additional buried steel piping inspections beyond the number required by Preventive Action Category F. This would result in a total of thirteen inspections being completed no later than six months prior to the SPEO.
- If soil testing has determined the soil is corrosive per Item E.b.iii of Table XI.M41-2 of NUREG-2191, FPL commits to performing five additional buried steel piping inspections beyond the number required by Preventive Action Category F. This would result in a total of sixteen inspections being completed no later than six months prior to the SPEO

Therefore, based on current inspection plans for LR and SLR, a commitment to install cathodic protection and perform soil corrosivity testing, and provisions in NUREG-2191 to expand the number of inspections if aging issues are discovered, there is reasonable assurance that systems within the scope of the PTN Buried and Underground Piping and Tanks AMP for SLR will continue to perform their intended functions.

#### Review of OE

To ensure a thorough assessment of OE as it relates to buried piping, a more in-depth (holistic) review of OE from the last fifteen years was performed, including the OE summarized by the NRC in the OE audit report (Ref. 3), and the OE assessed by FPL in support of the SLRA including over 200 ARs, seven buried piping inspection self-assessments, and twenty-four buried piping system health reports.

This effort included the review of the Asset Management Plan for the Turkey Point Nuclear Station Underground Piping and Tank Integrity Program (available on the ePortal), which identifies the internal and external piping inspection history from 2004 to 2016, analyzes results of completed inspections (including data regarding coatings, backfill quality, and soil sampling), and documents future inspection plans.

Based on the above, fifteen ARs of relevance were identified. These are further discussed below:

- Four ARs (01931234, 02066294, 02071661, 02105634) were for service (domestic) water piping leaks located outside the plant protected area. These four ARs were reporting leakage from the same ~fifteen foot section of service water piping located in a paved area between the nuclear entrance building and the FPL fitness center. The ARs did not document any coating or wrap on the piping. This OE is not directly comparable to the buried piping in the scope of the PTN Buried and Underground Piping and Tanks AMP for the following reasons:
  - The design and installation of piping outside of the protected area are not covered by the design and installation specifications for piping installed on the main plant island (power block) for Units 3 and 4.
  - The PTN specifications for fill indicate that all areas containing foundations for the main plant island (power block) for Units 3 and 4 are compacted to 95 percent or greater meaning smaller rock size and a better environment for buried piping. Fill for tanks, plant and access roads within the protected area are compacted to 85 percent or less. There are no specific criteria for fill for areas outside the protected area, so compaction is assumed to be much less than that for the main plant island (power block).
  - There are no specific license renewal commitments to manage aging of the buried portions of the service water system and the system is not monitored or inspected on a regular basis.

- One AR (00529702) was associated with fire protection piping for PTN fossil Units 1 and 2, which are no longer in operation and outside of the protected area. The design and installation of piping for the fossil units, including materials, use of coatings and fill conditions, are not covered by and typically less rigorous than the design and installation specifications for piping installed on the nuclear units.
- Five ARs were not related to aging and/or buried piping as follows:
  - A fire main break caused by construction excavation activities (AR 00461305).
  - A service water leak in the stairwell of the central storage facility (AR 02053141).
  - A drawing issue associated with a valve installed in a section of buried service water piping (AR 01940055).
  - A question raised regarding coating requirements on new stainless steel piping that was planned to be encased in concrete (AR 02055286).
  - A leak in a service water valve supplying administrative buildings on the South side of the plant site (AR 00460508).
- Five ARs represented applicable OE to the PTN Buried and Underground Piping and Tanks AMP as follows:
  - Two for external inspections of buried ICW piping indicating it was in good condition (AR 01955813, AR 02014369).
  - One for corrosion of fire protection piping (AR 00485197).
  - One for a pin-hole leak on a fire hydrant (AR 00464785).
  - Although not in the scope of SLR, one for corrosion of service water piping located near the plant cafeteria (AR 00462055).

The review of these five ARs indicates there are three ARs that are related to corrosion of buried piping. These ARs, which were discussed in Ref. 4, are summarized below for convenience:

- In January 2009 (AR 00485197), fire protection piping was found corroded during excavation for a construction activity. Although the external surface of the piping was corroded, the lowest wall thickness measurement was still well above the minimum wall thickness required for the service conditions. The cause was attributed to damage to the protective pipe wrap either due to past excavations or limited fill cover (<18"). The piping was cleaned, coated and backfilled.
- In October 2009 (AR 00464785), a pin-hole leak on a cast iron fire hydrant lower barrel (extension casing) was discovered after excavation to address bubbling paint above ground and at the air/ground interface. The functionality assessment indicated that although there was reduced margin, the fire hydrant was considered "Functional".

The pin-hole leak was due to a localized corrosion cell. The leak location was repaired, coated and backfilled.

- In January 2009 (AR 00462055), external corrosion was found on four areas of buried service water piping between the cafeteria and the nuclear entrance building within the PA. Although the external surface of the piping was corroded, the lowest wall thickness measurement was greater than that required to maintain pressure integrity.. The piping was cleaned, coated and backfilled.

SLRA, Section B.2.3.28, Buried and Underground Piping and Tanks, page B-233, makes the following statement:

"In addition, PTN has experienced a number of pipe leaks and/or breaks in buried piping. Most of these pipe breaks have been in the piping for the fire water and service water systems. These breaks have been documented in the CAP. A review of the documentation in the CAP indicates that typically they have been caused by localized corrosion. These breaks have been repaired and the piping returned to service."

Based on the review of OE summarized in the response above, this statement is revised. There has only been one pipe break, and that was due to construction excavation activities. Additionally, only one minor (pin-hole) leak has occurred that is directly applicable to external corrosion of buried piping within the scope of SLR. Accordingly, the statement in SLRA Section B.2.3.28 is revised as noted below in the Associated SLRA Revisions section.

#### Buried Piping Soil Classification

The second bullet under "Background" from the RAI above indicates that per the Structures Monitoring AMP the groundwater/soil at PTN meets an aggressive classification. However, this is for groundwater/soil below groundwater level and none of the piping within the scope of the PTN Buried and Underground Piping and Tanks AMP is installed below groundwater level. Additionally, soil resistivity and pH testing of ten samples performed per the Turkey Point Nuclear Station Underground Piping and Tank Integrity Program, with average values of 11,671 ohm-cm and 8.92 respectively, concluded that the soil condition above groundwater at PTN is moderately corrosive to non-corrosive.

However, as part of the commitment to install cathodic protection, FPL commits to performing soil testing following the guidance of Item E.b.iii of Table XI.M41-2 to determine if the soil is corrosive. This testing includes the following:

1. Obtain a minimum of three sets of soil samples in each soil environment (e.g., moisture content, soil composition) in the vicinity in which in-scope components are buried.

2. Test the soil for soil resistivity (a minimum value of 10,000 ohm-cm is required for the soil to be considered non-corrosive), corrosion accelerating bacteria, pH, moisture, chlorides, sulfates, and redox potential.
3. Determine the potential soil corrosivity for in-scope buried steel piping. In addition to evaluating each individual parameter, the overall soil corrosivity is determined.

#### Commitment to Install Cathodic Protection

FPL commits to installing cathodic protection for buried steel and cementitious piping for systems within the scope of SLR no later than nine years prior to the SPEO. The intent is to satisfy conditions of Preventive Action Category C in NUREG-2191, Table XI.M41-2, for inspections of buried steel piping. As part of that commitment, FPL will also perform soil corrosivity testing as described above. With successful implementation, a total of four inspections for buried steel piping would be required during each ten-year interval through the SPEO. This total includes the two inspections for fire water system piping required because fire main testing will not be performed.

Although FPL has committed to install cathodic protection with enough time to credit it for establishing pre-SPEO inspection plans, PTN has classified in-scope buried piping under Preventive Action Category F. Accordingly, eleven inspections for steel piping will be planned for the period ten years prior to the SPEO. The installation schedule specified by Ref. 2 for the cathodic protection system has been accelerated to provide additional operating time and data beyond the minimum required five years to demonstrate the ability for the system to meet the effectiveness acceptance criteria defined by NUREG-2191, Tables XI.M41-2 and -3 (-850 mV relative to a CSE, instant off, for at least 80% of the time, and in operation for at least 85% of the time). SLRA Commitment 32 and SLRA Section B.2.3.28 are adjusted in the Associated SLRA Revisions section below to reflect the revised commitment. If the criteria specified for Preventive Category C in NUREG-2191, Tables XI.M41-2 and -3, are satisfied after five years of cathodic protection system operation, only four buried steel piping inspections would be required. Thus, the eleven buried steel piping inspections FPL is committing to perform prior to the SPEO go well beyond the requirements of NUREG-2191 and will compensate for the lack of relevant operating experience.

#### Conclusion:

Therefore, plant specific OE (one instance of a leak in the fire water system and no significant degradation of buried piping in the scope of SLR, see ICW and other inspection results above), the commitment to install cathodic protection and perform soil corrosivity testing, and provisions in NUREG-2191 XI.M42 to expand the number of inspections as aging issues are discovered supports the applicability of Preventative Action Category F in Table XI.M41-2 of NUREG-2191.

Accordingly, FPL's current plans to perform eleven buried steel piping inspections (determined using the guidance of Table XI.M41-2, Preventive Action Category F) prior to the SPEO, in conjunction with other inspections being performed for current LR, and a commitment to install cathodic protection and perform soil corrosivity testing no later than nine years prior to the SPEO, are appropriate. If after five years of operation the cathodic protection system does not meet the effectiveness acceptance criteria defined by NUREG-2191, Tables XI.M41-2 and -3 (-850 mV relative to a CSE, instant off, for at least 80% of the time, and in operation for at least 85% of the time), the number of inspections will be as follows:

- If soil testing has determined the soil is not corrosive per Item E.b.iii of Table XI.M41-2 of NUREG-2191 (including a minimum soil resistivity value of 10,000 ohm-cm), FPL commits to performing two additional buried steel piping inspections beyond the number required by Preventive Action Category F. This would result in a total of thirteen inspections being completed six months prior to the SPEO.
- If soil testing has determined the soil is corrosive per Item E.b.iii of Table XI.M41-2 of NUREG-2191, FPL commits to performing five additional buried steel piping inspections beyond the number required by Preventive Action Category F. This would result in a total of sixteen inspections being completed six months prior to the SPEO.

**References:**

1. NEI 09-14, Rev. 4, Guideline for the Management of Underground Piping and Tank Integrity, December 2014
2. FPL Letter L-2018-166 to NRC dated October 16, 2018, Turkey Point Units 3 and 4 Subsequent License Renewal Application, Safety Review Requests for Additional Information (RAI) Set 3 Responses (ADAMS Accession No. ML18296A024)
3. NRC letter dated July 23, 2018 entitled, Turkey Point Nuclear Generating Units 3 and 4 - Report for the Operating Experience Review Audit Regarding the Subsequent License Renewal Application Review (EPID No. L-2018-RNW-0002), transmitting "Audit Report Operating Experience Review Audit Regarding the Turkey Point Nuclear Generating Units 3 and 4, Subsequent License Renewal Application" (ADAMS Accession No. ML18183A445)
4. FPL Letter L-2019-071 to NRC dated April 10, 2019 Turkey Point Units 3 and 4 Subsequent License Renewal Application, Safety Review Requests for Additional Information (RAI) Set 10 Responses (ADAMS Accession No. ML19102A065).

#### Associated SLRA Revisions:

SLRA Section 17.2.2.28, Table 17-3 and Section B.2.3.28 are amended as indicated by the following text deletion (strikethrough) and text addition (bold red underlined font) revisions. SLRA text additions made by previous RAI responses are indicated by bold black underlined font.

Revise the fourth paragraph and following table of SLRA Section 17.2.2.28 on page A-33 as follows:

Inspections are conducted by qualified individuals. Where the coatings, backfill or the condition of exposed piping does not meet acceptance criteria, such that the depth or extent of degradation of the base metal could have resulted in a loss of pressure boundary function when the loss of material rate is extrapolated to the end of the SPEO, an increase in the sample size is conducted. Direct visual inspections are performed on the external surfaces, protective coatings, wrappings, quality of backfill and wall thickness measurements using NDE techniques. Additional inspections are performed on steel piping in lieu of fire main testing. The fire water system jockey pump activity (or a similar parameter) will be monitored for unusual trends. The table below provides additional information related to inspections. Preventative Action Category F has been initially selected for monitoring steel piping (which includes cast iron piping) during the initial monitoring period ~~since the cathodic protection system will not be operational during that time period.~~ prior to the SPEO. A cathodic protection for buried steel and cementitious piping for systems within the scope of SLR will be installed no later than nine years prior to the SPEO. The intent is to satisfy conditions of Preventive Action Category C in NUREG-2191, Table XI.M41-2, for inspections of buried steel piping during the SPEO (four inspections during each ten-year period). As part of the cathodic protection system installation, FPL will also perform soil corrosivity testing per Item E.b.iii of Table XI.M41-2 of NUREG-2191. If after five years of operation the cathodic protection system does not meet the effectiveness acceptance criteria defined by NUREG-2191, Tables XI.M41-2 and -3 (-850 mV relative to a CSE, instant off, for at least 80% of the time, and in operation for at least 85% of the time), the number of inspections to be performed will be as follows:

- If soil testing has determined the soil is not corrosive per Item E.b.iii of Table XI.M41-2 of NUREG-2191 (including a minimum soil resistivity value of 10,000 ohm-cm), FPL commits to performing two additional buried steel piping inspections beyond the number required by Preventive Action Category F. This would result in a total of thirteen inspections being completed six months prior to the SPEO.

- If soil testing has determined the soil is corrosive per Item E.b.iii of Table XI.M41-2 of NUREG-2191, FPL commits to performing five additional buried steel piping inspections beyond the number required by Preventive Action Category F. This would result in a total of sixteen inspections being completed six months prior to the SPEO.

Based on the cathodic protection survey results and OE gathered prior to the SPEO, the preventive action category and number of inspections may be changed depending on which set of preventive actions listed GALL-SLR Table XI.M41-2 are satisfied at the time. The currently planned number of inspections for each 10-year inspection period, commencing 10 years prior to the start of SPEO, are based on the inspection quantities noted in Table XI.M41-2, adjusted for a 2-Unit plant site as shown in the table below.

Material	Parameter(s) Monitored	No. of Inspections	Notes
Steel	Loss of Material	11 <u>to 16 (pre-SPEO)</u> <u>4 (during the SPEO)</u>	GALL-SLR Report AMP XI.M41 Table XI.M41-2 quantity increased by 2 in lieu of fire main flow testing <u>The quantity of 4 inspections during the SPEO is based on meeting Preventive Action Category C requirements</u>
Stainless Steel	Loss of Material Cracking	2 <u>(underground environment)</u> 2 <u>(buried environment)</u>	<u>Number of inspections are for prior and during the SPEO</u>
Cementitious	Loss of Material Cracking	2	<u>Number of inspections are for prior and during the SPEO</u>

Revise the current commitment for the Buried and Underground Piping and Tanks AMP in SLRA Table 17-3, Item 32, updated per page 4 of 6 of Attachment 25 to Ref. 2 as follows:

**Table 17-3**  
**List of SLR Commitments and Implementation**  
**Schedule**

No.	Aging Management Program or Activity (Section)	NUREG-2191 Section	Commitment	Implementation Schedule
32	Buried and Underground Piping and Tanks (17.2.2.28)	XI.M41	<p>Implement the new PTN Buried and Underground Piping and Tanks AMP.</p> <p>Install cathodic protection systems and perform effectiveness reviews in accordance with Table XI.M41-2 in NUREG-2191, Section XI.M41.</p> <p><u>Perform soil testing following the guidance of Item E.b.iii of Table XI.M41-2 (including a minimum soil resistivity value of 10,000 ohm-cm) to determine if the soil is corrosive.</u></p> <p><u>If after five years of operation the cathodic protection system does not meet the effectiveness acceptance criteria defined by NUREG-2191, Tables XI.M41-2 and -3 (-850 mV relative to a CSE, instant off, for at least 80% of the time, and in operation for at least 85% of the time), the number of inspections will be as follows:</u></p> <ul style="list-style-type: none"> <li><u>If soil testing has determined the soil is not corrosive per Item E.b.iii of Table XI.M41-2 of NUREG-2191 (including a minimum soil resistivity value of 10,000), FPL commits to performing two additional buried steel piping inspections beyond the number required by Preventive Action Category F resulting in a total of thirteen inspections being completed six months prior to the SPEO.</u></li> <li><u>If soil testing has determined the soil is corrosive per Item E.b.iii of Table XI.M41-2 of NUREG-2191, FPL commits to performing five additional buried steel piping inspections beyond the number required by Preventive Action Category F resulting in a total of sixteen inspections being completed six months prior to the SPEO.</u></li> </ul>	<p>Implement AMP and start inspections no earlier than 10 years prior to the SPEO. <u>Install cathodic protection systems and perform soil testing no later than <del>nine</del> 7 years prior to the SPEO.</u></p> <p>Complete pre-SPEO inspections no later than 6 months or the last RFO prior to SPEO.</p> <p>Corresponding dates are as follows:</p> <p>PTN3: 7/19/2022 - 1/19/2032</p> <p>PTN4: 4/10/2023 - 0/10/2032</p>

Revise current SLRA Section B.2.3.28 page B-219 paragraph 3 under "Preventive measures" (updated per page 5 of 6 of Attachment 25 to Ref. 2) as follows:

PTN currently does not have a cathodic protection system for buried and underground piping. The original plant design assumed that based on the use of the limerock fill around the buried piping the groundwater would migrate to the water table and not be retained in the vicinity of the piping. Due to the high permeability of the limerock, corrosion was not expected to be a significant influence. **Regardless**, in accordance with the requirements of GALL-SLR Report AMP XI.M41, a cathodic protection system will be installed **at least nine years** prior to SPEO. ~~**Because of operating experience related to past corrosion of buried pipe at PTN, a cathodic protection system will be installed in accordance with the requirements of GALL-SLR Report AMP XI.M41 at least 7 years prior to the SPEO.**~~ Once cathodic protection is installed for steel piping, annual cathodic protection surveys are conducted so that adequate effectiveness can be demonstrated during the first inspection period. For steel components, the acceptance criteria for the effectiveness of the cathodic protection is -850 mV relative to a copper/copper sulfate reference electrode, **instant off, for at least 80% of the time, and in operation for at least 85% of the time for five years.**

Revise the table in SLRA Section B.2.3.28 on page B-220

Material	Parameter(s) Monitored	No. of Inspections	Notes
Steel	Loss of Material	11 <b><u>to 16 (pre-SPEO)</u></b> <b><u>4 (during the SPEO)</u></b>	GALL-SLR Report AMP XI.M41 Table XI.M41-2 quantity increased by 2 in lieu of fire main flow testing <b><u>The quantity of 4 inspections during the SPEO is based on meeting Preventive Action Category C requirements</u></b>
Stainless Steel	Loss of Material Cracking	2 <b><u>(underground environment)</u></b> 2 <b><u>(buried environment)</u></b>	<b><u>Number of inspections are for prior and during the SPEO</u></b>
Cementitious	Loss of Material Cracking	2	<b><u>Number of inspections are for prior and during the SPEO</u></b>

Turkey Point Units 3 and 4  
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Revise SLRA Section B.2.3.28 on page B-223 as follows:

~~In addition, PTN has experienced a number of pipe leaks and/or breaks in buried piping. Most of these pipe breaks have been in the piping for the fire water and service water systems. These breaks have been documented in the CAP. A review of the documentation in the CAP indicates that typically they have been~~ **Only one minor (pin-hole) leak has occurred on buried piping in the scope of SLR. This pin-hole leak was** caused by **a** localized corrosion **cell**. These breaks have been **The leak was** repaired and the piping returned to service.

**Associated Enclosures:**

None