

**From:** "Sanchez, Edward" <esanch1@entergy.com>  
**To:** "Perry Buckberg" <PHB1@nrc.gov>, "James Kim" <JSK@nrc.gov>  
**Date:** 9/12/2007 12:51:36 PM  
**Subject:** Pilgrim Letter 2.07.078- Fluence benchmarking action plan

Perry and Jim,

Attached is a PDF copy of Entergy letter dated 9/12/07 to meet our commitment to provide NRC with an action plan to improve benchmarking data to support developmenmt of new P-T curves for Pilgrim. Original will be placed in US mail today.

Ed Sanchez  
Pilgrim Licensing

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**From:** "Sanchez, Edward" <esanch1@entergy.com>

**Created By:** esanch1@entergy.com

**Recipients**

"Perry Buckberg" <PHB1@nrc.gov>  
"James Kim" <JSK@nrc.gov>

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Ed Sanchez  
Pilgrim Licensing



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

September 12, 2007

Stephen J. Bethay  
Director, Nuclear Assessment

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 Commitment 47 Response

REFERENCES:

1. Entergy Letter, License Renewal Application, dated January 25, 2006 (TAC MC9669)
2. Entergy Letter, Proposed Change to the Applicability of Pilgrim's Pressure-Temperature Curves, dated January 15, 2007
3. Entergy Letter, License Renewal Application Amendment 16, dated May 1, 2007
4. Entergy Letter, License Renewal Application Commitment 47 Response, dated August 23, 2007

LETTER NUMBER: 2.07.078

Dear Sir or Madam:

In Reference 1, Entergy Nuclear Operations, Inc. applied for renewal of the Pilgrim Nuclear Power Station operating license. In Reference 2, Entergy made a commitment to submit to the NRC an action plan to improve benchmarking data to support approval of new P-T curves beyond cycle 18 for Pilgrim. This commitment was reaffirmed in Reference 3 as part of License Renewal Application Amendment 16. This letter supersedes Reference 4. Attachment A provides the action plan to address this commitment.

This letter contains no new commitments. Please contact me at (508) 830-7800, if you have questions regarding this subject.

I declare under the penalty of perjury that the foregoing is true and correct. Executed on September 12, 2007.

Sincerely,

  
Stephen J. Bethay  
Director, Nuclear Safety Assessment

ERS/dl

Attachment A: Action Plan to Improve Benchmarking Data (2 pages)

cc: with Attachments

Mr. Perry Buckberg  
Project Manager  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Alicia Williamson  
Project Manager  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Susan L. Uttal, Esq.  
Office of the General Counsel  
U.S. Nuclear Regulatory Commission  
Mail Stop O-15 D21  
Washington, DC 20555-0001

Sheila Slocum Hollis, Esq.  
Duane Morris LLP  
1667 K Street N.W., Suite 700  
Washington, DC 20006

cc: without Attachments

Mr. James S. Kim, Project Manager  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
One White Flint North O-8C2  
11555 Rockville Pike  
Rockville, MD 20852

Mr. Jack Strosnider, Director  
Office of Nuclear Material and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-00001

Mr. Samuel J. Collins, Administrator  
Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

NRC Resident Inspector  
Pilgrim Nuclear Power Station

Mr. Joseph Rogers  
Commonwealth of Massachusetts  
Assistant Attorney General  
Division Chief, Utilities Division  
1 Ashburton Place  
Boston, MA 02108

Mr. Matthew Brock, Esq.  
Commonwealth of Massachusetts  
Assistant Attorney General  
Environmental Protection Division  
One Ashburton Place  
Boston, MA 02108

Diane Curran, Esq.  
Harmon, Curran, and Eisenberg, L.L.P.  
1726 M Street N.W., Suite 600  
Washington, DC 20036

Mr. Robert Walker, Director  
Massachusetts Department of Public Health  
Radiation Control Program  
Schraft Center, Suite 1M2A  
529 Main Street  
Charlestown, MA 02129

Mr. Ken McBride, Director  
Massachusetts Energy Management Agency  
400 Worcester Road  
Framingham, MA 01702

Mr. James E. Dyer, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-00001

## ATTACHMENT A to Letter 2.07.078

### Action Plan to Improve Benchmarking Data

By letter dated January 15, 2007, Entergy made a commitment to submit to the NRC an action plan to improve benchmarking data to support approval of new P-T curves for Pilgrim Station for operation beyond cycle 18. In addition, the draft Safety Evaluation Report for Pilgrim's license renewal application issued in March 2007 contained Open Item (OI) 4.2 related to neutron fluence calculations necessary to support new Pressure-Temperature (P-T) curves for Pilgrim Station beyond cycle 18. By letter dated May 1, 2007 Entergy submitted license renewal application amendment 16 which contained a response to address OI 4.2 that included commitment #47 to submit to the NRC an action plan to improve benchmarking data to support approval of new P-T curves for Pilgrim Station.

The benchmarking validation of the RAMA fluence calculation is ongoing for the Pilgrim reactor vessel and internals. Uncertainties between the calculated and measured results from the dosimetry are still being examined to determine a possible cause for the discrepancy. The following is the current plan that identifies all actions Entergy is pursuing to resolve the issue. Some of the actions have been completed.

1. Perform a sensitivity study to validate accuracy of the input data for the fluence model. This effort is two-fold: Based on the fact that most of the core power history is from dosimetry that was removed from the Pilgrim vessel during refueling outage (RFO) 4, Entergy is performing a detailed review of the power history developed to determine if adjustments are warranted. In addition, our vendor is reviewing the RAMA fluence model to assure that input assumptions are not compounding the calculated to measured (C/M) bias. This effort is being undertaken to refine the original model, however, it is recognized that it will not lead to resolution of the issue.
2. The copper flux wires from the RFO 4 capsule pull were recently retested and results were similar to the original measurements. Entergy has also independently reviewed and validated the dosimetry counting methods used by the contracted vendor. They are considered to be accurate and correct. This effort was undertaken to verify that the original results were valid.
3. Determine whether it would be useful to analyze jet pump swing gate samples that were removed from the Pilgrim vessel during RFO 16 in 2007 to obtain fluence information for the required benchmark to resolve the issue.
4. Review data from a similar EPRI sponsored BWR-3 to determine if it can be used to document an acceptable Regulatory Guide 1.190 C/M bias for a BWR-3 using the RAMA code. This could ultimately lead to resolution of the issue.
5. Confirm with precision, the as-built dimensions for the location of the remaining dosimetry capsules in the Pilgrim reactor vessel. If the C/M bias is not adequately resolved by the preceding actions, then evaluate the removal of dosimetry from a surveillance capsule in the Pilgrim vessel during RFO 17 scheduled for the spring of 2009. This dosimetry would then be analyzed to obtain an accurate fluence history for use in developing new P-T curves. This could ultimately lead to resolution of the issue.
6. Consider contracting an independent vendor to model the vessel and perform a fluence calculation as a verification of the current results. Use of the data from action 3, 4 or 5 above would be required as input. This could ultimately lead to resolution of the issue.

## **ATTACHMENT A to Letter 2.07.078**

### **Action Plan to Improve Benchmarking Data (continued)**

This action plan contains a number of potential success paths that were developed from a Kepner-Tregoe analysis conducted by Entergy. Although there are several actions identified, Entergy believes that one of the following two approaches in the action plan, pursued in parallel, will be successful. As identified in Action 4, an EPRI sponsored BWR-3 is currently being modeled using the RAMA code. It is anticipated that the fluence results from the EPRI sponsored plant will provide the successful benchmark required by Regulatory Guide 1.190 for the BWR-3 design eliminating the need for a Pilgrim specific benchmark. In case Action 4 is not successful, Entergy is working in parallel to that effort (Action 5) to obtain precise measurements of an existing capsule location in the Pilgrim reactor vessel to support removal of dosimetry in the spring 2009 refueling outage for use in developing a new fluence calculation benchmark. Although Action 3 may also lead to resolution of the issue, Entergy currently believes that one of the two approaches outlined in Actions 4 and 5 will be successful in meeting the Regulatory Guide 1.190 benchmark requirements for the BWR-3 design.

This letter meets the commitment made by Entergy in the two letters referenced above and will allow for successful resolution of the data benchmarking issue to support the development of new P-T curves for Pilgrim.