UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 18, 2015

Mr. Mano Nazar
President and Chief Nuclear Officer
Nuclear Division
NextEra Energy
P.O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: TURKEY POINT NUCLEAR GENERATING UNIT NOS. 3 AND 4 – STAFF ASSESSMENT OF LICENSE RENEWAL COMMITMENT FOR REACTOR VESSEL INTERNALS IMPLEMENTATION REPORT AND INSPECTION PLAN (CAC NOS. MF1485 AND MF1486)

Dear Mr. Nazar:

By letter dated December 14, 2012, as supplemented by letters dated October 30, 2013, January 29, and December 29, 2014, and July 15, 2015, Florida Power & Light Company (the licensee) submitted its reactor vessel internals (RVI) commitment implementation report and inspection plan for Turkey Point Nuclear Generating Unit Nos. 3 and 4 to the U.S. Nuclear Regulatory Commission (NRC). The licensee's submittal addresses a commitment described in NUREG-1759, "Safety Evaluation Report Related to the License Renewal of Turkey Point Nuclear Plant," dated April 2002. The licensee's RVI inspection plan credits the implementation of the NRC staff approved Electric Power Research Institute Materials Reliability Program (MRP) topical report MRP-227-A, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines."

The enclosure to this letter documents the staff's assessment of the licensee's submittal. The staff concludes that the submittal is acceptable because it is consistent with the inspection and evaluation guidelines of MRP-227-A and because the licensee addressed the applicant/licensee action items specified in MRP-227-A that are applicable to Turkey Point.

The staff considers the regulatory commitment in Section 3.8.6 of NUREG-1759 fulfilled. The staff's approval of the licensee's inspection plan does not reduce, alter, or otherwise affect inservice inspection requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI or any other requirements related to inservice inspection. The staff notes that Section 7.0, "Implementation Requirements," of MRP-227-A states that the licensee shall notify the NRC of any deviations from the "Needed" implementation requirements of MRP-227-A.

If you have any questions regarding this issue, please contact the Project Manager, Ms. Audrey Klett, at (301) 415-0489 or by email at Audrey.Klett@nrc.gov.

Sincerely,

Benjamin G. Beasley, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosure:
Staff Assessment

cc w/enclosure: Distribution via Listserv

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STAFF ASSESSMENT BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO LICENSE RENEWAL COMMITMENT FOR REACTOR VESSEL INTERNALS IMPLEMENTATION REPORT AND INSPECTION PLAN FLORIDA POWER & LIGHT COMPANY TURKEY POINT NUCLEAR GENERATING UNIT NOS. 3 AND 4 DOCKET NOS. 50-250 AND 50-251

1.0 INTRODUCTION AND BACKGROUND

On June 6, 2002,[1] the U.S. Nuclear Regulatory Commission (NRC) issued renewed facility operating licenses to Florida Power & Light Company (FPL, the licensee) for Turkey Point Nuclear Generating Unit Nos. 3 and 4 (Turkey Point). The NRC staff's review of FPL's license renewal application (LRA) is documented in NUREG-1759, "Safety Evaluation Report Related to the License Renewal of Turkey Point Nuclear Plant, Units 3 and 4," dated April 2002,[2] and its supplement dated May 2002.[3] As part of its LRA, the licensee developed an aging management program (AMP) for the Turkey Point reactor vessel internals (RVI), which the NRC approved in NUREG-1759. The licensee included a regulatory commitment in the RVI AMP to participate in ongoing joint industry efforts aimed at further understanding the aging effects of the RVI and to revise the Turkey Point RVI AMP as needed. This regulatory commitment is documented in Section 3.8.6, "Reactor Vessel Internals Inspection Program," of NUREG-1759, which states:

> Section 3.1.6, "Reactor Vessel Internals Inspection Program," of Appendix B to the LRA describes the program credited for aging management of the [RVI]. The [RVI] inspection program consists of two types of examinations, visual and ultrasonic testing (UT), to manage the aging effects of cracking, reduction in fracture toughness, and loss of mechanical closure integrity.
>
> As described in the LRA, the [RVI] inspection program will involve the combination of several activities culminating in the inspection of Turkey Point Unit 3 and 4 [RVI] once for each unit during the 20-year period of extended operation [PEO]. The applicant states that this program is intended to supplement the [RVI] inspections required by the ASME [American Society of

[1] Agencywide Documents Access and Management System (ADAMS) Accession No. ML021550256.
[2] ADAMS Accession Nos. ML021280496 and ML021280532.
[3] ADAMS Accession No. ML021560094.

> Mechanical Engineers] Section XI, Subsections IWB, IWC, and IWD inservice inspection [ISI] program. In addition, ongoing industry efforts are aimed at characterizing the aging effects associated with the [RVI]. As described in response to RAI [Request for Additional Information] 3.8.6-1, the applicant is a participant in industry research activities addressing aging effects on [RVI] being conducted by the materials reliability project [...] of EPRI [Electric Power Research Institute]. Further understanding of these aging effects will be developed by industry over time and will provide additional bases for the inspections under this program....
>
> Commitment dates associated with the implementation of this new program are provided in Appendix A to the LRA. Specifically, this program will be in place prior to the end of the initial operating license terms for Turkey Point, Units 3 and 4. As described in response to RAI 3.8.6-4, FPL will submit to the NRC a report that will summarize the understanding of aging effects to apply to the [RVI], and will provide the Turkey Point inspection plan, including required methods for detection and sizing of cracks and acceptance criteria. This report will be submitted prior the end of the initial 40-year operating license term for Unit 3.

The joint industry efforts aimed at further understanding the aging effects of RVI culminated in the issuance of the EPRI topical report 1016596, "Materials Reliability Program [MRP]: Pressurized Water Reactor [PWR] Internals Inspection and Evaluation [I&E] Guidelines (MRP-227-Rev. 0)," dated December 2008, which EPRI provided to the NRC by letter dated January 12, 2009.[4] On June 22, 2011,[5] the NRC issued its Final Safety Evaluation Report (SER) for MRP-227 that endorsed the guidance, provided that eight plant specific actions and seven topical report condition items were implemented. On July 21, 2011,[6] NRC issued Regulatory Issue Summary 2011-07, "License Renewal Submittal Information for Pressurized Water Reactor Internals Aging Management," to provide guidance to licensees with renewed licenses for the submittal of AMPs and inspection plans. On December 16, 2011,[7] the NRC issued Revision 1 of the SER to ensure the final approved version of MRP-227 (i.e., MRP-227-A) included all NRC required changes. By letter to the NRC dated January 9, 2012,[8] EPRI submitted topical report 1022863, "Material Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines (MRP-227-A)," dated December 2011.

By letter L-2011-176 dated May 11, 2011,[9] FPL informed the NRC of its intent to adopt and implement the NRC approved MRP-227 guidelines for Turkey Point. By letter L-2011-531 dated December 22, 2011,[10] FPL committed to submit to the NRC the RVI Inspection Plan no later than December 31, 2012, and deferred the implementation of the RVI Inspection Program

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[4] ADAMS Accession No. ML090160212.
[5] ADAMS Accession No. ML111600498.
[6] ADAMS Accession No. ML111990086.
[7] ADAMS Accession No. ML11308A770.
[8] ADAMS Accession No. ML120170453.
[9] ADAMS Accession No. ML11152A068.
[10] ADAMS Accession No. ML12020A247.

crediting MRP-227-A to no later than December 31, 2012, for Turkey Point Unit 3, and April 10, 2013, for Turkey Point Unit 4.

By letter dated December 14, 2012,[11] as supplemented by letters dated October 30, 2013,[12] January 29,[13] and December 29, 2014,[14] and July 15, 2015,[15] FPL submitted its RVI commitment implementation report and inspection plan for Turkey Point to the NRC. The licensee based its RVI AMP on MRP-227-A with the intent to meet the commitment in Section 3.8.6 of NUREG-1759. By electronic mail (email) dated September 27, 2013, January 22, 2014, February 12, 2015, and May 14, 2015,[16] the NRC staff sent the licensee RAIs. By letters dated October 30, 2013, January 29, and December 29, 2014, and July 15, 2015, the licensee responded to the requests.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 54 addresses the requirements for plant license renewal (LR). Section 54.21 requires that each application for an LR contain an integrated plant assessment (IPA) and an evaluation of time limited aging analyses. The plant specific IPA shall identify and list those structures and components subject to an aging management review (AMR) and demonstrate that the effects of aging (e.g., cracking, loss of material, loss of fracture toughness, dimensional changes, or loss of preload) will be adequately managed so that their intended functions will be maintained consistent with the current licensing basis for the PEO as required by 10 CFR 54.29(a). In addition, 10 CFR 54.22 requires that an LRA include any technical specification changes or additions necessary to manage the effects of aging during the PEO.

Section 54.21 also states that structures and components subject to an AMP shall encompass those structures and components that (1) perform an intended function, as described in 10 CFR 54.4, without moving parts or without a change in configuration or properties and (2) are not subject to replacement based on a qualified life or specified time period. These structures and components are referred to as "passive" and "long-lived" structures and components, respectively.

MRP-227, Revision 0 was intended as guidance for applicants in developing their plant specific AMP for RVI components. The NRC's December 16, 2011, SER for MRP-227, Revision 0 contains specific conditions on the use of the topical report and applicant/licensee action items (A/LAIs) that must be addressed by those using the topical report as the basis for a submittal to the NRC. MRP-227-A contains a discussion of the technical basis for the development of plant specific AMPs for RVI components in PWR vessels and also provides I&E guidelines for applicants to use in their plant specific AMPs. MRP-227-A provides the basis for renewed license holders to develop plant specific inspection plans to manage aging effects on RVI components, as described in their final safety analysis reports, as updated.

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[11] ADAMS Accession No. ML12363A103.
[12] ADAMS Accession No. ML13325A973.
[13] ADAMS Accession No. ML14069A084.
[14] ADAMS Accession No. ML15029A295.
[15] ADAMS Accession No. ML15211A241.
[16] ADAMS Accession Nos. ML13274A144, ML14022A189, ML15049A247, ML15134A152, respectively.

The scope of components considered for inspection under the guidance of MRP-227-A includes core support structures, which are typically denoted as Examination Category B-N-3 by Section XI of the ASME Boiler and Pressure Vessel Code (ASME Code), and those RVI components that serve an intended safety function consistent with the criteria in 10 CFR 54.4(a)(1). The scope of the program does not include consumable items such as fuel assemblies, reactivity control assemblies, and nuclear instrumentation because these components are not subject to an AMR, as defined in 10 CFR 54.21(a)(1).

Subsequent to the submittal of MRP-227 and prior to the issuance of the NRC SER on MRP-227, the NRC issued NUREG-1801, Revision 2, "Generic Aging Lessons Learned (GALL) Report – Final Report," dated December 31, 2010 (i.e., the GALL Report, Revision 2).[17] The GALL Report, Revision 2 provides new AMR line items and aging management guidance in Section XI.M16A, "PWR Vessel Internals." This AMP was based on staff expectations for the guidance to be provided in MRP-227-A. Since the GALL Report, Revision 2 was published prior to the issuance of the final SER of MRP-227-A, the staff published LR Interim Staff Guidance (ISG) LR-ISG-2011-04, "Updated Aging Management Criteria for Reactor Vessel Internal Components for Pressurized Water Reactors," dated May 28, 2013.[18] LR-ISG-2011-04 modifies the guidance of Section XI.M16A of the GALL Report, Rev. 2, to be consistent with MRP-227-A.

3.0 TECHNICAL EVALUATION

In Attachment 1 to its submittal dated December 14, 2012, the licensee describes the inspection plan and key attributes of the RVI AMP for Turkey Point. The staff's technical evaluation of Attachment 1 is discussed in Sections 3.1 through 3.3 of this staff assessment (SA). In Attachment 2 to its submittal, the licensee describes the plant specific confirmation and applicability of MRP-227-A. The staff's evaluation of Attachment 2 is discussed in Section 3.4 of this SA.

3.1 Reactor Vessel Internals Aging Management Program Attributes

Licensee Evaluation

In Section 3 of Attachment 1 to its submittal dated December 14, 2012, the licensee evaluates each of the 10 AMP program elements against the corresponding elements in Section XI.M16A of the GALL Report, Revision 2. The licensee determined that its AMP is consistent with the corresponding element in the GALL Report, Revision 2.

Staff Evaluation

The staff reviewed the licensee's AMP against the 10 elements of the revised version of the GALL Report, Revision 2, Section XI.M16A, as provided in LR-ISG-2011-04. The staff found the 10 elements of the Turkey Point RVI AMP are consistent with the 10 elements described in LR-ISG-2011-04. Therefore, the staff concludes the implementation of the 10 AMP elements is acceptable for Turkey Point.

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[17] ADAMS Accession No. ML103490041.
[18] ADAMS Accession No. ML12270A251.

3.2 Inspection Plan Description

The Turkey Point RVI Inspection Plan, which the licensee describes in Section 4 of Attachment 1 of its submittal dated December 14, 2012, is based on the implementation of MRP-227-A. The licensee's inspection plan considers the effects of eight age related degradation mechanisms (i.e., stress corrosion cracking (SCC), irradiation assisted stress corrosion cracking (IASCC), fatigue, irradiation embrittlement (IE), thermal embrittlement (TE), wear, void swelling, and irradiation assisted stress corrosion relaxation/creep) on the integrity of RVI components. In the inspection plan, the RVI components that require an AMR are categorized as, "Existing Program Components," "Primary Components," "Expansion Components," or "No Additional Measures Components," based on the guidance of MRP-227-A.

3.2.1 Component Categorization and Aging Management Strategy Development

In Table 1 of Attachment 1 to its submittal dated December 14, 2012, the licensee described its categorization of the Turkey Point RVI components. This section of the licensee's submittal corresponds to Section 3 of MRP-227-A.

Licensee Evaluation

In Table 1 of Attachment 1 to its submittal dated December 14, 2012, the licensee lists the Turkey Point RVI components and describes their "Material," "Intended Function," and "Category" (i.e., "Primary," "Expansion," "Existing," or No Additional Measures").

Staff Evaluation

In Table 1 of Attachment 1, the licensee included the Westinghouse RVI components listed in Table 3-3 of MRP-227-A with some additional RVI components that are categorized as "No Additional Measures." For the components that are listed in both Table 1 of Attachment 1 and Table 3-3 of MRP-227-A, the tables are consistent with each other with the exception of some materials substitutions. For example, for the lower support column bolting (an "Expansion" component), the licensee specifies Type 316 stainless steel rather than Type 304. For the control rod guide tube (CRGT) assembly lower flanges[19] ("Primary" components), the licensee specifies Type 304 stainless steel rather than CF8 Cast Austenitic Stainless Steel (CASS). For the CRGT support pins[20] (an "Existing Program"), the licensee specifies Type 316 stainless steel rather than Alloy X750. The staff determined that these material substitutions do not affect the categorization of the component and that the licensee has appropriately kept the categorization of MRP-227-A.

The staff finds the licensee's categorization of the RVI components acceptable because it is consistent with Table 3-3 of MRP-227-A with additions appropriately identified as "No Additional Measures" and material substitutions not affecting the categorization of the component.

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[19] The licensee refers to this component as the Guide Tube Assembly (GTA) Lower Flanges.
[20] The licensee refers to this component as the GTA Support Pins and as split pins. Section 3.4.3 of this SA discusses this component in more detail.

3.2.2 Aging Management Requirements

In Tables 2, 3, and 4 of Attachment 1 to its submittal dated December 14, 2012, the licensee discusses the I&E of the Turkey Point RVI components. This section of the licensee's submittal corresponds to Section 4 of MRP-227-A.

Licensee Evaluation

Tables 2, 3, and 4 of Attachment 1 to the licensee's submittal list the "Existing Programs," "Primary," and "Expansion" components for Westinghouse design RVI. The following components are included in "Existing Programs" category: core barrel flange, upper support ring or skirt, lower core plate, flux thimble tubes, clevis insert bolt, and upper core plate alignment pins. The following components are included in "Primary Components" category: CRGT assembly guide cards, CRGT assembly lower flange welds, upper and lower core barrel flange welds, upper and lower core barrel cylinder girth welds, baffle bolts, baffle-former assembly, internals hold down spring (HDS), and thermal shield flexures. The following components are included in "Expansion Components" category: upper core plate, lower support forgings, barrel-former bolts, lower support column bolts, core barrel outlet nozzle welds, upper and lower core barrel cylinder axial welds, lower support column bodies, and bottom mounted instrument (BMI) column bodies.

Staff Evaluation

Table 2 is identical to MRP-227-A, Table 4-9 (Westinghouse Existing Programs Components) in its description of aging effects, examination methods, and examination frequency, except that the licensee's table refers to the licensee's procedure, BMI-FTT-IP, "Bottom Mounted Instrumentation (BMI) Flux Thimble Tubing (FTT) Inspection Program For Turkey Point Units 3 & 4," which incorporates the requirements of NRC Bulletin 1988-009 (BL-88-09), "Thimble Tube Thinning in Westinghouse Reactors," dated July 26, 1988,[21] for eddy current surface examination of the flux thimble tubes. The staff finds this acceptable because it meets the minimum requirements of MRP-227-A and provides additional plant specific detail for the flux thimble tube inspections at Turkey Point. Table 3 is identical to MRP-227-A, Table 4-3 (Westinghouse Primary Components) in its description of effects, expansion links, examination methods and examination coverage for the primary components. Table 4 is identical to MRP-227-A, Table 4-6 (Westinghouse Expansion Components) in its description of effects, expansion links, examination methods and examination coverage for the expansion components, with the following exception. In Table 4, the licensee added Irradiation Embrittlement to the "Effect (Mechanism)" column for the upper core plate because the fluence on the upper core plate was greater than originally projected as a result of an extended power uprate (EPU) in 2012 and 2013. The staff finds this addition acceptable because it meets the minimum requirements of MRP-227-A and additional aging mechanisms must be considered based on revised fluence projections for the upper core plate at Turkey Point. Section 3.4.1 of this SA contains additional information on this subject.

The staff finds the licensee's specified examinations of the RVI acceptable because the AMP will implement all the "Primary," "Expansion," and "Existing Programs" inspections recommended for Westinghouse design RVI in MRP-227-A.

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[21] ADAMS Accession No. ML031220157.

3.3 Examination Acceptance and Expansion Criteria

Licensee Evaluation

In Sections 3 and 4 of Attachment 1 to its submittal dated December 14, 2012, the licensee discusses the specific examination acceptance and expansion criteria for "Primary" and "Expansion" components, which are derived from Section 5 of MRP-227-A. Table 5 of Attachment 1 lists the plant applicability, examination acceptance criteria, expansion link if applicable, and expansion criteria if applicable for these components. The examination techniques used include visual (VT-3, EVT-1), volumetric examination, and physical measurements.

Staff Evaluation

Table 5 is identical with MRP-227-A, Table 5-3 in its description of examination acceptance criteria, expansion links, and expansion criteria. The staff reviewed this section and found it acceptable because the information is consistent with the examination acceptance criteria of MRP-227-A.

3.4 Applicant/Licensee Action Items

The staff's SER dated December 16, 2011, concerning MRP-227 contained eight A/LAIs pertaining to the AMPs derived from MRP-227-A, as listed in Section 4.2 of the Staff's SER for MRP-227. The licensee addressed these eight A/LAIs in Attachment 2 to its submittal dated December 14, 2012.

3.4.1 A/LAI 1 – Plant-specific Applicability Verification of MRP-227-A

Per Section 4.2.1 of the staff's SER dated December 16, 2011, each licensee is responsible for assessing its plant's design and operating history and demonstrating that the approved version of MRP-227 is applicable to the facility. Each licensee shall refer, in particular, to the assumptions regarding plant design and operating history made in the failure modes effects and criticality analysis (FMECA) and functionality analyses that support MRP-227. The licensee shall also describe the process used for determining plant specific differences in the design of their RVI components or plant operating conditions that result in different component inspection categories. The licensee shall submit this evaluation for NRC review and approval as part of its application to implement the approved version of MRP-227.

In its letter MRP-2013-025 dated October 14, 2013,[22] EPRI provided a template for licensees to demonstrate compliance with the assumptions in MRP-227-A when responding to the following generic NRC RAI questions on A/LAI 1:

> Question 1: Does the plant have non-weld or bolting austenitic stainless steel components with 20 percent cold work or greater, and, if so, do the affected components have operating stresses greater than 30 ksi [kilo pounds per square inch]? If both conditions are true, additional components may need to be screened in for SCC.

[22] ADAMS Accession No. ML13322A454.

Question 2: Does the plant have atypical fuel design or fuel management that could render the assumptions of MRP-227-A, regarding core loading/core design, nonrepresentative for that plant?

The NRC staff documented its review of the EPRI MRP-2013-025 letter in an evaluation dated November 7, 2014.[23] The NRC staff concluded that the guidance in MRP-2013-025 provides an acceptable basis for licensees to prepare responses to the two generic RAI questions above.

Licensee Evaluation

In Section 1 of Attachment 2 to its submittal dated December 14, 2012, the licensee stated that Turkey Point is reasonably represented by the generic industry program assumptions with regard to neutron fluence, temperature, materials, and stress values used in the development of MRP-227-A. The licensee further stated that Turkey Point internal components are represented by the design and operating history assumptions with regard to neutron fluence, temperature, materials, and stress values in the generic FMECA of MRP-191[24] and the functionality analysis of MRP-232. The licensee stated that Turkey Point Units 3 and 4 operated the first 24 and 23 years of operation respectively with a high leakage core loading pattern, and that the FMECA and functionality analyses were based on the assumption of 30 years of operation with high leakage core loading patterns; therefore, Turkey Point is bounded by the assumptions in MRP-191.

The licensee also stated that operations at Turkey Point conform to the assumptions in Section 2.4 of MRP-227-A. Turkey Point Units 3 and 4 operated for less than 30 years with high leakage core patterns, followed by implementation of a low leakage fuel management strategy for the remaining years of operation. Turkey Point Units 3 and 4 operate as base load units, and no design changes were implemented beyond those identified in general industry guidance or recommended by the original vendors.

Staff Evaluation

The information provided by the licensee confirmed that Turkey Point switched to a low leakage core loading pattern prior to 30 calendar years of operation, has always operated as a base loaded unit, and has no unique plant modifications, consistent with the three assumptions of the FMECA and functionality analyses supporting MRP-227-A, listed in Section 2.4 of MRP-227-A.

To verify that the detailed component state at the end of the PEO is bounded by the detailed assumptions of MRP-227-A, NRC staff issued RAI-5 to the licensee by email dated September 27, 2013. In RAI-5, the staff requested the following information:

a. Identify whether the Turkey Point 3 and 4 RVIs include nonweld or bolting austenitic stainless steel components with 20 percent or greater cold work from fabrication and operating surface tensile stresses greater than 30 [ksi]. Provide a plant-specific evaluation to determine the aging management requirements for the identified components.

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[23] ADAMS Accession No. ML14309A484.
[24] ADAMS Accession No. ML091910130.

b. Identify whether Turkey Point 3 and 4 used an atypical fuel design or fuel management that could make the assumptions of MRP-227-A regarding core loading/core design nonrepresentative for that unit, including those during power changes and uprates. If so, describe how the differences were reconciled with the assumptions of MRP-227-A, or provide a plant-specific AMP for affected components as appropriate.

The staff notes that the underlying concern to RAI 5a is that if plant-specific components are cold worked to a higher degree than assumed in MRP-191, such components may be more susceptible than assumed in MRP-191 and, thus, may need to be screened in for susceptibility to SCC if those components are also highly stressed. In its response to RAI-5a dated December 29, 2014, the licensee summarized its evaluation as follows. The licensee grouped all the austenitic internals into five categories: CASS, hot formed austenitic stainless steel, annealed austenitic stainless steel, austenitic stainless steel fasteners, and cold formed austenitic stainless steel without subsequent annealing. According to the licensee, only two categories, austenitic stainless steel fasteners and cold formed austenitic stainless steel without subsequent annealing, had the potential to contain cold work greater than 20 percent as a result of the material specification and fabrication controls. The license briefly discussed fabrication processes for these categories and concluded that: (1) the plant specific material fabrication and design were consistent with the MRP-191 basis, and (2) the MRP-227-A sampling inspection aging management requirements related to cold work are directly applicable to Turkey Point. In other words, the licensee's response indicates that it did not find any plant-specific components with cold work greater than or equal to (≥) 20 percent that were not in categories already assumed to have cold work ≥ 20 percent in MRP-191, such as fasteners. The staff notes that the licensee's categorization and review process is consistent with the generic guidance of MRP-2013-025, which states that only the generic categories of fasteners and cold formed austenitic stainless steel without subsequent solution annealing may exceed 20 percent cold work and should be screened in as susceptible to SCC or IASCC. The licensee's response is consistent with the generic assessment in MRP-2013-025 and does not identify any plant-specific components not covered by the generic assessment. The staff finds the licensee's response to RAI-5a acceptable because it is in accordance with the guidance in the EPRI MRP-2013-025 letter for compliance with MRP-227-A A/LAI-1 with respect to cold work, and demonstrates that there are no Turkey Point Unit 3 or Unit 4 RVI components with higher susceptibility to SCC due to cold work than assumed in MRP-191.

In its response to RAI-5b dated January 29, 2014, the licensee stated that it had analyzed the increase in fluence values resulting from the EPU and the impact of any elevated fluence on aging management of the internals components. The licensee referenced its letter dated March 9, 2011,[25] related to the EPU, in which it provided the fluence information. The licensee also stated that in the response to A/LAI 1 it provided in its submittal dated December 14, 2012, it evaluated the impact of the updated fluence values on the aging degradation of the upper core plate and BMI columns. The licensee stated that it found the updated fluence values exceeded the assumptions of MRP-191 for the upper core plate but not for the BMI columns. The licensee determined that IASCC concerns could be eliminated for the upper core plate by considering a combination of stress and fluence at various regions of the plate, but that IE would have to be considered as a degradation mechanism of concern for the upper core plate. The licensee determined that this degradation mechanism would need to be considered in future flaw

[25] ADAMS Accession No. ML110700068.

evaluations. The staff reviewed the information on the upper core plate in the licensee's submittal dated December 14, 2012, and determined that the existing inspection requirements for the upper core plate are adequate.

The guidance of MRP-2013-025 recommends that for plants with Westinghouse design internals, licensees can compare the core power density, heat generation figure of merit (derived from core power density), and certain geometric parameters against standard acceptance criteria. These criteria were developed by EPRI as a method to provide reasonable assurance that a plant's core design is adequately represented by the assumptions made in developing MRP-227-A, in lieu of a detailed fluence analysis of the RVI, which has not been performed for most PWRs. Because Turkey Point previously performed a plant specific fluence analysis, the staff found an evaluation of core power density and geometry, as recommended by the EPRI MRP-2013-025 letter, is not needed. The NRC staff reviewed the fluence information provided in the licensee's letter dated March 9, 2011, and verified that based on fluence, the assumptions of MRP-191 still hold for the internal components, except for the upper core plate. As another point of reference for fluence, the staff notes the peak fluence on the inner surface of the baffle former plates provided by the licensee in Attachment 4 to its EPU license amendment request dated October 21, 2013,[26] is 6.9×10^{22} neutrons per square centimeters (n/cm^2) (energy (E) > 1.0 megaelectron volt (MeV)) at 60 effective full power years (EFPY). For the expected 48 EFPY at the end of the PEO for Turkey Point, the prorated fluence at this location would be 5.5×10^{22} n/cm^2. The staff compared this value to the fluence range assumed in MRP-191 for the baffle plates ($\geq 5 \times 10^{22}$ n/cm^2, E > 1.0 MeV) and notes that the Turkey Point value is consistent with, and close to, the minimum for this range. The staff finds that, based on its review of the licensee's neutron fluence information for the RVI, and the licensee's evaluation of aging management requirements for the upper core plate, the licensee demonstrated that Turkey Point does not have an atypical fuel design or fuel management that could invalidate the assumptions of MRP-227-A.

The staff finds that the licensee's response to RAIs 5a and 5b adequately addressed the two factors necessary to verify applicability of MRP-227-A to Turkey Point cold work induced stress and fuel management. Furthermore, the licensee confirmed that Turkey Point will continue to comply with these limits during the PEO. Therefore, the staff finds the licensee's response acceptable and that the licensee met A/LAI 1 for Turkey Point.

3.4.2 A/LAI 2 – RVI Components within the Scope of License Renewal

Per Section 4.2.2 of the NRC SER dated December 16, 2011, A/LAI 2 states that consistent with the requirements addressed in 10 CFR 54.4, each applicant/licensee is responsible for identifying which RVI components are within the scope of LR for its facility. Applicants/licensees for Westinghouse design RVI shall review the information in Table 4-4 in MRP-191 and identify whether these tables contain all of the RVI components that are within the scope of LR for their facilities in accordance with 10 CFR 54.4. If the tables do not identify all the RVI components that are within the scope of LR for its facility, the applicant or licensee shall identify the missing components and propose any necessary modifications to the program defined in MRP-227, as modified by the SER dated December 16, 2011, when submitting its plant specific AMP. The AMP shall provide assurance that the effects of aging on the missing components will be managed for the PEO.

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[26] ADAMS Accession No. ML103560177.

Licensee Evaluation

The licensee stated that it reviewed the information in Table 4-4 of MRP-191 and determined that all components required to be included in the Turkey Point RVI AMP are consistent with those contained in MRP-191. The licensee identified a number of components in Attachment 2 of the AMP that use different materials than those specified in Table 4-4 of MRP-191. The licensee stated that these material substitutions have no effect on the recommended MRP aging management strategy or are already managed by an alternate Turkey Point AMP, and that no modifications to the MRP-227-A program need to be proposed. These materials are discussed in more detail in the following paragraphs.

The following components in the Turkey Point RVI are fabricated from Type 304 stainless steel rather than the MRP-191 material, which is Type 316 stainless steel: upper core plate fuel alignment pin, upper support plate assembly lock key, lower core plate fuel alignment pins, and the thermal shield dowel. The licensee stated that both the MRP-191 material and the Turkey Point material were wrought austenitic stainless steel alloys with the same screening criteria for all degradation mechanisms.

The following components in the Turkey Point RVI are fabricated from Type 316 stainless steel rather than the MRP-191 material, which is Type 304 stainless steel: lower support column bolts, thermal shield flexures, and radial support key bolts. The licensee stated that both the MRP-191 material and the Turkey Point material were wrought austenitic stainless steel alloys with the same screening criteria for all degradation mechanisms.

For the upper instrumentation conduit and supports, the licensee substituted CF8 CASS for the MRP-191 material, which is Type 304 stainless steel. The licensee stated that this component did not screen in for any degradation mechanisms under MRP-191 and that the susceptibility of this material to IE and TE is discussed under the licensee's response to A/LAI 7. In A/LAI 7, the licensee further stated that the FMECA category for this component is "No Additional Measures."

For the flux thimble tube plug, the licensee substituted 308 stainless steel for the MRP-191 material, which is Type 304 stainless steel. The licensee stated that both the MRP-191 material and the Turkey Point material were wrought austenitic stainless steel alloys with the same screening criteria for all degradation mechanisms. NRC staff requested additional information about this in RAI-6a. The staff's evaluation of the licensee's response is provided as follows.

Staff Evaluation

For the upper core plate fuel alignment pin, upper support plate assembly lock key, lower core plate fuel alignment pins, and the thermal shield dowel, the licensee submittal stated that Type 304 stainless steel was used rather than Type 316 stainless steel, which was specified in MRP-191 for these components. Because stainless steel Types 304 and 316 are both wrought austenitic alloys and have similar responses to the material degradation methods discussed in MRP-191, the NRC staff finds that this material substitution will not change the screening criteria for all degradation mechanisms and that no change to the aging management strategy is required.

For the lower support column bolts, thermal shield flexures, and the radial support key bolts, the licensee's submittal stated that Type 316 stainless steel was used rather than Type 304 stainless steel, which was specified in MRP-191 for these components. Because stainless steel Types 304 and 316 are both wrought austenitic alloys and have similar responses to the material degradation methods discussed in MRP-191, the NRC staff finds that this material substitution will not change the screening criteria for all degradation mechanisms and that no change to the aging management strategy is required.

For the upper instrumentation conduit and supports, the licensee submittal stated that Type CF8 CASS was used rather than Type 304 stainless steel, which was specified in MRP-191 for these components. The licensee also stated that this component did not screen in for any degradation mechanisms under MRP-191 and that the FMECA category for this component was "No Additional Measures." The NRC staff finds the categorization of this component acceptable. Based on this categorization, the staff finds that no change to the aging management strategy is required.

For the FTT plug, the licensee's submittal stated that Type 308 stainless steel was used rather than Type 304 stainless steel, which was specified in MRP-191 for this component. The licensee stated that both the MRP-191 material and the Turkey Point material were wrought austenitic stainless steel alloys with the same screening criteria for all degradation mechanisms. In RAI-6a, the NRC staff stated that since Type 308 typically refers to weld alloy rather than wrought alloy, the licensee should clarify the material used for the FTT plugs and describe whether a change to aging management strategy is required if Type 308 weld alloy is used.

In its response to RAI-6a dated October 30, 2013, the licensee clarified that the FTT plugs are constructed of Type 308 weld wire conforming to SFA 5.9 Class ER308. Also in its response, the licensee provided a short analysis comparing the mechanical and chemical properties of the ER308 weld wire to the properties of Type 304 wrought material. The licensee stated that ER308 and Type 304 have comparable chemical and mechanical properties, although there would be some differences in delta ferrite content (ER308: "not significantly greater than 5 [percent]", 304: "up to 3 [percent]"). More importantly, the licensee provided the context for the application for the FTT plugs, which receive very high fluence and which are already screened in for IE.

The NRC staff finds that in this context (i.e., very high fluence environment with delta ferrite slightly above 5 percent), IE becomes limiting, and any loss of toughness to TE becomes inconsequential. Although ER308 is not a wrought material, it may be treated as equivalent to Type 304 wrought material for purposes of aging degradation screening criteria for applications in very high fluence areas. Although the staff would not categorize the Turkey Point FTT plug material as a wrought austenitic stainless steel alloy, the staff finds that both the Turkey Point material and the MRP-191 material share the same screening criteria for all degradation mechanisms and that no change to the aging management strategy is required.

3.4.3 A/LAI 3 – Evaluation of the Adequacy of Plant-Specific Existing Programs

Section 4.2.3 of the staff's SER dated December 16, 2011, states that licensees of Westinghouse plants are required to perform plant specific analysis either to justify the acceptability of a licensee's existing programs, or to identify changes to the programs that should be implemented to manage the aging of these components for the PEO. This SER

further states that the results of this plant specific analysis and a description of the plant specific programs being relied on to manage aging of these components shall be submitted as part of the licensee's AMP application, and that the Combustion Engineering (CE) and Westinghouse components identified for this type of plant specific evaluation include: CE thermal shield positioning pins and CE in-core instrumentation thimble tubes (Section 4.3.2 in MRP-227-A), and Westinghouse guide tube support pins (split pins) (Section 4.3.3 in MRP-227-A).

Licensee Evaluation

In its submittal dated December 14, 2012, the licensee discussed four existing plant programs credited for adequately managing specific aging effects of selected RVI components. These programs are as follows:

1. Chemistry Control Program. The licensee credits the chemistry control program for controlling levels of corrosive contaminants in the Primary Water System, thereby preventing or mitigating cracking of RVI components.

2. ASME Code Section XI ISI Program. The licensee credits the visual inspection of removable RVI components categorized as core support structures in the ASME Code. Visual inspections (ASME class VT-3) of accessible surfaces of these components are required once per 10-year ISI interval.
3. CRGT Support Pin (Split Pin) Replacement. The licensee credits the replacement of nickel alloy Type X-750 split pins with stainless steel cold worked Type 316 split pins for the management of SCC.

4. FTT Inspection Program. The licensee credits the eddy current test inspection of thimble tubes to manage the aging effect of material loss due to fretting wear.

Staff Evaluation

The licensee credits its chemistry control program for controlling levels of corrosive contaminants in the Primary Water System and preventing or mitigating cracking of RVI components by SCC and IASCC. The licensee did not provide details about its chemistry control program in its submittal. The staff notes that chemistry control can be an important component of an AMP, but a review of the Turkey Point chemistry control program is outside the scope of this SA.

The licensee credits the ASME Section XI ISI Program, specifically the Examination Category B-N-3 requirements, for removable RVI components categorized as core support structures. NRC staff notes that Section XI is not identified as a plant specific existing program in MRP-227-A, but Section XI is an important generic existing program for managing the aging of components. In RAI-4, NRC staff requested that the licensee identify all RVI components that are defined as Examination Category B-N-3 core support structure components and the applicable MRP-227-A inspection category for these components. The staff also requested that the licensee identify any differences in inspection between ASME Section XI and MRP-227-A for these components, which are categorized as "Primary" or "Expansion." In RAI-4, the staff also requested that the licensee clarify how differences in the inspection bases will be reconciled. In its response to RAI-4 dated October 30, 2013, the licensee provided this information and clarified that the RVI AMP inspections are considered augmented inspections

under the ASME ISI program and do not replace the existing ISI requirements for the B-N-3 components. The licensee also clarified that there is no need for reconciliation because the RVI AMP inspections do not replace the existing ISI requirements. The staff finds the licensee response acceptable.

The licensee credits the replacement of nickel alloy Type X-750 CRGT split pins with stainless steel cold worked Type 316 split pins for the management of SCC. The original Turkey Point CRGT split pins were fabricated from X-750 with a heat treatment that was subsequently determined to be susceptible to SCC. Split pins of the original type were later replaced with X-750 with a modified heat treatment, but the modified heat treatment X-750 split pins were also found to be susceptible to SCC. Based on recommendations from Westinghouse, the licensee replaced the X-750 split pins with split pins fabricated from cold worked Type 316 stainless steel in 2007 and 2008. In RAI-3, NRC staff stated that these components are described as susceptible to wear and fatigue per MRP-227-A and requested the licensee to describe how it will manage aging degradation of the split pins due to wear and fatigue. NRC staff also requested the licensee to confirm if split pin inspections will be performed under the ASME Code, Section XI, Examination Category B-N-3.

In its response to RAI-3 dated October 30, 2013, the licensee stated that a design criteria evaluation performed by Westinghouse in 2007 demonstrated that the replacement split pins provided adequate resistance to wear and fatigue over a 40-year design life. The licensee also stated that a subsequent structural and fatigue evaluation on the impact of a 15 percent EPU determined that the structural integrity and fatigue usage factors for these split pins remained acceptable during the PEO. The licensee also stated that split pin inspections will not be performed under the ASME Code, Section XI, Examination Category B-N-3 because the split pins are not categorized as B-N-3 and do not perform a core support function. Instead, the licensee clarified that VT-3 inspections of accessible portions of the upper core plates will provide a partial view of some of the split pins and that other inspections are regularly performed that would detect split pin fragments in the event that a failure would occur. The staff finds the licensee response acceptable because the licensee has demonstrated that replacement split pins would have adequate resistance to wear and fatigue, and that in the unlikely event of split pin failure, the failure would not affect the core support function and evidence of failure would be detected by VT-3 inspection.

The licensee credits the eddy current test inspection of thimble tubes to manage the aging effect of material loss caused by fretting wear. NRC staff notes that the inspection of Westinghouse design thimble tubes is not identified as a plant specific existing program in MRP-227-A; however, the staff finds that the inspection of thimble tubes is important to manage the aging effect of material loss due to fretting wear. As stated in the licensee's submittal dated December 14, 2012, eddy current test inspection of thimble tubes at Turkey Point was performed on a single thimble tube as part of the licensee's response to BL-88-09. A periodic inspection program was later implemented. According to the licensee, the licensing basis, program basis documents, and implementing procedures of this program were reviewed by NRC inspectors during the Phase 2 License Renewal Post-Approval Site Inspections in 2012. The staff finds the licensee response acceptable.

The staff has reviewed the information in the AMP and finds the licensee existing programs acceptable. Therefore, the staff finds the licensee has adequately addressed A/LAI 3.

3.4.4 A/LAI 4 – Babcock & Wilcox (B&W) Core Support Structure Upper Flange Stress Relief

A/LAI 4 is not applicable to Westinghouse-design RVI and is therefore not applicable to Turkey Point.

3.4.5 A/LAI 5 – Application of Physical Measurements as part of I&E Guidelines for B&W, CE, and Westinghouse RVI Components

Per Section 4.2.5 of the staff's SER dated December 16, 2011, A/LAI 5 requires licensees to identify plant specific acceptance criteria to be applied when performing the physical measurements required by MRP-227-A for loss of compressibility for Westinghouse HDSs, and for distortion in the gap between the top and bottom core shroud segments in CE units with core barrel shrouds assembled in two vertical sections. The licensee shall include its proposed acceptance criteria and an explanation of how the proposed acceptance criteria are consistent with the plants' licensing basis and the need to maintain the functionality of the component being inspected under all licensing basis conditions of operation as part of their submittal to apply MRP-227-A.

Licensee Evaluation

In Attachment 1, Table 3 of its submittal, the licensee described the method of examining the HDS, which is identical to the method described in MRP-227-A, Table 4-3. This method requires direct measurement of spring height, and extrapolation to 60 years if the first set of measurements is not sufficient to determine life. In Attachment 2 of its submittal, the licensee also stated that Turkey Point HDS acceptance criteria are based on the measured height of the springs as a function of time relative to the required hold-down force, and the conservative assumption that relaxation occurs linearly over time. Considering the measured HDS height at plant startup, and knowing the necessary HDS height at the end of the PEO, the licensee has derived time dependent criteria for HDS height. The licensee has stated that for HDS height measurements that are found to be less than the required minimum, the licensee will re-evaluate with successive measurements or a replacement HDS will be required.

Staff Evaluation

The staff finds the acceptance criteria for the Turkey Point HDS to be acceptable because it is consistent with the Turkey Point licensing basis and will ensure functionality of the component under all conditions of operation. Therefore, the staff finds the licensee has adequately addressed A/LAI 5.

3.4.6 A/LAI 6 – Evaluation of Inaccessible B&W Components

This action item does not apply to Westinghouse designed units and is therefore not applicable to Turkey Point.

3.4.7 A/LAI 7 Plant-Specific Evaluation of CASS Materials

The staff's SER dated December 16, 2011, states that A/LAI 7 requires the applicants and licensees of B&W, CE, and Westinghouse reactors to develop plant specific analyses to be applied for their facilities to demonstrate that B&W in-core monitoring instrumentation GTA

spiders and CRGT assembly spacer castings, CE lower support columns, and Westinghouse lower support column bodies, or additional RVI components that may be fabricated from CASS, martensitic or precipitation hardened stainless steel, will maintain their functionality during the PEO. These analyses should also consider the possible loss of fracture toughness in these components caused by TE and IE. The plant specific analysis shall be consistent with the plant's licensing basis and the need to maintain the functionality of the components being evaluated under all licensing basis conditions of operation. Applicants and licensees shall include the plant specific analysis as part of their submittals to apply the approved version of MRP-227.

Licensee Evaluation

The licensee identified four RVI components that are constructed of CASS. These components and their FMECA categorization are as follows:

Component	FMECA Category
Lower Support Columns	Expansion
Upper Support Column Bases	No Additional Measures
BMI Cruciforms	No Additional Measures
Upper Instrumentation Columns and Supports (Unit 4 only)	No Additional Measures

For expansion components, supplemental inspections are required if cracking is found in the primary linked component, which is specified in MRP-227-A. Therefore, the licensee identified that if cracking is found in the GTA lower flange welds (the Primary Link for the lower support columns), supplemental EVT-1 inspections of the lower support columns must be performed. The licensee also investigated the delta ferrite content of the lower support columns because there is a link between high ferrite and TE. The licensee reported that it had searched the original manufacturing records and determined that the ferrite content for all lower support columns ranged from a low of 4.29 percent to a high of 14.83 percent. The licensee stated that the calculated ferrite for these components was well below the 20 percent threshold for TE susceptibility as described in the May 19, 2000, letter from NRC staff (Christopher Grimes) to the Nuclear Energy Institute (NEI).[27]

Staff Evaluation

Section 3.3.7 of the staff's SER dated December 16, 2011, lists three possible options for the type of plant specific analysis used to fulfill the requirements of A/LAI 7. The three approaches are: (1) functionality analyses of the set of like components, (2) component specific flaw tolerance evaluations, or (3) a screening approach demonstrating that the CASS components are not susceptible to TE, IE, or the combined effects of both. In its submittal dated December 14, 2012, the licensee discussed the link between ferrite content and TE and provided a range of ferrite contents for the lower support columns at Turkey Point. The licensee's approach is the screening approach, although it did not address IE susceptibility. The NRC staff confirmed that the Grimes letter dated May 19, 2000, specifies a 20 percent threshold for statically cast, low Molybdenum (Mo) content CASS but notes that the Grimes letter criteria were not intended to apply to high fluence environments. In order to support the evaluation of Turkey Point lower support columns, and to provide data input for generic CASS

[27] ADAMS Accession No. ML003717179.

guidance being prepared by the staff at that time, the staff requested in RAI-7 that the licensee provide the ferrite content for each lower support column and the casting method for each column.

In its response to RAI-7 dated January 29, 2014, the licensee provided ferrite contents for each lower support column but could not determine whether the components were statically or centrifugally cast. The licensee stated that the casting method could not be determined for the lower support columns, but that the 20 percent threshold could be conservatively applied to all CASS with a low Mo content. Subsequent to the licensee response to RAI-7, the NRC developed screening criteria on CASS exposed to the combined effects of TE and IE. These criteria were attached to an NRC email dated June 11, 2014.[28] In the email attachment, the NRC staff proposed that statically cast, low Mo, CASS components should be considered susceptible to the combined effects of TE and IE if the delta ferrite content is greater than 15 percent and neutron fluence is greater than or equal to 0.45 displacements per atom (dpa). Since the ferrite content of the lower support columns ranged between 4.29 percent and 14.83 percent, these components are well below the 20 percent threshold for susceptibility to TE and below the 15 percent threshold for susceptibility to the combined effects of TE and IE.

The licensee's approach in its initial submittal and its response to RAI-7 demonstrated that the lower support columns at Turkey Point were not susceptible to TE. However, the licensee's approach did not address the susceptibility of the lower support columns to IE. As stated in the NRC email attachment dated June 11, 2014, even statically cast, low Mo CASS components with delta ferrite less than or equal to 15 percent are susceptible to IE when subject to neutron fluence greater than 1.5 dpa. Additionally, the staff was concerned that the CRGT assembly lower flange welds, which is the MRP-227-A primary link for the lower support columns, would not be a good predictor of IE for the lower support columns because the CRGT assembly lower flange welds receive substantially lower neutron fluence than the lower support column bodies. Therefore, the staff requested in RAI-8 that the licensee evaluate the lower support column bodies and provide a link to a primary component that is an appropriate predictor of IE and IASCC of the lower support column bodies.

In its response to RAI-8 dated July 15, 2015, the licensee stated that based on a comparison of neutron fluence, the lower core barrel girth weld would be a more appropriate predictor of IE and IASCC. The licensee therefore selected the lower core barrel girth weld as the Primary Link for the lower support column bodies with respect to IE and IASCC. The licensee also stated that the CRGT lower flange weld would remain the SCC Primary Link for the lower support column bodies. The staff finds the licensee response acceptable because the new primary link selected for IE and IASCC will receive similar fluence to the lower support columns and, thus, would be a more appropriate indicator for the potential of IE and IASCC for the lower support columns. Additionally, the lower core barrel girth welds selected as primary link would be a leading indicator of IASCC because welds generally contain residual tensile stresses, whereas the lower support columns would likely be in compressive stress under normal operating conditions and thus should be much less susceptible to IASCC. For these reasons, the staff finds the licensee's response to RAI-8 acceptable.

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[28] ADAMS Package Accession No. ML14163A109.

3.4.8 A/LAI 8 – Submittal of Information for Staff Review and Approval

The staff's SER dated December 16, 2011, states that A/LAI 8 requires applicants/licensees to make a submittal for NRC review and approval to credit their implementation of MRP-227, as amended by the SER, as an AMP for the RVI components at their facility. The submittals shall include the information identified in Section 3.5.1 of the staff's SER dated December 16, 2011.

Section 3.5.1 of the staff's SER dated December 16, 2011, states that in addition to the implementation of MRP-227, Revision 0, in accordance with NEI 03-08, applicants/licensees whose licensing basis contains a commitment to submit a PWR RVI AMP and/or inspection program shall also make a submittal for NRC review and approval to credit their implementation of MRP-227, as amended by the staff's SER dated December 16, 2011. Section 3.5.1 of the staff's SER dated December 16, 2011, further states that an applicant/licensee's application to implement MRP-227, as amended by the staff's SER, shall include the following items:

1. An AMP for the facility that addresses the 10 program elements as defined in NUREG-1801, Revision 2, AMP XI.M16A.

2. To ensure the MRP-227, Revision 0 program and the plant specific action items will be carried out by applicants/licensees, applicants/licensees are to submit an inspection plan which addresses the identified plant-specific action items for staff review and approval consistent with the licensing basis for the plant. If an applicant/licensee plans to implement an AMP which deviates from the guidance provided in MRP-227, as approved by the NRC, the applicant/licensee shall identify where their program deviates from the recommendations of MRP-227, as approved by the NRC, and shall provide a justification for any deviation which includes a consideration of how the deviation affects both "Primary" and "Expansion" inspection category components.

Applicants that submit LRAs after the issuance of the staff's December 16, 2011, SER for MRP-227, Revision 0 are required to submit additional information items. The staff notes that because the Turkey Point LRA was submitted prior to the issuance of the staff's SER related to MRP-227, the licensee is only required to submit the above two information items.

Licensee Evaluation

A/LAI 8 requires that the applicant/licensee establish that the AMP fulfills the 10 attributes in the GALL report. The licensee reviewed these 10 attributes in Section 3 of its AMP This A/LAI also requires that the applicant submit an inspection plan which addresses the identified plant specific action items for staff review and approval consistent with the licensing basis for the plant. The licensee discusses the Turkey Point inspection plan in Section 4 of the AMP. This A/LAI also requires the applicant to identify and justify any deviations from the recommendations of MRP-227. The licensee has identified no deviations.

Staff Evaluation

The licensee provided the information for Item 1 of A/LAI 8 because it provided an AMP as described in Section 3 of its submittal and as discussed in Section 3.1 of this SE. The licensee provided the information required by Item 2 of A/LAI 8 as described in Section 4 of its submittal,

including evaluation of the A/LAIs, as supplemented by its October 30, 2013, January 29, 2014, December 29, 2014, and July 15, 2015 RAI responses. Therefore, the staff finds that the licensee has adequately addressed A/LAI 8.

4.0 CONCLUSION

The NRC staff has reviewed the AMP for the Turkey Point RVI components and concludes that the Turkey Point AMP is acceptable because it is consistent with the I&E guidelines of MRP-227-A, and the licensee has addressed the A/LAIs specified in MRP-227-A applicable to Turkey Point appropriately.

The NRC staff therefore considers the LR commitments stated in Section 3.8.6 of NUREG-1759 to be fulfilled. The NRC staff's approval of the Turkey Point RVI AMP does not reduce, alter, or otherwise affect current ASME Code, Section XI ISI requirements, or any Turkey Point specific licensing requirements related to ISI. The licensee must follow the implementation requirements as defined in Section 7.0 of MRP-227-A, which require that the NRC be notified of any deviations from the "Needed" requirements.

Principal Contributor: J. Jenkins

Date: December 18, 2015

If you have any questions regarding this issue, please contact the Project Manager, Ms. Audrey Klett, at (301) 415-0489 or by email at Audrey.Klett@nrc.gov.

Sincerely,

/RA/

Benjamin G. Beasley, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

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