Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth. MA 02360

March 11, 2016

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

SUBJECT: Notification for Information Only – Pilgrim Deviations from BWRVIP-41, Rev.3, BWRVIP-76, Rev.1-A, BWRVIP-139-A, and BWRVIP-180, Rev.0 Guidelines

Pilgrim Nuclear Power Station
Docket No. 50-293
Renewed License No. DPR-35

REFERENCES:

1. BWRVIP-41, Rev.3, "BWR Jet Pump Assembly Inspection and Flaw Evaluation Guidelines"
2. BWRVIP-76, Rev.1-A, "BWR Core Shroud Inspection and Flaw Evaluation Guidelines"
3. BWRVIP-139-A, "BWR Steam Dryer Inspection and Flaw Evaluation Guidelines
4. BWRVIP-180, Rev.0, "BWR Access Hole Cover Inspection and Flaw Evaluation Guidelines"
5. BWRVIP-94NP, Rev.2, "BWR Program Implementation Guidelines"
6. U.S. Nuclear Regulatory Commission Letter to Entergy, Supplemental Safety Evaluation Report Related to the License Renewal of Pilgrim Nuclear Power Station (TAC No. MC9669), June 30, 2011. (1.11.076)

LETTER NUMBER: 2.16.016

Dear Sir or Madam:

Entergy Nuclear Operations, Inc. hereby informs the NRC of specific deviations from the inspection guidelines described in BWRVIP-41, Rev.3 (Reference 1), BWRVIP-76, Rev.1-A (Reference 2), BWRVIP-139-A (Reference 3) and BWRVIP-180, Rev.0 (Reference 4) in accordance with BWRVIP-94NP, Rev.2 (Reference 5) at Pilgrim Nuclear Power Station (PNPS).

Reference 5 requires notification to the NRC anytime a utility does not implement any portion of an applicable "mandatory" or "needed" BWR Vessel and Internals Project (BWRVIP) guideline that has been approved by the BWRVIP Executive Committee within 45 days of the utility executive concurrence with the deviation disposition.

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The deviations listed in Table 1 of the Attachment are all deviations from BWRVIP guidelines that are classified as "needed" elements of the BWRVIP program. The deviations are due to Entergy's recent announcement of plant closure, performance deficiencies with vendor ultrasonic testing tooling and plant configuration interferences to weld examinations.

Entergy announced in October 2015 that Pilgrim Nuclear Power Station will be permanently retired from active service not later than June 1, 2019.

Table 1 lists the deviation from BWRVIP guidelines, the justification for the deviation and any alternative actions in lieu of the BWRVIP requirements. Table 1 also lists the Pilgrim Station License Renewal Commitment Number associated with the corresponding BWRVIP guidelines document, if any (Reference 6).

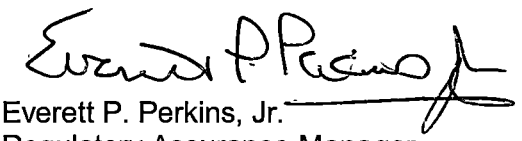
The deviations from the listed BWRVIP guidelines have been reviewed and approved in accordance with Entergy procedures and NEI 03-08 guidance. The deviations will remain in effect until the end of cycle 22 (Spring 2019 when Pilgrim will cease commercial operation).

If you have any questions or require additional information, please contact me at (508) 830-8323.

This is a notification of deviation only, and no action is being requested from the NRC.

There are no regulatory commitments made in this letter.

Sincerely,



Everett P. Perkins, Jr.
Regulatory Assurance Manager

EPP/mw

Attachment: TABLE 1 – Deviation Listing

cc:

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NRC Senior Resident Inspector
Pilgrim Nuclear Power Station

Attachment

Letter Number 2.16.016

TABLE 1 – Deviation Listing

(4 Pages)

TABLE 1 – Deviation Listing

BWRVIP Guidelines Document No.	Deviation from BWRVIP Guidelines	Justification for Deviation	Alternative Actions / License Renewal Regulatory Commitment
BWRVIP-41, Rev.3	Pilgrim Station is required to re-inspect all jet pump (JP) beam BB-1 and BB-2 regions by UT methods by 2017; a 10-year re-inspection frequency (There are a total of 20 JPs). Instead, Pilgrim plans to perform an EVT-1 visual examination of all beams during the 2017 (RFO21) last planned refuel outage in lieu of UT re-inspection examination required by BWRVIP-41, Rev.3, Table 2-4.	Pilgrim replaced all 20 original JP beams with the improved Group 2 beams in 1984 and has subsequently examined all beams by UT method per BWRVIP guidelines without any relevant indications. The BWRVIP 10-year re-inspection frequency is based on a normal water chemistry environment. However, Pilgrim's superior water chemistry environment should be conducive to a longer re-inspection interval, i.e., no-less than a 12-year interval ending in 2019 when the plant will be retired from active service. The alternative proposed EVT-1 examination of all 20 beams in 2017 will provide additional assurance that sufficient structural integrity exists to justify an additional cycle of operation to 2019. This alternative method is appropriate as the EVT-1 method has the capability to detect Intergranular Stress Corrosion Cracking (IGSCC) initiating from visible areas of the top surface and IGSCC is the only known significant degradation mechanism associated with JP beams.	Pilgrim plans to perform an EVT-1 visual examination of all 20 beams during the 2017 (RFO21) refuel outage in lieu of UT re-inspection examination required by BWRVIP-41, Rev.3, Table 2-4. There are no License Renewal Commitments for inspection of jet pump beams. Upon BWRVIP approval, this deviation disposition constitutes an approved plant-specific application of the BWRVIP guidelines.

TABLE 1 – Deviation Listing

BWRVIP Guidelines Document No.	Deviation from BWRVIP Guidelines	Justification for Deviation	Alternative Actions / License Renewal Regulatory Commitment
BWRVIP-76, Rev.1-A	Pilgrim is required to re-inspect core shroud beltline vertical welds V15, V16, V17 and V18 by either a UT volumetric or two-sided EVT-1 visual examination method by 2017. The deviation is a one-time two-year extension over the 10-year re-inspection interval for the UT inspection strategy of the core shroud beltline vertical welds V15, V16, V17 and V18 as required by BWRVIP-76, Rev.1-A, Figure 3-3. The two year extension is from 2017 to 2019, when Pilgrim plans to cease operations.	Pilgrim is a BWR-3 with a repaired Category C core shroud. The plant installed a pre-emptive shroud repair in 1995 to structurally replace shroud horizontal welds H1 through H10. The repair consists of four tie-rods installed at azimuths 45°, 135°, 225° and 315° which coincide with azimuthal locations of shroud vertical welds V15, V16, V17 and V18. These tie-rod locations completely prevent inspection access to the welds from the shroud exterior surface and would require peripheral fuel removal for interior access. Pilgrim has an extensive history of shroud inspections with no relevant indications by visual or UT methods. The four vertical welds V15, V16, V17 and V18 were last inspected in 2007 with a full volumetric UT method from the shroud interior surface achieving >90% coverage of all four welds with no relevant indications noted. These shroud welds are fully mitigated by Hydrogen Water Chemistry (HWC) and Noble Metals Chemical Addition (NMCA) to prevent or reduce the effects of IGSCC. Fleet operating experience shows "very little vertical weld cracking has occurred within the U.S. fleet" as stated in BWRVIP-278, Section 5.3.2. Pilgrim performed plant-specific calculations in accordance with BWRVIP guidelines and conservatively concluded that the 20% extension over the 10-year inspection interval is structurally acceptable to justify an additional cycle of operation.	Pilgrim performed plant-specific calculations in accordance with BWRVIP guidelines and conservatively concluded that the one-time 20% extension over the 10-year inspection interval is structurally acceptable to justify an additional cycle of operation. There are no License Renewal Commitments for inspection of core shroud welds. Upon BWRVIP approval, this deviation disposition constitutes an approved plant-specific application of the BWRVIP guidelines.

TABLE 1 – Deviation Listing

BWRVIP Guidelines Document No.	Deviation from BWRVIP Guidelines	Justification for Deviation	Alternative Actions / License Renewal Regulatory Commitment
BWRVIP-139-A	Pilgrim is required to re-inspect steam dryer interior key locations and a 10% sampling of other dryer interior welds every 10 years as detailed in BWRVIP-139-A, Section 5.3.4(D) by the visual VT-1(89) method by 2017. The deviation is a one-time two-year extension over the 10-year re-inspection interval for selected interior locations from 10 to 12 years (2017 to 2019, when Pilgrim plans to cease operations).	Pilgrim has complied with the inspection requirements of BWRVIP-139-A and previously with GE SIL No.644. PNPS recently completed the re-inspection of exterior dryer locations required by BWRVIP-139-A in 2015. The Pilgrim steam dryer is a non-safety-related component with no history of significant structural degradation. Seven of a total ten tie-bars were structurally replaced in 2005 per BWRVIP-181-A repair guidelines. The interior structure of the square hood dryer configuration does not have diagonal bracings and interior brackets that have caused high stress concentrations in some dryer designs. Inspection of this component is an economic issue directed primarily at preventing the generation of loose parts in the reactor vessel. There have been few indications in dryer welds or components but these indications have been re-inspected repeatedly and have shown to be stable with no evidence of crack growth or continued degradation. However, one new indication was identified in 2015 when original tie-bar #8 was found to be partially cracked. Tie-bar #8 will be re-inspected (and re-evaluated) in 2017 along with adjacent tie-bars #6 and #7. An evaluation confirmed that tie–bar #8 does not present a loose-parts concern. The structural integrity of the dryer is monitored by Chemistry during power operations via moisture carryover analysis in accordance with Entergy fleet and plant procedures. Based on moisture carryover trends since 2005, there has been no indication of a reduction in the structural integrity of the steam dryer. Pilgrim has not installed a power uprate other than a thermal power uprate. It is therefore reasonable to conclude that the alternative plans to re-examine tie-bars #6, #7 and #8 in 2017, will provide sufficient assurance to maintain the structural integrity of the dryer for an additional cycle of operation to 2019.	Pilgrim plans to visually examine tie-bars #6, #7 and #8 in 2017 (RFO21). License Renewal Commitment No.37 (TAC No. MC9569) This is a one-time action. Upon BWRVIP approval, this deviation disposition constitutes an approved plant-specific application of the BWRVIP guidelines.

TABLE 1 – Deviation Listing

BWRVIP Guidelines Document No.	Deviation from BWRVIP Guidelines	Justification for Deviation	Alternative Actions / License Renewal Regulatory Commitment
BWRVIP-180, Rev.0	Pilgrim is required to complete a UT baseline examination of the access hole cover (AHC) weld at 180° by 2017. Pilgrim successfully completed the baseline UT of the 0° AHC in 2015 but deferred examination of the 180° cover to the 2017 refuel outage due to adverse inspection tooling issues which prevented completion of the baseline examination of the 180° AHC in 2015. Instead, Pilgrim plans to perform an EVT-1 visual examination of the 180° AHC in 2017, in lieu of UT examination required by BWRVIP-180, Rev.0, Section 9.1.	Pilgrim has an extensive inspection history regarding the AHCs with no service-induced recordable indications since the first UT examination in RFO8 (1991). The similarly constructed AHC weld at azimuth 0° was recently examined with UT in RFO20 (2015) with 100% coverage achieved and no service-induced relevant indications. The BWRVIP-180 inspection guidelines allow use of the EVT-1 examination method until such time as a UT technique is demonstrated and documented by the BWRVIP. The UT technique was demonstrated by EPRI/GEH however, the UT tooling used at Pilgrim Station in RFO20 lacked reliability as it could only examine the AHC at the 0° but not at the 180° side as planned. The AHC design at Pilgrim Station is unique to the industry consisting of an "intermediate" thickness configuration that required a hybrid combination of "thin" and "thick" mockups for the EPRI/GEH demonstration. The AHC welds are highly flaw tolerant. Only a small percentage of the AHC 360° circumferential seal weld is required to maintain a leak-tight barrier. There are no known industry operating experience reports of cracking in AHCs since the BWR fleet implemented improved water chemistry. The AHCs at Pilgrim Station are mitigated by HWC and NMCA. The planned EVT-1 alternative method is appropriate as the EVT-1 method has the capability to detect IGSCC initiating from visible areas of the AHC top surface and IGSCC is the only known degradation mechanism for this weld.	Pilgrim plans to perform an EVT-1 visual examination of the 180 degree AHC in 2017 (RFO21). License Renewal Commitment No.34 (TAC No. MC9669) This is a one-time action. Upon BWRVIP approval, this deviation disposition constitutes an approved plant-specific application of the BWRVIP guidelines.