



**Entergy Nuclear Operations, Inc.**  
Pilgrim Nuclear Power Station  
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**Stephen J. Bethay**  
Director, Nuclear Assessment

August 28, 2007

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

**SUBJECT:** Entergy Nuclear Operations, Inc.  
Pilgrim Nuclear Power Station  
Docket No. 50-293 License No. DPR-35  
License Renewal Application Amendment 20

**REFERENCES:** 1. Entergy Letter, License Renewal Application, dated  
January 25, 2006 (TAC MC9669)  
2. Entergy Letter, License Renewal Application Amendment 19,  
dated July 30, 2007

**LETTER NUMBER:** 2.07.073

Dear Sir or Madam:

In Reference 1, Entergy Nuclear Operations, Inc. applied for renewal of the Pilgrim Nuclear Power Station operating license.

Attachment A provides supplemental information for Entergy's response to NRC request for additional information (RAI) provided by Reference 2 associated with license renewal application (LRA) commitment #31. Attachment B provides changes to LRA Appendix A.2.2.2.3.

This letter contains no regulatory commitments.

If you have questions regarding this subject, please contact me at (508) 830-7800.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 28, 2007.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen J. Bethay".  
Stephen J. Bethay  
Director, Nuclear Safety Assessment

ERS/dl

Attachments

Attachment A: Supplemental Information for the Entergy Response to the NRC Request for Additional Information 4.3.3-1 Related to Pilgrim LRA Commitment #31

Attachment B: Changes to LRA Appendix A.2.2.2.3

Entergy Nuclear Operations, Inc.  
Pilgrim Nuclear Power Station

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cc: with Attachments

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**Attachment A to Letter 2.07.073**  
**(1 page)**

**Supplemental Information for the Entergy Response to NRC Request for Additional Information**  
**4.3.3-1 Related to Pilgrim LRA Commitment #31**

Pilgrim Nuclear Power Station (PNPS) will comply with Commitment #31 as part of the Fatigue Monitoring Program (FMP) in accordance with 10 CFR 54.21(c)(1)(iii). This is accomplished as follows.

(1) NUREG-1801, Program X.M1, Metal Fatigue of Reactor Coolant Pressure Boundary, Element 4, Detection of Aging Effects, states "The program provides for periodic update of the fatigue usage calculations." Commitment #31 to refine the current fatigue analyses to include the effects of reactor water environment specifies details for updating the fatigue usage calculations consistent with this element (Element 4) of NUREG-1801, X.M1. The refined analyses will be accomplished as described in Commitment #31 with the clarifying details described in our July 30, 2007 response to RAI 4.3.3-1.

(2) NUREG-1801, Program X.M1, Element 7, Corrective Actions, states "The program provides for corrective actions to prevent the usage factor from exceeding the design code limit during the period of extended operation. Acceptable corrective actions include repair of the component, replacement of the component, and a more rigorous analysis of the component to demonstrate that the design code limit will not be exceeded during the extended period of operation. For programs that monitor a sample of high fatigue usage locations, corrective actions include a review of additional affected reactor coolant pressure boundary locations." Commitment #31 includes corrective actions to prevent the usage factor from exceeding the design code limit during the period of extended operation consistent with this element (Element 7) of the NUREG-1801, X.M1. Those corrective actions are the three options specified in the commitment for fatigue management if ongoing monitoring indicates a potential for a condition outside the analyses bounds.

The LRA and subsequent amendments treated the actions specified under Commitment #31 as separate from the PNPS Fatigue Monitoring Program and took exception to the consideration of reactor water environment in the program. Combining Commitment #31 with the FMP combines activities that the staff has reviewed as separate items. No new technical information or activities are introduced by combining these items. By considering the actions specified in Commitment #31 part of the FMP, the FMP becomes consistent with NUREG-1801 with no exceptions.

**Attachment B to Letter 2.07.073**  
**(1 page)**

Changes to LRA Appendix A.2.2.2.3

**A.2.2.2.3 Environmental Effects on Fatigue**

The effects of reactor water environment on fatigue were evaluated for license renewal. Projected cumulative usage factors (CUFs) were calculated for the limiting locations identified in NUREG/CR-6260. Several locations may exceed a CUF of 1.0 with consideration of environmental effects during the period of extended operation. For these locations, ~~prior to the period of extended operation, PNPS will (1) refine the fatigue analysis to lower the predicted CUF to less than 1.0; (2) manage fatigue at the affected locations with an inspection program that has been reviewed and approved by the NRC (e.g., periodic non-destructive examination of the affected locations at inspection intervals to be determined by a method acceptable to the NRC); or (3) repair or replace the affected locations.~~ at least 2 years prior to entering the period of extended operation, for the locations identified in NUREG/CR-6260 for BWRs of the PNPS vintage, PNPS will refine our current fatigue analyses to include the effects of reactor water environment and verify that the cumulative usage factors (CUFs) are less than 1. This includes applying the appropriate Fen factors to valid CUFs determined in accordance with one of the following:

1. For locations, including NUREG/CR-6260 locations, with existing fatigue analysis valid for the period of extended operation, use the existing CUF to determine the environmentally adjusted CUF.
2. More limiting PNPS-specific locations with a valid CUF may be added in addition to the NUREG/CR-6260 locations.
3. Representative CUF values from other plants, adjusted to or enveloping the PNPS plant specific external loads may be used if demonstrated applicable to PNPS.
4. An analysis using an NRC-approved version of the ASME code or NRC-approved alternative (e.g., NRC-approved code case) may be performed to determine a valid CUF.

During the period of extended operation, PNPS may also use one of the following options for fatigue management if ongoing monitoring indicates a potential for a condition outside the analysis bounds noted above:

- 1) Update and/or refine the affected analyses described above.
- 2) Implement an inspection program that has been reviewed and approved by the NRC (e.g., periodic nondestructive examination of the affected locations at inspection intervals to be determined by a method acceptable to the NRC).
- 3) Repair or replace the affected locations before exceeding a CUF of 1.0.

License renewal commitment 31 addresses environmental-assisted fatigue for the locations identified in NUREG/CR-6260 for BWRs of the PNPS vintage.