TURKEY POINT NUCLEAR GENERATING UNITS 3 AND 4 (TURKEY POINT)
SUBSEQUENT LICENSE RENEWAL APPLICATION (SLRA)
REQUESTS FOR ADDITIONAL INFORMATION (RAIS)
SAFETY - SET 3

1. Fatigue Monitoring Program, GALL AMP X.M1

Regulatory Basis:

Title 10 of the *Code of Federal Regulation* (10 CFR) Section 54.21(a)(3) states for each structure and component subject to an aging management review per § 54.21(a)(1), the applicant shall demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the current license basis (CLB) for the subsequent period of extended operation (SPEO).

RAI B.2.2.1-1

Background:

The subsequent license renewal application (SLRA) Section B.2.2.1 and the applicant's program basis document states that the Fatigue Monitoring Program implementing procedure will identify the ten (10) components and the specific projected cycles utilized in their environmentally assisted fatigue cumulative usage factor (CUF_{en}) analyses (i.e., of 80-year projected cycles instead of the design cycles to achieve a CUF_{en} value less than 1.0).

SLRA Section 4.3.3, including supporting fatigue calculations, indicate that nine (9) components that required refined CUF_{en} analyses used 80-year projected cycles instead of the design cycles to achieve a CUF_{en} value less than 1.0. During its review of the applicant's refined CUF_{en} calculations, the staff noted that two (2) additional components (i.e., the pressurizer spray nozzle and pressurizer heater well) may have used 80-year projected cycles in the refined CUF_{en} calculations.

SLRA Section B.2.2.1 includes an enhancement to the "parameters monitored or inspected" program element to update the aging management program (AMP) governing procedure to identify and require monitoring of the 80-year plant design cycles, or projected cycles that are utilized as inputs to component CUF_{en} calculations, as applicable.

Issue:

The staff noted a discrepancy between SLRA Sections B.2.2.1 and 4.3.3, and the applicant's CUF_{en} calculations; thus, it is not clear whether the implementing procedure for the Fatigue Monitoring Program will incorporate the appropriate components and cycle limits from the refined CUF_{en} analyses in order to manage environmentally-assisted fatigue during the SPEO.

Request:

- Please confirm the number and identity of the components for which the 80 year projected cycles were used in the CUF_{en} analysis.

- Please confirm that the implementing procedures for the Fatigue Monitoring Program will be updated to require monitoring of cycle limits for the components for which the CUF_{en} analysis relies on projected cycles.

2. Atmospheric Metallic Tanks, GALL AMP XI.M29

Regulatory Basis:

Section 54.21(a)(3) of 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 period of extended operation. One of the findings that the staff must make to issue a renewed license (10 CFR Section 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 Section 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. In order to complete its review and enable making a finding under 10 CFR Section 54.29(a), the staff requires additional information in regard to the matters described below.

RAI B.2.3.17-1

Background:

The design basis document for the component cooling water (CCW) system states:

- There is an overhead surge tank and static head tank serving two independent headers.

- A passive failure is defined as a 50 gpm leak resulting from a packing or seal failure. This requirement is cited as an original design basis.

- The passive failure occurs in the long term portion of recovery of an accident.

- The emergency containment coolers are supplied by the CCW system.

- The demineralized water storage system and primary water system provide normal, non-safety related makeup water for operational purposes.

Updated Final Safety Analysis Report (UFSAR) Section 9.3.3 “System Evaluation, Availability and Reliability, Leakage Provisions, Component Cooling Loop,” states:

> The component which is leaking can be located by sequential isolation or inspection of equipment in the loop. If the leak is in one of the component cooling water heat exchangers, the leaking heat exchanger would be isolated and repaired. During normal operation, the leaking heat exchanger could be left in service with leakage up to the capacity of the makeup line to the system from the primary water storage tank. By manual transfer, emergency power is available for primary water pump operation.
>
> If a design basis leak (defined as a 50 gpm leak) were to occur coincident with a design basis LOCA [loss-of-coolant-accident], the installed automatic valves in the supply and return lines to the RCP [reactor coolant pump] isolate rapidly, such that the inventory remaining in the CCW head tank would be sufficient to ensure continued CCW system operability under all design basis conditions.

UFSAR page 9.3-10 states:

> The CCW head tank has been designed and installed to provide sufficient static head, such that component cooling water temperatures up to 270°F will not initiate steam void formation. The required NPSH [net positive suction head] for one pump at 15,000 gpm is approximately 46 ft. with the installed CCW head tank, the available NPSH is 123.8 ft when the maximum post-accident suction temperature is 182.5°F. Therefore, sufficient NPSH is available. Installation of the CCW head tank increases available static head by a nominal 29 psig. That added NPSH will ensure that pump performance will remain unaffected by establishing added margin during elevated temperature operation.

Drawing No. 5613-M-3030, Sheet 1, “Component Cooling Water System,” cites a normal volume of 125 gallons in the CCW head tank and a 2000 gallon capacity in the CCW surge tank.

Section 54.4(a)(2) of 10 CFR states that all nonsafety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs (a)(1)(i), (ii), or (iii) of 10 CFR 54.4 should be in scope.

NUREG-2192, Rev. 0, “Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants,” dated July 2017 (SRP-SLR), Section 2.1.3.1.1 states:

> The scoping criterion under 10 CFR 54.4(a)(2), in general, is intended to identify those nonsafety-related SSCs that support safety-related functions. More specifically, this scoping criterion requires an applicant to identify all nonsafety-related SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified under 10 CFR 54.4(a)(1). Section III.c(iii) of the SOC

[Statements of Consideration] (60 FR [Federal Register] 22467) clarifies the NRC's intent for this requirement in the following statement:

> The inclusion of nonsafety-related systems, structures, and components whose failure could prevent other systems, structures, and components from accomplishing a safety function is intended to provide protection against safety function failure in cases where the safety-related structure or component is not itself impaired by age-related degradation but is vulnerable to failure from the failure of another structure or component that may be so impaired.

In addition, Section III.c(iii) of the SOC provides the following guidance to assist an applicant in determining the extent to which failures must be considered when applying this scoping criterion:

> [C]onsideration of hypothetical failures that could result from system interdependencies that *are not part of the CLB* and that have not been previously experienced is not required. However, for some license renewal applicants, the Commission cannot exclude the possibility that hypothetical failures that *are part of the CLB* may require consideration of second-, third-, or fourth-level support systems.

Nuclear Energy Institute (NEI) 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Section 3.1.2 states, "[a]n applicant should rely on the plant's CLB, actual plant-specific experience, industry wide operating experience, as appropriate, and existing plant-specific engineering evaluations to determine the appropriate systems, structures and components in this category." SRP-SLR Section 2.1.3.1.1 states essential the same concepts.

Issue:

The staff believes that failure of the makeup water source to the overhead surge tank might prevent the CCW system from meeting its intended function(s).

Based on a review of the UFSAR and the CCW design basis document, the current licensing basis for the CCW includes a passive failure equivalent to a 50 gpm leak resulting from a packing or seal failure occurring in the long term portion of recovery of an accident. In order for the staff to conclude that there is reasonable assurance that the intended functions of the CCW system will be met in the subsequent period of extended operation, it must be concluded that either: (a) the CCW surge tank and static head tank have sufficient inventory to sufficiently mitigate the effects of the leakage; or (b) aging effects are managed for a source of makeup water (i.e., tank, piping) to the CCW surge tank and static head tank.

Based on a review of SLRA Section 2 and the referenced piping and instrument drawings, it appears that aging effects are not managed for any of the sources of makeup water to the CCW surge tank and static head tank. The UFSAR states that the isolation of the supply and return lines to the reactor coolant pump would not challenge the available inventory in the surge tank and static head tank. However, the SLRA does not contain enough information for the staff to

reach a similar conclusion for potential packing and seal leaks in other portions of the CCW system.

The staff requires further information in regard to the following:

a) NUREG-2192, "Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants," Section A.1.2.1, "Applicable Aging Effects," states, "[h]owever, leakage from bolted connections should not be considered as abnormal events. Although bolted connections are not supposed to leak, experience shows that leaks do occur…" In that regard, normal long term leakage from the CCW system (e.g., packing, flanges, seal leakage) could challenge the available volume in the surge tank during the long term portion of recovery of an accident. For example, assuming a 25 day recovery period, a leak rate less than 0.06 gpm would empty the two tanks. Even though CCW systems are designed to minimize leakage, no system is leak tight and as such, long term normal leakage should be considered in regard to determining the scope of components for subsequent license renewal.

b) Given long term leakage and leakage during the sequential isolation operations, it is not clear that the water level in the surge tank and static head tank will be sufficient to meet NPSH or other requirements (e.g., minimum elevation for the CCW head tank to maintain system static pressure above the maximum anticipated saturation pressure post-accident).

c) It is not clear that the CCW supply lines to components in post LOCA high radiation areas would be accessible for isolation in the recovery phase (e.g., residual heat removal pump seals, containment spray pumps, safety injection pumps, emergency containment coolers).

d) During the audit, it was stated that there are plant-specific operating procedures for conducting the sequential isolation. However, it is not known whether these procedures have had a timed walk through to ensure that isolation of the limiting component is possible prior to the surge tank not meeting the required minimum level.

<u>Request:</u>

1. If there is a flow path from the demineralized water storage system, primary water system, or other suitable inventory source where aging effects will be managed for the tank, piping, piping components, etc., state the flow path and applicable Table 2 AMR items.

2. Alternatively, state the following:

    a. The plant-specific normal long-term leakage rate from the CCW system. State the length of the long term portion of recovery subsequent to a loss of coolant accident. Given plant-specific and industry operating experience, the expected normal leakage from boundary isolation valves post-LOCA.

b. The minimum level in the CCW surge tank necessary to support the intended functions of the CCW system including factors such as NPSH and maintaining system static head requirements.

c. Whether the isolation valves necessary to conduct the sequential isolation of CCW components will be accessible during the recovery subsequent to a loss of coolant accident.

d. The maximum time the sequential isolation process could take to perform.

3. Inaccessible Medium Voltage Cables, GALL AMP XI.E3A

Regulatory Basis:

Section 54.21(a)(3) of 10 CFR requires the 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 period of extended operation. As described in SRP-SLR, an applicant may demonstrate compliance with 10 CFR Section 54.21(a) (3) and Section 54.21(d) by referencing the NUREG-2191, Rev. 0, "Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report," dated July 2017., when the evaluation of the matter in the GALL-SLR Report applies to the plant. Section 54.21(d) of 10 CFR requires an FSAR supplement to include a summary description of the programs and activities for managing the effects of aging.

RAI B.2.3.40-1

Background:

SLRA Appendix A Section 17.2.2.40, "Electrical Insulation for Inaccessible Medium-Voltage Power Cables Not Subject to 10 CFR 50.49 EQ Requirements," states that inaccessible medium-voltage cables designed for continuous wetting or submergence are also included in this AMP for a one-time inspection and test. However, it does not states that "the need for additional tests and inspections is determined by the test/inspection results as well as industry and plant-specific operating experience."

SRP-SLR Table XI-01, "FSAR Supplement Summaries for GALL-SLR Report Chapter XI Aging Management Programs," for AMP XI.E3A recommends that the UFSAR supplement includes a statement about the need for additional test and inspection. Specifically, it states, "submarine or other cables designed for continuous wetting or submergence are also included in this AMP as a one-time inspection and test with additional periodic tests and inspections determined by one-time inspection results and industry and plant-specific operating experience."

Issue:

The licensing basis for this program for the period of extended operation will not be consistent with the staff-issued guidance documents if the UFSAR supplement does not include the need

for additional test and inspection determined by one-time inspection results and industry and plant-specific operating experience.

The staff cannot complete its review of the Electrical Insulation for Inaccessible Medium-Voltage Power Cables Not Subject to 10 CFR 50.49 EQ Requirements UFSAR supplement without additional information or reviewing the changes to SLRA Supplement A Section 17.2.2.40 necessary to address the need for additional tests/inspections.

Request:

State the basis for why SLRA Appendix A Section 17.2.2.40 does not cite the need for additional test for submarine or other cables design for continuous wetting or submergence. Alternatively, what are the changes that will be incorporated into SLRA Appendix A Section 17.2.2.40 to include these requirements?

4. One-Time Inspection, GALL AMP XI.M32

Regulatory Basis:

Section 54.21(a)(3) of 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 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 the 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 § 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 GALL-SLR Report. 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.

RAI B.2.3.20-1

Background:

Section 54.21(d) of 10 CFR states, "[t]he UFSAR supplement for the facility must contain a summary description of the programs and activities for managing the effects of aging…"

SLRA Section 17.2.2.20, "One –Time Inspection," does not state that long-term loss of material will not cause a loss of intended function for steel components exposed to environments that do not include corrosion inhibitors as a preventive action.

GALL-SLR Table XI-01, "FSAR Supplement Summaries for GALL-SLR Report Chapter XI Aging Management Programs," states that the XI.M32, "One-Time Inspection" program will consist of a one-time inspection to verify that long-term loss of material will not cause a loss of intended

function for steel components exposed to environments that do not include corrosion inhibitors as a preventive action.

Issue:

The licensing basis for this program for the period of extended operation will not be consistent with staff-issued guidance documents if the UFSAR supplement does not include the long-term loss of material for steel components exposed to environments that do not include corrosion inhibitors.

The staff cannot complete its review of the AMP UFSAR supplement without additional information or reviewing the changes to SLRA Section 17.2.2.20 necessary to address the long-term loss of material will for steel components exposed to environments that do not include corrosion inhibitors.

Request:

State the basis for why SLRA Section 17.2.2.20 does not cite that long-term loss of material will not cause a loss of intended function for steel components exposed to environments that do not include corrosion inhibitors as a preventive action.

Alternatively, what are the changes that will be incorporated into SLRA Section 17.2.2.20 to include these requirements?

RAI B.2.3.20-2

Background

SLRA Table 3.2.2-2, states that carbon steel piping exposed internally to treated borated water will be managed for loss of material by the Water Chemistry and One - Time Inspection programs.

The “scope of program” program element of GALL-SLR AMP XI.M32 states the following:

1. The program cannot be used for structures or components with known age-related degradation mechanisms as determined based on a review of plant-specific and industry OE for the prior operating period.

Periodic inspections are proposed in these cases for structures or components with known age-related degradation.

During the audit, the staff reviewed AR 01638881, which states, “[t]here is a long history of Containment Spray carbon steel piping corrosion at PTN [Turkey Point].” Additionally, the AR states that the Containment Spray System Piping Inspection program was developed to perform ultrasonic testing (UT) with a 54 month frequency. The staff also noted that the AR states “corrosion product buildup can occur within the Containment Spray headers have been documented in several AR…” the AR goes on to state that most of the corrosion is considered

to be general boric acid corrosion and there is also a buildup of bimetallic weld transition from carbon to stainless steel.

Issue

It is not clear to the staff how the One-Time Inspection program will be sufficient for managing age-related degradation of carbon steel piping in the containment spray system, when a history of loss of material is apparent. The One-Time Inspection program states that the program cannot be used for structures or components with known age-related degradation mechanisms as determined based on a review of plant-specific and industry OE for the prior operating period. The program states that periodic inspections are proposed in these cases.

Request

State the basis for using the One-Time Inspection program for carbon steel piping in the containment spray system. Alternatively, provide the following:

1. Provide a periodic inspection program that will be used to monitor the loss of material for carbon steel.

2. Provide the inspection frequency that will be used to monitor wall thinning for carbon steel piping in the containment spray system.

3. Provide how bimetallic corrosion (galvanic corrosion) will be managed for the weld transition from carbon to stainless steel.

RAI 3.4.2.1.2-1

Background:

SLRA Table 3.4-1, item 3.4.1-81, addresses steel components exposed to treated water and raw water for long-term loss of material due to general corrosion. The applicant also states that this item is not applicable and there are no components exposed to raw water in the Steam and Power Conversion Systems.

SRP-SLR Table 3.4-1, item 3.4.1-81 addresses steel components exposed to treated water and raw water for long-term loss of material due to general corrosion.

Issue:

The staff reviewed the SLRA and confirmed that there are no components in the Steam and Power Conversion Systems that are exposed to raw water. However, SLRA Table 3.4 1, item 3.4.1-81 also addresses steel components exposed to treated water. It is not clear to the staff how the applicant will manage steel components exposed to treated water for long term loss of material due to general corrosion in the Steam and Power Conversion Systems.

Request:

State the basis for why SLRA Table 3.4-1, item 3.4.1-81 does not include steel components exposed to treated water for long term loss of material. Alternatively, provide additional information on how steel components exposed to treated water will be managed for long term loss of material due to general corrosion.

5. Reactor Coolant Pump Integrity Analysis, GALL TLAA 4.7

Regulatory Basis:

Section 54.21 (c) of 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 (CLB) 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 the managing the effects of aging during the subsequent period of extended operation (SPEO) 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 subsequent renewed license will continue to be conducted in accordance with the CLB. As described in SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL-SLR Report. 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:

The regulation in 10 CFR 54.21(c)(1)(ii) states that, for a specific time limited aging analyses (TLAA) that is dispositioned in accordance with this regulation, the applicant must demonstrate that the analysis has been projected to the end of the SPEO. Subsequent license renewal application (SLRA) Section 4.7.5, “Code Case N-481 Reactor Coolant Pump Integrity Analysis,” identifies the examination reactor coolant pump (RCP) casing in the current licensing basis as a TLAA item.

In 2000, the applicant submitted for NRC review and approval the 60-year license renewal application. As part of that application, the applicant performed a reactor coolant pump (RCP) integrity analysis for Turkey Point Units 3 and 4 as documented in Westinghouse topical reports, WCAP-13045 and WCAP-15355. To demonstrate continued compliance during SPEO, the Pressurized Water Reactor Owner’s Group (PWROG) re-evaluated WCAP-13045 associated with the application of Code Case N-481 to the RCP casing during the SPEO as documented in PWROG-17033, Revision 0. The applicant submitted the topical report PWROG-17033, Revision 0 as part of the SLRA.

RAI 4.7.5-1

Issue:

The applicant referenced following three reports in Section 4.7.5 of the SLRA.

1. WCAP-13045, Compliance to ASME Code Case N-481 of the Primary Loop Pump Casings of Westinghouse Type Nuclear Steam Supply Systems,

2. WCAP-15355, A Demonstration of Applicability of ASME Code Case N-481 to the Primary Loop Pump Casings of the Turkey Point Units 3 and 4, and

3. PWROG-17033-P/NP, Revision 0, entitled "Update for Subsequent License Renewal: WCAP-13045, "Compliance to ASME Code Case N-481 of the Primary Loop Pump Casings of Westinghouse Type Nuclear Steam Supply Systems", October 2017.

By letter dated June 14, 2018, Pressurized Water Reactor Owners Group (PWROG) submitted, for NRC review and approval, topical report PWROG-17033-P & NP, Revision 1, under the NRC's topical report review process for generic use.

Request:

a. Submit WCAP-15355 for staff review so that the staff can verify how Code Case N-481 is applicable to the examination of the pump casing.

b. Discuss any technical changes between Revision 0 and Revision 1 and their impact to Revision 0 of PWROG-17033.

RAI 4.7.5-2

Issue:

Page 1-2 of PWROG-17033-P/NP, Revision 0, states that Westinghouse has several models for the RCP. There are eight different models of RCPs in Westinghouse type pressurized water reactors (PWRs), Models 63, 70, 93, 93A, 93A-1, 93D, 100A, and 100D.

Request:

a. Discuss the material, casing wall thickness, and model number of RCP casing at Turkey Point.

b. Discuss whether the pump drawings in Section 3 of WCAP-13045 are consistent with or representative of the actual pumps installed at Turkey Point.

RAI 4.7.5-3

Issue:

As shown in WCAP-13045, the applicant postulated a flaw of ¼ T depth (T is the wall thickness of the RCP casing) having an aspect ratio of 6 to 1 in accordance with Code Case N-481. The locations of the flaws are identified in Section 9 of WCAP-13045. The NRC staff notes that the applied loading to analyze the postulated flaw are generic in nature. Tables 11-2 to 11-9 of WCAP-13045 provided the generic J_{app} values (the applied J-integral) for various flaws under various loading conditions for various pump models.

Request:

a. Confirm that the locations of the postulated flaws in WCAP-13045 represent the high stress areas of the pump casing at Turkey Point.

b. Discuss whether the J_{app} values in WCAP-13045 bound the Japp values from the RCPs at Turkey Point.

c. Discuss which flaw identification number (potential proprietary information) in Tables 11-2 to 11-5 represents the worst (limiting) case in pump casing at Turkey Point.

d. The staff notes that the postulated 1/4T flaw in the pump casing satisfies the crack stability criteria; however, discuss the depth of a flaw in the pump casing that would not satisfy the crack stability criteria.

RAI 4.7.5-4

Issue:

Second paragraph on Page 3-2 of PWROG-17033 stated that

> "…The transient stresses used in the fatigue crack growth are generic and encompass the various pump designs; furthermore, these stresses have not changed for the subsequent license renewal period (80 years)… The number of predicted cycles for 80 years of service are assumed to be bounded by the transient cycles considered in Table 12-2 of WCAP-13045; moreover, the transient definitions are also not expected to change over the 80 year design life…"

However, it is not clear that the generic stresses used in WCAP-13045 bound the transient stresses in pump casing at Turkey Point. Also, it is not clear that the number of transient cycles used in the fatigue growth calculations in WCAP-13045 bound the transient cycles that are predicted in the Turkey Point SLRA.

Fourth paragraph on Page 3-2 of PWROG-17033 stated that a flaw of depth 0.3 inches is the maximum acceptable flaw size for the pump casing.

Request:

a. Demonstrate that the stresses used in WCAP-13045 bound the stresses at the Turkey Point pump casing in the fatigue crack growth calculations.

b. Discuss whether the number of transient cycles used in the fatigue growth calculations bound the transient cycles that are predicted for the 80 years of SPEO in the Turkey Point SLRA.

c. Discuss the length of the postulate flaw, orientation of the flaw, and the direction of its growth (e.g., crack grows radially, axially or circumferentially; or into the wall thickness) in the fatigue crack growth calculations.

RAI 4.7.5-5

Issue:

The applicant performs visual examinations of the pump casing in accordance with Code Case N-481. Code Case N-481(a) requires a VT-2 visual examination of the exterior of all pumps during the hydrostatic pressure test required by Table IWB-2500-1, Category B-P.

Code Case N-481(b) requires a VT-1 visual examination of the external surfaces of the weld of one pump casing. Code Case N-481(c) requires a VT-3 visual examination of the internal surfaces whenever a pump is disassembled for maintenance.

Request:

a. Discuss any degradation in the pump casing that need to be addressed in the SPEO.

b. Discuss defense-in-depth measures and/or aging management programs that are in place to alert the operators to take corrective actions should leakage or cracking occur at the pump casing during the SPEO.

RAI 4.7.5-6

Issue:

The WCAP-13045 report is referenced in SLRA Section 4.7.5 (crack stability analysis for RCP casings) and PWROG-17033-P, Revision 0 report that was submitted as part of the SLRA. The WCAP-13045 report is a technical basis document of PWROG-17033-P, Revision 0. Section 11.1 of WCAP-13045 addresses the crack stability analysis results for postulated flaws in the Model 93 pump casings made with CF8M cast austenitic stainless (CASS). Specifically, the stability analysis in the WCAP-13045 report indicates that postulated flaw 5-93 is subject to the loss of load transient (upset condition) and is identified as the highest stressed location.

WCAP-13045 also indicates that on a plant-specific basis, a yield strength level slightly greater than 20 ksi is sufficient to confirm the flaw stability at flaw location 5-93. The WCAP report further indicates that such a yield strength level (greater than 20 ksi) will ensure that the stability

criteria regarding the fracture toughness and tearing modulus are met (i.e., applied J-integral < J_{max} of the material, and applied tearing modulus T < T_{max} of the material).

In contrast, the SLRA (specifically, Table 2 of PWROG-17033, Revision 0) uses a yield strength level less than 20 ksi to calculate the fracture toughness properties of the CF8M material in the crack stability analysis. In addition, the SLRA does not clearly address whether postulated flaw 5-93 meets the crack stability criteria for 80 years of operation when the crack stability analysis uses the updated fracture toughness properties such as those in NUREG-4513, Revision 2.

Request:

a. Describe how the applicant's crack stability analysis confirms the stability of postulated flaw 5-93 (CF8M material at the highest stressed location) taking into account the plant-specific yield strength of the material and actual loading conditions.

b. Describe how the 80-year crack stability analysis for postulated flaw 5-93 uses the updated fracture toughness properties (such as J_{max} and T_{max} based on NUREG-4513, Revision 2).

RAI 4.7.5-7

Issue:

Page 2-4 of PWROG-17033 stated that "…the fracture toughness correlations used for the full aged condition is applicable for plants operating at and beyond 15 EFPY (Effective Full Power Years) for the CF8M materials…"

Request:

Provide the exact EFPY for Turkey Point Units 3 and 4 as of January 2018.

RAI 4.7.5-8

Issue:

Section 11.2 of WCAP-13045 discusses the crack stability analyses for Model 93 pump casings. In the discussions, there is a postulated flaw that exceeded the stability criteria under certain assumptions on yield stress and operating conditions.

Request:

Discuss whether the pump casing at Turkey Point would have a postulated flaw with the yield stresses of the Turkey Point pump casing that would exceed the crack stability criteria as the case discussed in Section 11.2 of WCAP-13045. If the crack stability criteria will be exceeded, discuss how this issue can be resolved.

6. Selective Leaching, GALL AMP XI.M33

Regulatory Basis:

Section 54.21(a)(3) of 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 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 the 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 § 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-LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report. 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.

RAI B.2.3.21-2

Background:

SLRA Table 3.3.2-15 states that gray cast iron valve bodies and fire hydrants exposed to soil will be managed for loss of material using the Buried and Underground Piping and Tanks program. The components are not being managed for loss of material due to selective leaching.

The "scope of program" program element of GALL-SLR AMP XI.M33, "Selective Leaching," states that gray cast iron components exposed to soil are susceptible to selective leaching.

Issue:

It is unclear to the staff why the gray cast iron valve bodies and fire hydrants are not being managed for loss of material due to selective leaching.

Request:

State the basis for not managing the gray cast iron valve bodies and fire hydrants for loss of material due to selective leaching. Alternatively, state the changes to the SLRA necessary to address loss of material due to selective leaching for the gray cast iron valve bodies and fire hydrants.

RAI B.2.3.21-3

Background:

The "detection of aging effects" program element of GALL-SLR AMP XI.M33, "Selective Leaching," states the following:

a) One-time inspections are only conducted for components exposed to closed-cycle cooling water (CCCW) or treated water when no plant-specific operating experience (OE) of selective leaching exists in these environments.

b) Opportunistic and periodic inspections are conducted for components exposed to raw water, waste water, or soil, and for components in CCCW or treated water where plant-specific OE includes selective leaching in these environments.

SLRA Section B.2.3.21 states "[t]o date, PTN site-specific OE has not revealed selective leaching in components exposed to treated water. Those components are only subject to a one-time inspection unless that inspection identifies selective leaching."

During its audit, the staff noted that during the license renewal "C" auxiliary feedwater (AFW) lubricating oil cooler inspection, selective leaching was found on the gray cast iron bonnet end bells and divider plates. In addition, the staff noted that the AFW lubricating oil cooler uses demineralized water.

SLRA Table 3.0-1, "Service Environments for Mechanical Aging Management Reviews," states that "[t]reated water is demineralized water and is the base water for all clean systems."

Issue:

During its audit, the staff noted that selective leaching was identified on components exposed to a treated water environment. Based on this observation, it is unclear to the staff why one-time inspections are appropriate for components susceptible to selective leaching exposed to a treated water environment.

Request:

State the basis for why one-time inspections are appropriate for components susceptible to selective leaching exposed to a treated water environment.

RAI B.2.3.21-4

Background:

The "corrective actions" program element of GALL-SLR AMP XI.M33, "Selective Leaching," states "[t]he program includes a process to evaluate difficult-to-access surfaces (e.g., heat exchanger shell interiors, exterior of heat exchanger tubes) if unacceptable inspection findings occur within the same material and environment population."

SLRA Section B.2.3.21, "Selective Leaching," does not include the statement above regarding difficult-to-access surfaces.

SLRA Tables 3.2.2-1, 3.2.2-2, 3.2.2-4, 3.3.2-2, 3.3.2-4, 3.3.2-8, 3.3.2-10, 3.3.2-15, 3.3.2-16, and 3.4.2-3 states that heat exchanger components will be managed for loss of material due to selective leaching using the Selective Leaching program.

Issue:

It is unclear to the staff why SLRA Section B.2.3.21 does not address a process to evaluate difficult-to-access surfaces given that the program manages heat exchanger components.

Request:

State the basis for why SLRA Section B.2.3.21 does not address a process to evaluate difficult-to-access surfaces if unacceptable inspection findings occur within the same material and environment population.

7. Water Chemistry, GALL AMP XI.M2

Regulatory Basis:

Section 54.21(a)(3) of 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 period of extended operation. One of the findings that the staff must make to issue a renewed license (10 CFR Section 54.29(a)) is that actions have been identified and have been or will be taken with respect to the 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 Section 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). In order to complete its review and enable making a finding under 10 CFR Section 54.29(a), the staff requires additional information in regard to the matters described below.

RAI B.2.3.2-1

Background:

In its SLRA, Section B.2.3.2, "Water Chemistry," the applicant claimed consistency with the GALL-SLR Report for the AMP XI.M2, "Water Chemistry." The GALL-SLR Report recommends the monitoring and control of reactor water chemistry in accordance the Electric Power Research Institute (EPRI) PWR Primary Water Chemistry Guidelines, Revision 7. Additionally, the "Monitoring and Trending," program element, states that "Chemistry parameter data are recorded, evaluated, and trended in accordance with the EPRI Water Chemistry Guidelines."

During the In-Office audit, the staff reviewed the procedure 0-ADM-651, "Nuclear Chemistry Parameters Manual," Revision 12, to evaluate whether the applicant is consistent with the GALL-SLR Report recommendations for the "Water Chemistry" AMP. The staff reviewed Section 5.3, "Reactor Coolant System Action Level Responses," which describes applicant actions when water chemistry parameters exceed certain values. In its procedure, the applicant states that formal technical reviews are "recommended" for prolonged abnormal water chemistry conditions.

Issue:

The EPRI PWR Primary Water Chemistry Guidelines, Revision 7, state that technical reviews are necessary for prolonged abnormal water chemistry conditions. It is not clear to the staff why formal technical reviews of prolonged abnormal water chemistry conditions are not required.

Request:

Justify why technical reviews of prolonged abnormal water chemistry conditions are 'recommended by procedure,' instead of 'necessary' as identified in the EPRI guidelines.

RAI B.2.3.2-2

Background:

In its SLRA, Section B.2.3.2, "Water Chemistry," the applicant claimed consistency with the GALL-SLR Report for the AMP XI.M2, "Water Chemistry." The GALL-SLR Report recommends taking corrective actions for abnormal chemistry conditions as established in the EPRI PWR Primary Water Chemistry Guidelines, Revision 7. The "Corrective Actions," program element, states that "…corrective actions are taken to bring the parameter back within the acceptable range…."

During the In-Office audit, the staff reviewed the procedure 0-ADM-651, "Nuclear Chemistry Parameters Manual," Revision 12, Section 5.7 "Secondary Systems – Power Operation," to evaluate whether the applicant is consistent with the recommendations for the Water Chemistry AMP in the GALL-SLR Report.

Issue:

The EPRI PWR Secondary Water Chemistry Guidelines recommend the applicant develop a site-specific action for Action Level 2 oxygen levels in the secondary water. During its review of the procedure the NRC staff noted that no plant specific action is specified for Action Level 2 oxygen levels in the secondary water.

Request:

Justify why a site-specific action for Action Level 2 oxygen levels in the secondary water is not included in 0-ADM-651.

RAI B.2.3.2-3

Background:

In its SLRA, Section B.2.3.2, "Water Chemistry," the applicant claimed consistency with the GALL-SLR Report for the AMP XI.M2, "Water Chemistry." The GALL-SLR Report recommends

adherence to the parameter limits established in the EPRI PWR Primary Water Chemistry Guidelines, Revision 7.

During the In-Office audit, the staff reviewed procedure 0-ADM-651, "Nuclear Chemistry Parameters Manual", Revision 12, Section 5.2.3, "Power Operation (Reactor Critical)," which describes the Mode 1 normal chemistry values. In addition, Updated Final Safety Analysis Report (UFSAR) Table 4.2-2, "Reactor Coolant Water Chemistry Specification," also specifies Mode 1 normal chemistry values.

Issue:

The values recommended by the EPRI PWR Primary Water Chemistry Guidelines for chlorides, fluorides, sulfates, and conductivity during power operations do not appear to be consistent between procedure 0-ADM-651, and the UFSAR. It should be clear which values are used as the controlling parameters during power operations in order to ensure consistency with the GALL-SLR.

Request:

State the basis for the apparent discrepancies between the water chemistry parameter values for chlorides, fluorides, sulfates, and conductivity during power operations in the UFSAR and procedure 0-ADM-651.

RAI B.2.3.2-4

Background:

The GALL-SLR Report recommends the use of AMP XI.M21A, "Closed Treated Water Systems," to manage aging effects for components in closed, treated water systems. The GALL-SLR Report AMP XI.M2, "Water Chemistry," relies on the monitoring and control of reactor water chemistry to control impurities in primary and secondary water consistent with the guidance found in the EPRI PWR Primary and Secondary Water Chemistry Guidelines.

The emergency diesel generator (EDG) cooling water systems are not part of the primary, or secondary water systems. Instead, as noted in document FPLCORP020-REPT-010, "Turkey Point Units 3 and 4 Subsequent License Renewal Screening Results Emergency Diesel Generator Cooling Water System," Revision 1, Section 2.2.1, "System Intended Functions," one of the safety related functions of the EDG cooling water systems is to "Function independently from other cooling water systems…." In addition, the EPRI Closed-Cooling Water Systems Guidelines provide guidance, and recommendations for monitoring and controlling cooling water in EDG cooling jackets.

SLRA Table 3.3.2-16, "Emergency Diesel Generator Cooling water – Summary of Aging Management Evaluation," states that loss of material for stainless steel piping, and valve body, in a treated water environment will be managed using the "Water Chemistry," AMP described in Section B.2.3.2 of the SLRA. Additionally, these AMR items reference Table 3.3.1 Item 3.3-1, 085.

Issue:

1. It is not clear to the staff how the applicant's "Water Chemistry" AMP will be effective to monitor and mitigate the loss of material in the EDG cooling water system.

2. It is not clear to the staff why Table 1 Item 3.3.1, 085, is referenced under a Table 3.3.2-16 item which covers stainless steel piping. Table 1 Item 3.3.1, 085 covers elastomer piping.

Request:

1. State the basis for why the "Water Chemistry" AMP will be an effective program for monitoring and mitigating the loss of material in the EDG cooling water system.

2. Provide the basis for referencing Table 1 Item 3.3-1, 085, for Table 3.3.2-16 items which cover stainless steel piping.

8. Electrical Cable Connections Not Subject to 10 CFR 50.49 Requirements, GALL AMP XI.E6

Regulatory Basis:

Section 54.21(a)(1) of 10 CFR requires the applicant to identify and list those structures and components subject to an aging management review. Section 54.21(a)(3) of 10 CFR requires the applicant to demonstrate that the effects of aging for structures and components within the scope of license renewal and subject to an AMR pursuant to 10 CFR 54.21(a)(1) will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation. As described in SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL-SLR Report, and when evaluation of the matter in the GALL-SLR Report applies to the plant.

RAI B.2.3.43-1

Background:

SLRA Section B.2.3.43 describes the new Electrical Cable Connections Not Subject to 10 CFR 50.49 Requirements Program as consistent with GALL-SLR Report AMP XI.E6, "Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The staff reviewed the applicant's basis document FLCORP 020-REPT-114, "Aging Management Program Basis Document - Electrical Cable Connections Not Subject to 10 CFR 50.49 Requirements" that describes the ten elements of the proposed program and concludes that there is consistency with the corresponding elements of the GALL-SLR Report AMP XI.E6.

The "monitoring and trending" element of the GALL-SLR Report AMP XI.E6 states in part "… condition monitoring inspections or test results that are trendable provide additional information on the rate of electrical connection degradation." The staff noted that the applicant's proposed program element "monitoring and trending" does not include trending when inspections or test results are trendable.

The applicant's program basis document FLCORP 020-REPT-114 identifies various types of connections used at PTN that will be included in the sampling population for inspection and testing. During the operating experience review of the applicant's corrective actions data base, the NRC staff noted that split bolt connections are utilized at PTN. However, FLCORP 020-REPT-114 does not mention split bolt connections to be included in the sampling basis as a category of connection to be tested.

Issue:

1. It is not clear to the NRC staff that the applicant's proposed program element "monitoring and trending" is consistent with the corresponding program element in the GALL-SLR Report AMP XI.E6.

2. It is not clear to the NRC staff whether all applicable in-scope connection types utilized at PTN will be considered in the sampling population of the electrical connection to be inspected or tested.

Request:

1. Justify why the "trending and monitoring" element of the proposed program B.2.3.43, "Electrical Cable Connections Not Subject to 10 CFR 50.49 Requirements" does not include trending when the results of condition monitoring or tests are trendable as described in the GALL-SLR Report AMP XI.E6, or update the appropriate implementing documents to include trending when the results of condition monitoring or test are trendable.

2. Clarify whether split bolt connections used at PTN are included in the connection types in the sampling population of the proposed program B.2.3.43, "Electrical Cable Connections Not Subject to 10 CFR 50.49 Requirements," or update the appropriate implementing documents to include these connections.

9. High-Voltage Insulator, GALL AMP XI.E7

Regulatory Basis:

Section 54.21(a)(1) of 10 CFR requires the applicant to identify and list those structures and components subject to an aging management review. Section 54.21(a)(3) of 10 CFR requires the applicant to demonstrate that the effects of aging for structures and components within the scope of license renewal and subject to an AMR pursuant to 10 CFR 54.21(a)(1) will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation. As described in SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL-SLR Report, and when evaluation of the matter in the GALL-SLR Report applies to the plant.

RAI B.2.3.44-1

Background:

SLRA Section B.2.3.44 describes the new High-Voltage Insulators program as consistent with GALL-SLR Report AMP XI.E7, "High-Voltage Insulators." This section states that PTN utilizes polymer insulators made of silicon rubber. However, SLRA Table 3.6.1 and Table 3.6.2-1 describe PTN high-voltage insulators as porcelain type rather than insulators made of polymers. The GALL-SLR evaluated porcelain

type insulators, but polymer insulators have not been addressed in this document. Presence of material and component types not previously addressed in the GALL-SLR report constitutes a site-specific material/environment combination that should be addressed in the SLRA. However, the applicant's SLRA Tables 3.6.1 and 3.6.2-1 do not mention this site-specific component type (polymer insulators).

Polymer High-voltage insulators are typically composed of material such as fiberglass, silicone rubber (SIR), ethylene propylene rubber (EPR), epoxy, silicone gel, sealants, ductile iron, aluminum, aluminum alloys, steel, steel alloys, malleable iron, and galvanized metals. Exposure to air-outdoor can cause degradation and aging effects that can result in reduced insulation resistance due to deposits and surface contamination, reduced insulation resistance due to polymer degradation as well as loss of material caused by wind blowing on transmission conductors, all of which may require aging management. This component material/environment combination has not previously been evaluated in GALL-SLR and is considered a site-specific condition to be evaluated by the applicant.

Polymer high-voltage insulators have been shown to have unique failure modes with little advance indications. Surface buildup of contamination can be worse for SIR (compared to porcelain insulators) due to absorption by silicone oil, especially in late stages of service life.

Typical aging degradation and mechanisms for polymer high-voltage insulators include (but not limited to) the following:

- Deposits and buildup of surface contamination causing reduced insulation resistance, arcing and flashover
- Polymer degradation caused by thermal degradation of organic material, radiolysis and photolysis of UV sensitive material, oxidation, and moisture intrusion
- Stress corrosion cracking (SCC) of glass fibers due to sheath degradation
- Swelling of SIR layer due to chemical contamination
- Sheath wetting caused by chemicals absorbed by oil from SIR compound
- Brittle fracture of rods resulting from discharge activity, flashunder, and flashover
- Chalking and crazing of insulator surfaces resulting in contamination , arcing, and flashover
- Water penetration through the sheath followed by electrical failure
- Bonding failure at rod and sheathing interface
- Water ingress through end fittings causing flashunder, corrosion and fracture of glass fibers

Additionally, aggressive environment due to presence of and excrements from birds and rodents containing chemicals such as uric acid, phosphates, and ammonia can accelerate degradation.

Issue:

The applicant's SLRA does not include a discussion of site-specific material/environment combination relating to polymer high-voltage insulators installed at PTN for in-scope SBO recovery path transmission lines and switchyard components.

Request:

Justify why the actual material used for high-voltage insulators is not listed in the SLRA, or revise the SLRA to include polymer high-voltage insulator material/environment combination. Provide a discussion of industry operating experience, surface buildup of contaminations, applicable aging, degradations, aging mechanisms, aging effects, aging studies, and any site-specific aging management programs to address relevant AERMs to ensure the aging effects of these components composed of the particular constituent material exposed to the PTN site environment will be adequately managed.

10. Environmental Qualification of Electric Equipment, GALL AMP X.E1

Regulatory Basis:

Section 54.21(a)(1) of 10 CFR requires the applicant to identify and list those structures and components subject to an aging management review. Section 54.21(a)(3) of 10 CFR requires the applicant to demonstrate that the effects of aging for structures and components within the scope of license renewal and subject to an AMR pursuant to 10 CFR 54.21(a)(1) will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation. As described in SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL-SLR Report, and when evaluation of the matter in the GALL-SLR Report applies to the plant.

RAI B.2.2.4-1

Background:

SLRA Section B.2.2.4 describes the Environmental Qualification of Electric Equipment program as consistent with the GALL-SLR Report AMP X.E1, "Environmental Qualification of Electric Equipment." The staff reviewed the applicant's basis document FLCORP 020-REPT-109, "Aging Management Program Basis Document – Environmental Qualification of Electric Equipment" that describes the ten elements of the proposed program and claims consistency with each corresponding element of the GALL-SLR Report AMP X.E1.

The applicant's program basis document FLCORP 020-REPT-109, does not mention adverse localized environments (ALE) in the following program elements: "preventive actions," "parameters monitored or inspected," "detection of aging effects," and "corrective actions." These program elements, as described in the GALL-SLR Report AMP X.E1, include discussions of ALE as an essential consideration of the program during the subsequent period of extended operation.

An adverse localized environment is an environment that exceeds the most limiting qualified condition for temperature or radiation for the component material. ALE may increase the rate of aging or have an adverse effect on the basis for equipment qualification. Environmentally qualified electrical equipment may degrade more rapidly than expected when exposed to ALE.

Issue:

It is not clear to the NRC staff that the applicant's proposed program elements "preventive actions," "parameters monitored or inspected," "detection of aging effects," and "corrective actions" are consistent with the corresponding program elements in the GALL-SLR Report AMP X.E1, without considering ALE.

Request:

Justify why the "preventive actions," "parameters monitored or inspected," "detection of aging effects," and "corrective actions" elements of the proposed program B.2.2.4, "Environmental Qualification of Electric Equipment program," do not include discussions of adverse localized environments as described in the GALL-SLR Report AMP XI.E1, or update the basis document to include ALE considerations.

11. Buried and Underground Piping and Tanks, GALL AMP XI.M41

Regulatory Basis:

10 CFR § 54.21(a)(3) of 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 § 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 GALL-SLR Report. 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.

RAI B.2.3.28-1

Background:

SLRA Section B.2.3.28 states the following:

a) Preventive Action Category F (i.e., inspection quantity of the smaller of 10 percent of the piping length or six inspections) has been selected for monitoring steel piping exposed to soil during the initial monitoring period because the cathodic protection system will not be operational during that time period.

b) Two inspections will be conducted for cementitious piping exposed to soil during each 10 year inspection period.

c) 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.

GALL-SLR Report AMP XI.M41, “Buried and Underground Piping and Tanks,” states the following:

a) Cathodic protection is a recommended preventive action for steel and reinforced concrete piping exposed to soil.

b) Additional inspections, beyond those in Table XI.M41-2, “Inspection of Buried and Underground Piping and Tanks,” may be appropriate if exceptions are taken to program element 2, “preventive actions,” or in response to plant specific operating experience (OpE).

During the audit the staff noted the following:

a) Leaks and localized external corrosion in buried service water and fire water system piping.

b) Corrosion of reinforcement is an applicable aging mechanism for concrete piping exposed to soil.

Issue:

The staff notes that the inspection quantities identified in SLRA Section B.2.3.28 for steel and reinforced concrete piping during the 10 year period prior to the SPEO are based on recommendations provided in GALL-SLR Report AMP XI.M41 Table XI.M41-2. However, it is unclear to the staff why GALL-SLR Report recommended inspection quantities are appropriate for steel and reinforced concrete piping during the 10 year period prior to the subsequent SPEO based on the following:

a) Additional inspections beyond those recommended in the GALL-SLR Report AMP XI.M41 may be appropriate if exceptions are taken to the "preventive actions" program element. Cathodic protection is a recommended preventive action for steel and reinforced concrete piping; however, cathodic protection will not be provided for steel and reinforced concrete piping during the 10 year period prior to the subsequent SPEO.

b) Additional inspections beyond those recommended in the GALL-SLR Report AMP XI.M41 may be appropriate in response to plant specific OpE. As stated in the SLRA and by the staff during the audit, leakage (due to a combination of external and internal degradation) has occurred in buried steel piping within the scope of license renewal.

Request:

State the basis for why the inspection quantities in GALL-SLR Report Table XI.M41 2 are appropriate for the 10 year period prior to the subsequent SPEO for steel and reinforced concrete piping.

RAI B.2.3.28-2

Background:

SLRA Tables 3.3.2-1, 3.3.2-9, and 3.3.2-15 state that steel piping, fire hydrants, bolting, and valve bodies exposed to soil will be managed for loss of material using the Buried and Underground Piping and Tanks program. In addition, SLRA Tables 3.3.2-9, 3.3.2-12, and 3.4.2-2 state loss of material will be managed for stainless steel piping exposed to soil using the Buried and Underground Piping and Tanks program. Stress corrosion cracking is not addressed as an applicable aging effect.

SRP SLR items 3.3.1-144 and 3.4.1-72 state that steel and stainless steel components exposed to soil are susceptible to stress corrosion cracking (steel in carbonate/bicarbonate environment only).

GALL-SLR Report AMP XI.M41 states that steel components can experience stress corrosion cracking when exposed to a carbonate/bicarbonate environment depending on cathodic polarization level, temperature, and pH. This is based on the staff's review of NACE SP0169 2013, "Control of External Corrosion on Underground or Submerged Metallic Piping Systems," Figure 2, "SCC [stress corrosion cracking] Range of Pipe Steel in Carbonate/Bicarbonate Environments."

During its review of soil corrosivity testing during the audit, the staff could not determine if the carbonate/bicarbonate environment is applicable at Turkey Point.

Issue:

a) The SLRA does not address stress corrosion cracking of stainless steel exposed to soil.

b) The SLRA does not address stress corrosion cracking of steel exposed to soil, which can occur in a carbonate/bicarbonate environment depending on cathodic polarization level, temperature, and pH. Based on the staff's review of soil corrosivity testing during the audit, it is unclear why stress corrosion cracking is not an aging effect requiring management for steel piping exposed to soil.

Request:

State the basis for why stress corrosion cracking is not an aging effect requiring management for steel and stainless steel piping exposed to soil.

RAI B.2.3.28-3

Background:

SLRA Sections B.2.3.28 and 17.2.2.28 state that the Buried and Underground Piping and Tanks program will (a) conduct two inspections for stainless steel during each 10 year inspection period; and (b) inspection quantities are adjusted for a two unit site.

SLRA Tables 3.2.2 4, 3.3.2 8, 3.3.2 9, 3.3.2 12, and 3.4.2 2 state that aging effects for buried and underground stainless steel piping and piping components will be managed using the Buried and Underground Piping and Tanks program.

For two-unit sites, GALL-SLR Report AMP XI.M41 recommends two inspections for stainless steel in a buried environment and two inspections for stainless steel in an underground environment (i.e., four total inspections) during each 10 year inspection period.

Issue:

It is unclear to the staff why the Buried and Underground Piping and Tanks program will conduct only two inspections, as opposed to four inspections, for stainless steel during each 10 year inspection period.

Request:

State the basis for why the Buried and Underground Piping and Tanks program will only conduct two inspections for stainless steel piping during each 10 year inspection period.

RAI B.2.3.28-4

Background:

Section 54.21(d) of 10 CFR states, "[t]he UFSAR supplement for the facility must contain a summary description of the programs and activities for managing the effects of aging…"

SLRA Section 17.2.2.28, "Buried and Underground Piping and Tanks," does not state the following:

a) Annual cathodic protection surveys are conducted.

b) For steel components, where the acceptance criteria for the effectiveness of the cathodic protection is other than -850 mV instant off, loss of material rates are measured.

c) If a reduction in the number of inspections recommended in GALL-SLR Report, AMP XI.M41, Table XI.M41-2 is claimed based on a lack of soil corrosivity as determined by soil testing, then soil testing is conducted once in each 10-year period starting 10 years prior to the subsequent period of extended operation.

GALL SLR Table XI 01, "FSAR Supplement Summaries for GALL-SLR Report Chapter XI Aging Management Programs," for AMP XI.M41 recommends that the UFSAR supplement includes the three statements listed in the paragraph above.

Issue:

The licensing basis for this program for the period of extended operation will not be consistent with staff issued guidance documents if the UFSAR supplement does not include the three statements listed in the Background section above.

The staff cannot complete its review of the Buried and Underground Piping and Tanks UFSAR supplement without additional information or reviewing the changes to SLRA Section 17.2.2.28 necessary to address these three gaps.

Request:

State the basis for why SLRA Section 17.2.2.28 does not cite the three statements listed in the Background section above.

12. Emergency Containment Cooler Tube Wear, GALL TLAA 4.7

Regulatory Basis:

For time-limited aging analyses, 10 CFR 54.21(c)(1)(iii) requires an applicant to demonstrate that the effects of aging on the intended function(s) will be adequately managed for the period of extended operation. As provided in 10 CFR 54.29(a), a renewed license may be issued if the staff finds that actions have been identified, which either have been or will be taken, with respect to time limited aging analyses identified to require review under 10 CFR 54.21(c). In order to complete its review and to enable formulation of a finding under 10 CFR 54.29(a), the staff requires additional information as described below.

RAI 4.7.2-1

Background:

SLRA Section 4.7.2, Emergency Containment Cooler [ECC] Tube Wear includes a discussion about conducting an inspection for minimum tube wall thickness in 2011. The measured wall thickness was found to be 0.039 inches and based on an initial tube wall thickness of 0.049 inches, the calculated wear rate was 0.000263 inches per year using 38 years of operation. The ultrasonic testing (UT) wall thickness values for the 1.125-inch diameter tubes are listed in the "UT Matrix" and show wall thickness values between 0.054 inches and 0.039 inches. Although these results concluded that the calculated wear rates would be acceptable for the subsequent period of extended operation, the SLRA states that a one-time inspection will be performed to confirm the acceptability of the projected wear rates because tube wall loss has been observed.

PTN-ENG-LRAM-00-00065, "Emergency Containment Cooler Inspection – License Renewal Basis Document," includes a sketch as part of Attachment 9.1, "Unit 4 ECC Tubes Inspection Report dated 04/04/11," showing that inspection locations A through E, on both the North Side and South Side headers, are either on 90° elbows or 180° returns on the cooler. The staff notes that based on information in Vendor Manual V000060, "Installation, Operation, & Maintenance Instructions Emergency Containment Filter Equipment and Cooling," the 8-inch schedule 40 "North Side" header appears to be the supply side of the water to the tubes and the "South Side" header appears to be the return side of the water from the tubes. In its discussion of erosion, EPRI 1007820, Closed Cooling Water Chemistry Guideline," April 2004, Section B.1.2 "Localized Corrosion," states, "Copper alloy heat exchanger tubes are often subject to erosion conditions, especially at the inlet end where turbulence is greatest."

The "Ultrasonic Thickness Calibration Data Sheet" in Attachment 9.1, includes the statement (in regards to the UT measurement of the calibration block) that, "the instrument shall read ±0.005 inches from the actual thickness measured."

The staff also notes that the "acceptance criteria" discussion in PTN-ENG-LRAM-00-0065 states the minimum allowable wall thickness value of 0.011 inches "includes a 10% margin typically used in wear applications (such as the Flow Accelerated Corrosion program)."

Issue:

The staff identified the following potential nonconservatisms with the initial methodology used to show that the projected wear rates for the ECC heat exchanger tubes are acceptable:

1) Sample Location. Wall thickness measurements were only taken at 90° or 180° fittings. Based on the information from EPRI 1007820, it is not clear to the staff how the sample selection criteria determined that the inlet portion of the tubing coming off of the supply header was not one of the most susceptible locations. The flow in the supply header past the first sets of tubing take-offs will induce significantly more turbulence in the inlet portion of the tubing than the last sets of tubing take-offs. The outlet portion of the tubing in the return header would not be susceptible to this aspect.

2) Wear Rate Calculation Methodology. The UT measurements show that some of the locations have thicknesses greater than the nominal 0.049 inch tubing wall thickness. Consequently, basing the wear rate on the difference between the nominal value and measured value potentially, significantly underestimates the wear rate. It was not clear to the staff why the wear rate calculation did not use initial wall thicknesses values greater than the nominal value based on the actual measurements.

3) Wear Rate Projection Methodology. The wear rate is calculated based on an assumed amount of yearly operation during surveillance testing. The calculation for the initial license renewal appropriately determined the remaining wall thickness at year 60, assuming the amount of system surveillance testing done during the initial 38 years of operation will be comparable to the amount of surveillance testing to be done in the remaining 22 years. However, it was not clear to the staff how the calculation accounted for the additional wear that would occur due to high flow rates during design basis accident conditions.

4) Wall Thickness Measurement Uncertainty. Based on the small tube diameter, thin wall, unique configuration of the tubes, and the statement on the UT calibration sheet, it is not clear to the staff whether some measurement uncertainty should be considered in the wear rate calculation.

5) Safety Factor Application. The acceptance criteria states that it includes a 10 percent margin typically used in wear applications such as the Flow-Accelerated Corrosion program. (The allowable wall thickness of 0.011 inches, includes the calculated minimum wall thickness of 0.010 inches plus an additional 10 percent.) As stated in GALL-SLR Report AMP XI.M17, “Flow-Accelerated Corrosion, a conservative safety factor is applied to the predicted wear rate determination to account for uncertainties in the wear rate calculations and UT measurements. Applying a safety factor to the calculated minimum wall thickness instead of the calculated wear rate potentially underestimates the applied margin, depending on the magnitudes of the minimum wall thicknesses and the wear rates. For the specific situation of the ECC tubes, the applied margin of 0.001 inch would only be conservative as long as the calculated wear rate is determined to be less than 0.000319 inches per year (neglecting the wear rate projection methodology question above). Using the worst case wear rate based on the thickest and the thinnest readings, the calculated wear rate is 0.000395 inches per year.

Consequently, it is not clear to the staff that applying the 10 percent margin to the acceptance criteria, instead of to the wear rate, is consistent with typical wear applications such as for the Flow-Accelerated Corrosion program.

Request:

In order to determine whether the same approach used for the initial license renewal can be used for the subsequent license renewal activities:

1) Provide information to show that the wall thickness measurements were taken at the most susceptible locations. Include a discussion explaining how the inlet portions tubes that are subjected to significant turbulence were determined to be less susceptible than the locations on the outlet side of the heat exchanger.

2) Provide information to show that the use of nominal wall thickness values in the wear rate calculation bounds the potential wear rates of the heat exchanger components.

3) Provide information to show that the projection of the tube wall thinning only needs to account for material lost during periodic surveillances and testing through the end of the extended period of operation and that no additional consideration needs to be included for wall thinning that will occur during high flow conditions as part of an accident response.

4) Provide information to show that wall thickness data consider UT measurement uncertainty or that consideration of UT measurement uncertainty is not needed in order provide reasonable assurance that wall thinning due to tube erosion is acceptable.

5) Provide information to show that the application of a 10 percent margin to the acceptance criteria instead of the wear rate is consistent with other wear applications such as flow-accelerated corrosion.

13. Inspection of Internal Surfaces in Misc Piping and Ducting Components, GALL AMP XI.M38

Regulatory Basis:

10 CFR § 54.21(a)(3) of 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 § 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 GALL-SLR Report. 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.

RAI B.2.3.25-1

Background:

The following components do not include flow blockage due to fouling as an aging effect requiring management (AERM):

a) Gray cast iron drains exposed to waste water in SLRA Table 3.3.2-8.

b) Elastomeric expansion joints exposed to raw water in SLRA Table 3.3.2-15.

The GALL-SLR Report Section IX.C, "Use of Terms for Materials," definition for steel states "[i]n some environments, carbon steel, alloy steel, gray cast iron, ductile iron, malleable iron, and high-strength low-alloy steel are vulnerable to general, pitting, and crevice corrosion, even though the rate of loss of material may vary amongst material types. Consequently, these metal types are generally grouped under the broad term "steel.""

SRP-SLR Table 3.3-1, items 85 and 91, state that elastomeric and steel (inclusive of gray cast iron) piping and piping components exposed to raw water and waste water should be managed for flow blockage due to fouling.

Issue:

It is unclear to the staff why flow blockage due to fouling is not being managed for the gray cast iron drains exposed to waste water and the elastomeric expansion joints exposed to raw water.

Request:

State the basis for not managing flow blockage due to fouling for the gray cast iron drains exposed to waste water and the elastomeric expansion joints exposed to raw water.

RAI B.2.3.25-2

Background:

Section 54.21(d) of 10 CFR states, "[t]he UFSAR supplement for the facility must contain a summary description of the programs and activities for managing the effects of aging…"

SLRA Section 17.2.2.25, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components," states that this program ***may*** also perform surface examinations or ASME Code Section XI VT-1 examinations to detect and manage cracking due to stress corrosion cracking in aluminum and stainless steel components exposed to aqueous solutions and air environments containing halides. In addition, SLRA Section 17.2.2.25 does not state that opportunistic inspections continue in each period despite meeting the sampling limit.

GALL-SLR Table XI-01, "FSAR Supplement Summaries for GALL-SLR Report Chapter XI Aging Management Programs," for AMP XI.M38 recommends that the UFSAR supplement include a statement that (a) surface examinations or ASME Code Section XI VT-1 examinations are conducted to detect cracking of stainless steel and aluminum components; and (b) opportunistic inspections continue in each period despite meeting the sampling limit.

Issue:

The licensing basis for this program for the subsequent period of extended operation will not be consistent with staff-issued guidance documents if the UFSAR supplement does not include a statement that (a) surface examinations or ASME Code Section XI VT-1 examinations are (as opposed to may) conducted to detect cracking of stainless steel and aluminum components; and (b) opportunistic inspections continue in each period despite meeting the sampling limit.

The staff cannot complete its review of the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components UFSAR supplement without additional information or reviewing the changes to SLRA Section 17.2.2.25 necessary to address the two gaps noted above.

Request:

State the basis for why SLRA Section 17.2.2.25 does not cite the two gaps noted in the Issue section above.

14. Closed Treated Water System, GALL AMP XI.M21A

Regulatory Basis.

Section 54.21(a)(3) of 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 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. As described in SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL-SLR Report. In order to complete its review and enable the formulation of a finding under 10 CFR 54.29(a), the staff requires additional information in regard to the matters described below.

RAI 3.3.2.10-1

Background:

SLRA Table 3.3.2-10, "Normal Containment Ventilation," identifies several AMR items for heat exchanger tubes made from copper alloy with greater than 15 percent zinc. Enercon Report FPLCORP020-REPT-033, "Subsequent License Renewal Aging Management Review,

Containment Ventilation Systems," also shows the same materials of construction for the normal containment cooler heat exchanger tubes and cites design document V000968. Vendor Manual V000968, Revision 2, "Installation, Operation, & Maintenance for Normal Containment Coolers," includes an Aerofin Coil Data Sheet that specifies the tube material as "90/10 CuNi." In addition, the data sheet includes various fin parameters and specifies a fin material as copper. The staff notes that SLRA Table 3.3.2-10 does not contain any AMR items associated with heat exchanger fins.

Issue:

The material specified in SLRA Table 3.3.2-10 for the normal containment cooler heat exchanger tube AMR item does not correspond to the material shown in the associated vendor manual. In addition, the table does not include an AMR item for the heat exchanger fins specified in the vendor manual.

Request:

Provide information to reconcile the differences in heat exchanger tube material and component type between SLRA Table 3.3.2-10 and Vendor Manual V000968 for the normal containment coolers.

15. Neutron Fluence Monitoring Program, GALL AMP X.M2

Regulatory Basis:

The NRC staff is evaluating Appendix B.2.2.2 of the SLRA to determine its consistency with NUREG-2192, "Generic Aging Lessons Learned for Subsequent License Renewal Report" (GALL-SLR) Aging Management Program (AMP) X.M2, "Neutron Fluence Monitoring." The program provides an acceptable basis for managing aging effects attributable to neutron irradiation in accordance with requirements in 10 CFR 54.21(c)(1)(iii).

RAI B.2.2.2-1

Background:

In Appendix B.2.2.2 of its subsequent license renewal application (SLRA), Florida Power and Light, the applicant, describes a neutron fluence monitoring program. The applicant states that the program "is an existing program that ensures the continued validity of the neutron fluence analyses and neutron fluence-based TLAA and related analyses involving time-dependent neutron irradiation through monitoring and periodic updates."

Issue:

The NRC staff is unable to determine that the applicant's treatment of fluence for reactor vessel internals (RVI) components is consistent with the scope of GALL-SLR Report AMP X.M.2. Whereas, in GALL-SLR Report AMP X.M.2, RVI fluence estimates are considered within the

scope of the program, and subject to the remaining program elements, the applicant defers to GALL-SLR XI.M16a for the determination of RVI fluence estimates. In Appendix C.2.2 of the SLRA, which describes aging management of RVI components, the applicant determined fluence using methods that were not described in adequate detail, and the NRC staff was unable to determine whether the fluence estimates for the RVI components were adherent to Regulatory Guide (RG) 1.190, :Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence ," or otherwise acceptable, and subject to additional justification, as appropriate, as noted in GALL-SLR Report AMP X.M.2. In addition, as described above, the applicant provided no enhancements to ensure that additional justification for fluence estimates for the RVI components, if determined using RG 1.190-adherent methods, would be provided in concert with any generic industry initiatives.

Request:

Please provide justification for the treatment of fluence estimates for RVI components within Appendix B.2.2.2, "Neutron Fluence Monitoring Program" of the SLRA. Additionally, as appropriate, identify whether fluence estimates for RVI components are excluded from the program, or clarify whether the program and enhancements, as proposed, include RVI component fluence estimates.

16. Open-Cycle Cooling Water System, GALL AMP XI.M20

Regulatory Basis.

Section 54.21(a)(3) of 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 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. As described in the SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL-SLR Report. 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.

RAI B.2.3.11-1

Background:

The recommendations in Aging Management Program XI.M20, "Open-Cycle Cooling Water System" (OCCW) in Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report state that the scope of program addresses piping and piping components exposed to raw water in the OCCW system. Enercon Report FPLCORP020-REPT-082, Aging Management Program Basis Document – Open-Cycle Cooling Water System," Revision 1,

shows that the only implementing document associated with piping inspections is SPEC-M-086, "Intake Cooling Water System Piping Inspection."

Issue:

The staff noted that SPEC-M-086 describes the scope of the inspection procedure to include selected piping with nominal diameters of 24 inches or larger and did not specify inspection requirements for piping with diameters less than 24 inches. Drawing 5614-M-3019, Revision 28, "Intake Cooling Water System," appears to include in-scope OCCW piping with diameters less than 24 inches.

Request:

Discuss how the applicable aging effects (e.g., loss of material, flow blockage) for in-scope OCCW piping with diameters less than 24 inches are managed by the OCCW program. Describe the inspections that are performed on in-scope OCCW piping with diameters less than 24 inches and cite any relevant procedures that address inspections of this piping.

17. Monitoring of Neutron-Absorbing Materials Other Than Boraflex, GALL AMP XI.M40

Regulatory Basis:

Section 54.21(a)(3) of 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 CLB. As described in SRP-SLR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL-SLR Report. 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.

RAI B.2.3.27-1

Background:

SLRA, Section B.2.3.27, "Monitoring of Neutron-Absorbing Materials other than Boraflex," states that the program is consistent with GALL-SLR Report AMP XI.M40, "Monitoring of Neutron-Absorbing Materials other than Boraflex." In plant-specific procedure 0-OSP-034.3, "Metamic Insert Surveillance," Revision 1, as well as in FPLCORP020-REPT-098, "Aging Management Program Basis Document – Monitoring of Neutron-Absorbing Materials [NAM] Other Than Boraflex," Revision 1, the test frequency for the Metamic inserts is described. The testing

frequency provided in 0-OSP-034.3 describes the testing intervals that extend for 30 years after the installation of the Metamic NAM. An enhancement is provided in the SLRA to revise procedure 0-OSP-034.3 to state that the maximum interval between each inspection of an insert, and coupon test, does not exceed 10 years regardless of operating experience.

Issue:

Procedure 0-OSP-034.3 provides defined test intervals for the Metamic coupons that only extend for 30 years after the installation of the Metamic NAM. This would indicate that the test intervals end during the subsequent period of extended operation (SPEO) as the Metamic NAM was previously installed as described in the license amendments issued July 17, 2007 (Agencywide Document Access and Management System (ADAMS) No. ML071800198) In addition, the proposed enhancement to this AMP doesn't clarify whether the tests will continue past the initial 30 year inspections.

Request:

State whether Metamic coupon, and insert, testing will continue throughout the SPEO and will not end after the 30 years currently described in the procedure.

RAI B.2.3.27-2

Background:

The Turkey Point UFSAR, Section 16.2.17, "Metamic Insert Surveillance Program," Revision 28, contains a description of the Metamic Insert Surveillance Program. This description includes items such as: criteria for the surveillance testing; test requirements; test frequency; acceptance criteria; and corrective actions, documentation and reporting based on test results. In addition, procedure 0-OSP-034.3, "Metamic Insert Surveillance," Revision 1, contains a similar description of requirements for the program, and also references UFSAR Section 16.2.17 for these requirements. Surveillance Requirement (SR) 4.9.14.2 in Technical Specification (TS) 3/4.9.14, "Spent Fuel Storage," also references UFSAR Section 16.2 for the surveillance program requirements.

Issue:

The staff reviewed the proposed UFSAR supplement, and it appeared that significant details of the program would be removed from the UFSAR. It is unclear whether these changes will impact the implementing procedure for the Metamic insert surveillance program.

Request:

Clarify whether the Metamic insert surveillance program, TS 3/4.9.14, or SR 4.9.14.2, will be impacted by the proposed changes to the UFSAR.