

Perry Buckberg - Pilgrim LRA Amendment 19 - 7/30/2007

From: Perry Buckberg
To: James Davis; James Medoff; Kaihwa Hsu; Peter Wen
Date: 7/30/2007 1:47 PM
Subject: Pilgrim LRA Amendment 19 - 7/30/2007
CC: Jonathan Rowley; Kenneth Chang ; Kent Howard; Louise Lund; Pao-Tsin Kuo

Folks

Please see the attached advance copy of Pilgrim LRA amendment 19 that just arrived via e-mail.

Perry

Mail Envelope Properties (46AE2436.194 : 9 : 8248)

Subject: Pilgrim LRA Amendment 19 - 7/30/2007
Creation Date 7/30/2007 1:47:34 PM
From: Perry Buckberg
Created By: PHB1@nrc.gov

Recipients	Action	Date & Time
nrc.gov OWGWPO03.HQGWDO01 PM JAD (James Davis) KXC2 CC (Kenneth Chang)	Delivered	7/30/2007 1:47:43
nrc.gov OWGWPO04.HQGWDO01 PM KLH1 CC (Kent Howard) KRH2 (Kaihwa Hsu) PTK CC (Pao-Tsin Kuo)	Delivered	7/30/2007 1:47:43
nrc.gov TWGWPO01.HQGWDO01 PM JXM (James Medoff) LXL CC (Louise Lund)	Delivered	7/30/2007 1:47:43
nrc.gov TWGWPO03.HQGWDO01 PM JGR CC (Jonathan Rowley)	Delivered	7/30/2007 1:47:42
nrc.gov TWGWPO04.HQGWDO01 PM PXW (Peter Wen)	Delivered	7/30/2007 1:47:43

Post Office	Delivered	Route
OWGWPO03.HQGWDO01	7/30/2007 1:47:43 PM	nrc.gov
OWGWPO04.HQGWDO01	7/30/2007 1:47:43 PM	nrc.gov
TWGWPO01.HQGWDO01	7/30/2007 1:47:43 PM	nrc.gov
TWGWPO03.HQGWDO01	7/30/2007 1:47:42 PM	nrc.gov
TWGWPO04.HQGWDO01	7/30/2007 1:47:43 PM	nrc.gov

Files	Size	Date & Time
MESSAGE	541	7/30/2007 1:47:35 PM
TEXT.htm	401	
Pilgrim LRA Amendment 19 7_30_2007.pdf	1382019	7/30/2007 1:18:32 PM

Options

Auto Delete:	No
Expiration Date:	None
Notify Recipients:	Yes
Priority:	Standard
ReplyRequested:	No
Return Notification:	None

Concealed Subject:	No
Security:	Standard

To Be Delivered:	Immediate
Status Tracking:	Delivered



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

Stephen J. Bethay
Director, Nuclear Assessment

July 30, 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 19

REFERENCES: 1. Entergy Letter, License Renewal Application, dated
January 25, 2006 (TAC MC9669)
2. NRC Request for additional information for review of the Pilgrim
License Renewal Application, dated July 26, 2007

LETTER NUMBER: 2.07.064

Dear Sir or Madam:

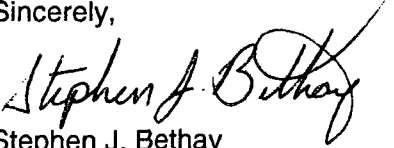
In Reference 1, Entergy Nuclear Operations, Inc. applied for renewal of the Pilgrim Nuclear Power Station operating license.

Attachment A provides a revised listing of regulatory commitments. Attachment B provides Entergy's response to the request for additional information (RAI) in Reference 2 associated with commitment 31 related to the Pilgrim license renewal application (LRA). Attachment C contains the revision to Commitment 31.

Please contact Mr. Bryan Ford, (508) 830-8403, if you have questions regarding this subject.

I declare under penalty of perjury that the foregoing is true and correct. Executed on
July 30, 2007.

Sincerely,


Stephen J. Bethay
Director Nuclear Safety Assessment

ERS/dl

Attachments: A: Revised List of Regulatory Commitments
B: Response to the NRC Request for Additional Information
Related to Pilgrim LRA Commitment 31
C: Revision to Pilgrim LRA Commitment 31

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

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

NRC Resident Inspector
Pilgrim Nuclear Power Station

ATTACHMENT A to Letter 2.07.064

(8 pages)

Revised List of Regulatory Commitments

ATTACHMENT A to Letter Number 2.07.064**Revised List of Regulatory Commitments**

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./Comments
1	Implement the Buried Piping and Tanks Inspection Program as described in LRA Section B.1.2.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.2 / Audit Item 320
2	Enhance the implementing procedure for ASME Section XI Inservice Inspection and testing to specify that the guidelines in Generic Letter 88-01 or approved BWRVIP-75 shall be considered in determining sample expansion if indications are found in Generic Letter 88-01 welds.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.6 / Audit Item 320
3	Inspect fifteen (15) percent of the top guide locations using enhanced visual inspection technique, EVT-1, within the first 18 years of the period of extended operation, with at least one-third of the inspections to be completed within the first six (6) years and at least two-thirds within the first 12 years of the period of extended operations. Locations selected for examination will be areas that have exceeded the neutron fluence threshold.	As stated in the commitment.	Letters 2.06.003 2.06.057 2.06.064 2.06.081	B.1.8 / Audit Items 155, 320
4	Enhance the Diesel Fuel Monitoring Program to include quarterly sampling of the security diesel generator fuel storage tank. Particulates (filterable solids), water and sediment checks will be performed on the samples. Filterable solids acceptance criteria will be = 10 mg/l. Water and sediment acceptance criteria will be = 0.05%.	June 8, 2012	Letters 2.06.003 2.06.057 2.06.089	B.1.10 / Audit Items 320, 566
5	Enhance the Diesel Fuel Monitoring Program to install instrumentation to monitor for leakage between the two walls of the security diesel generator fuel storage tank to ensure that significant degradation is not occurring.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.10 / Audit Items 155, 320
6	Enhance the Diesel Fuel Monitoring Program to specify acceptance criterion for UT measurements of emergency diesel generator fuel storage tanks (T-126A&B).	June 8, 2012	Letters 2.06.003 2.06.057	B.1.10 / Audit Items 165, 320

ATTACHMENT A to Letter Number 2.07.064

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./Comments
7	Enhance Fire Protection Program procedures to state that the diesel engine sub-systems (including the fuel supply line) shall be observed while the pump is running. Acceptance criteria will be enhanced to verify that the diesel engine did not exhibit signs of degradation while it was running; such as fuel oil, lube oil, coolant, or exhaust gas leakage. Also, enhance procedures to clarify that the diesel-driven fire pump engine is inspected for evidence of corrosion in the intake air, turbocharger, and jacket water system components as well as lube oil cooler. The jacket water heat exchanger is inspected for evidence of corrosion or buildup to manage loss of material and fouling on the tubes. Also, the engine exhaust piping and silencer are inspected for evidence of internal corrosion or cracking.	June 8, 2012	Letters 2.06.003 2.06.057 2.06.064	B.1.13.1 / Audit Items 320, 378
8	Enhance the Fire Protection Program procedure for Halon system functional testing to state that the Halon 1301 flex hoses shall be replaced if leakage occurs during the system functional test.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.13.1 / Audit Item 320
9	Enhance Fire Water System Program procedures to include inspection of hose reels for corrosion. Acceptance criteria will be enhanced to verify no significant corrosion.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.13.2 / Audit Item 320
10	Enhance the Fire Water System Program to state that a sample of sprinkler heads will be inspected using guidance of NFPA 25 (2002 Edition) Section 5.3.1.1.1. NFPA 25 also contains guidance to repeat this sampling every 10 years after initial field service testing.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.13.2 / Audit Item 320
11	Enhance the Fire Water System Program to state that wall thickness evaluations of fire protection piping will be performed on system components using non-intrusive techniques (e.g., volumetric testing) to identify evidence of loss of material due to corrosion. These inspections will be performed before the end of the current operating term and at intervals thereafter during the period of extended operation. Results of the initial evaluations will be used to determine the appropriate inspection interval to ensure aging effects are identified prior to loss of intended function.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.13.2 / Audit Item 320
12	Implement the Heat Exchanger Monitoring Program as described in LRA Section B.1.15.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.15 / Audit Item 320

ATTACHMENT A to Letter Number 2.07.064

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./Comments
13	Enhance the Instrument Air Quality Program to include a sample point in the standby gas treatment and torus vacuum breaker instrument air subsystem in addition to the instrument air header sample points.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.17 / Audit Item 320
14	Implement the Metal-Enclosed Bus Inspection Program as described in LRA Section B.1.18.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.18 / Audit Item 320
15	Implement the Non-EQ Inaccessible Medium-Voltage Cable Program as described in LRA Section B.1.19. Include developing a formal procedure to inspect manholes for in-scope medium voltage cable.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.19 / Audit items 311, 320
16	Implement the Non-EQ Instrumentation Circuits Test Review Program as described in LRA Section B.1.20.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.20 / Audit Item 320
17	Implement the Non-EQ Insulated Cables and Connections Program as described in LRA Section B.1.21.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.21 / Audit Item 320
18	Enhance the Oil Analysis Program to periodically change CRD pump lubricating oil. A particle count and check for water will be performed on the drained oil to detect evidence of abnormal wear rates, contamination by moisture, or excessive corrosion.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.22 / Audit Item 320
19	Enhance Oil Analysis Program procedures for security diesel and reactor water cleanup pump oil changes to obtain oil samples from the drained oil. Procedures for lubricating oil analysis will be enhanced to specify that a particle count and check for water are performed on oil samples from the fire water pump diesel, security diesel, and reactor water cleanup pumps.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.22 / Audit Item 320
20	Implement the One-Time Inspection Program as described in LRA Section B.1.23.	June 8, 2012	Letters 2.06.003 2.06.057 2.07.023	B.1.23 / Audit Items 219, 320
21	Enhance the Periodic Surveillance and Preventive Maintenance Program as necessary to assure that the effects of aging will be managed as described in LRA Section B.1.24.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.24 / Audit Item 320
22	Enhance the Reactor Vessel Surveillance Program to proceduralize the data analysis, acceptance criteria, and corrective actions described in LRA Section B.1.26.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.26 / Audit Item 320

ATTACHMENT A to Letter Number 2.07.064

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./Comments
23	Implement the Selective Leaching Program in accordance with the program as described in LRA Section B.1.27.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.27 / Audit Item 320
24	Enhance the Service Water Integrity Program procedure to clarify that heat transfer test results are trended.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.28 / Audit Item 320
25	Enhance the Structures Monitoring Program procedure to clarify that the discharge structure, security diesel generator building, trenches, valve pits, manholes, duct banks, underground fuel oil tank foundations, manway seals and gaskets, hatch seals and gaskets, underwater concrete in the intake structure, and crane rails and girders are included in the program. In addition, the Structures Monitoring Program will be revised to require opportunistic inspections of inaccessible concrete areas when they become accessible.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.29.2 / Audit Items 238, 320
26	Enhance Structures Monitoring Program guidance for performing structural examinations of elastomers (seals, gaskets, seismic joint filler, and roof elastomers) to identify cracking and change in material properties.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.29.2 / Audit Item 320
27	Enhance the Water Control Structures Monitoring Program scope to include the east breakwater, jetties, and onshore revetments in addition to the main breakwater.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.29.3 / Audit Item 320
28	Enhance System Walkdown Program guidance documents to perform periodic system engineer inspections of systems in scope and subject to aging management review for license renewal in accordance with 10 CFR 54.4(a)(1) and (a)(3). Inspections shall include areas surrounding the subject systems to identify hazards to those systems. Inspections of nearby systems that could impact the subject systems will include SSCs that are in scope and subject to aging management review for license renewal in accordance with 10 CFR 54.4(a)(2).	June 8, 2012	Letters 2.06.003 2.06.057	B.1.30 / Audit Items 320, 327
29	Implement the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program as described in LRA Section B.1.31.	June 8, 2012	Letters 2.06.003 2.06.057	B.1.31 / Audit Items 257, 320

ATTACHMENT A to Letter Number 2.07.064

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./Comments
30	Perform a code repair of the CRD return line nozzle to cap weld if the installed weld repair is not approved via accepted code cases, revised codes, or an approved relief request for subsequent inspection intervals.	June 30, 2015	Letter 2.06.057	B.1.3 / Audit Items 141, 320
31	<p>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:</p> <ol style="list-style-type: none"> 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. <p>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:</p> <ol style="list-style-type: none"> 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. 	<p>June 8, 2012</p> <p>June 8, 2010 for submitting the aging management program if PNPS selects the option of managing the affects of aging due to environmentally assisted fatigue.</p>	<p>Letters 2.06.057 2.06.064 2.06.081 2.07.005 2.07.064</p>	4.3.3 / Audit Items 302, 346
32	Implement the enhanced Bolting Integrity Program described in Attachment C of Pilgrim License Renewal Application Amendment 5 (Letter 2.06.064).	June 8, 2012	Letters 2.06.057 2.06.064 2.06.081	Audit items 364, 373, 389, 390, 432, 443, 470

ATTACHMENT A to Letter Number 2.07.064

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./Comments
33	PNPS will inspect the inaccessible jet pump thermal sleeve and core spray thermal sleeve welds if and when the necessary technique and equipment become available and the technique is demonstrated by the vendor, including delivery system.	As stated in the commitment.	Letter 2.06.057	Audit Items 320, 488
34	Within the first 6 years of the period of extended operation and every 12 years thereafter, PNPS will inspect the access hole covers with UT methods. Alternatively, PNPS will inspect the access hole covers in accordance with BWRVIP guidelines should such guidance become available.	June 8, 2018	Letters 2.06.057 2.06.089	Audit Items 320, 461
35	<p>At least 2 years prior to entering the period of extended operation, for reactor vessel components, including the feedwater nozzles, PNPS will implement one or more of the following:</p> <ul style="list-style-type: none"> (1) Refine the fatigue analyses to determine valid CUFs less than 1. Determine valid CUFs based on numbers of transient cycles projected to be valid for the period of extended operation. Determine CUFs in accordance with an NRC-approved version of the ASME code or NRC-approved alternative (e.g., NRC-approved code case). (2) Manage the effects of aging due to fatigue at the affected locations by 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). (3) Repair or replace the affected locations before exceeding a CUF of 1.0. <p>Should PNPS select the option to manage the aging effects due to fatigue during the period of extended operation, details of the aging management program such as scope, qualification, method, and frequency will be submitted to the NRC at least 2 years prior to the period of extended operation.</p>	<p>June 8, 2012</p> <p>June 8, 2010 for submitting the aging management program if PNPS selects the option of managing the affects of aging.</p>	Letters 2.06.057 2.06.064 2.06.081	Audit Item 345
36	To ensure that significant degradation on the bottom of the condensate storage tank is not occurring, a one-time ultrasonic thickness examination in accessible areas of the bottom of the condensate storage tank will be performed. Standard examination and sampling techniques will be utilized.	June 8, 2012	Letter 2.06.057	Audit Items 320, 363

ATTACHMENT A to Letter Number 2.07.064

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./Comments
37	The BWR Vessel Internals Program includes inspections of the steam dryer. Inspections of the steam dryer will follow the guidelines of BWRVIP-139 and General Electric SIL 644 Rev. 1.	June 8, 2012	Letter 2.06.089	A.2.1.8 / Conference call on September 25, 2006
38	Enhance the Diesel Fuel Monitoring Program to include periodic ultrasonic thickness measurement of the bottom surface of the diesel fire pump day tank. The first ultrasonic inspection of the bottom surface of the diesel fire pump day tank will occur prior to the period of extended operation, following engineering analysis to determine acceptance criteria and test locations. Subsequent test intervals will be determined based on the first inspection results.	June 8, 2012	Letter 2.06.089	B.1.10 / Audit Item 565
39	Perform a one-time inspection of the Main Stack foundation prior to the period of extended operation.	June 8, 2012	Letter 2.06.094	B.1.23 / Audit Item 581
40	Enhance the Oil Analysis Program by documenting program elements 1 through 7 in controlled documents. The program elements will include enhancements identified in the PNPS license renewal application and subsequent amendments to the application. The program will include periodic sampling for the parameters specified under the Parameters Monitored/Inspected attribute of NUREG-1801 Section XI.M39, Lubricating Oil Analysis. The controlled documents will specify appropriate acceptance criteria and corrective actions in the event acceptance criteria are not met. The basis for acceptance criteria will be defined.	June 8, 2012	Letter 2.06.094	B.1.22 / Audit Items 553 and 589
41	Enhance the Containment Inservice Inspection (CII) Program to require augmented inspection in accordance with ASME Section XI IWE-1240, of the drywell shell adjacent to the sand cushion following indications of water leakage into the annulus air gap.	June 8, 2012	Letter 2.06.094	A.2.1.17 and B.1.16.1
42	Implement the Bolted Cable Connections Program, described in Attachment C of Pilgrim License Renewal Application 11 (Letter 2.07.003), prior to the period of extended operation.	June 8, 2012	Letter 2.07.003	A.2.1.40 and B.1.34
43	Include within the Structures Monitoring Program provisions to ensure groundwater samples are evaluated periodically to assess the aggressiveness of groundwater to concrete, as described in Attachment E of LRA Amendment 12 (Letter 2.07.005), prior to the period of extended operation.	June 8, 2012	Letter 2.07.005	A.2.1.32 and B.1.29.2

ATTACHMENT A to Letter Number 2.07.064

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	Related LRA Section No./Comments
44	Perform another set of the UT measurements just above and adjacent to the sand cushion region prior to the period of extended operation and once within the first 10 years of the period of extended operation.	As stated in the commitment.	Letter 2.07.010	A.2.1.17 and B.1.16.1
45	If groundwater continues to collect on the torus room floor, obtain samples and test such water to determine its pH and verify the water is non-aggressive as defined in NUREG-1801 Section III.A1 item III.A.1-4 once prior to the period of extended operation and once every five years during the period of extended operation.	As stated in the commitment.	Letters 2.07.010 2.07.027 2.07.029	A.2.1.32 and B.1.29.2
46	Inspect the condition of a sample of the torus hold-down bolts and associated grout and determine appropriate actions based on the findings prior to the period of extended operation.	June 8, 2012	Letter 2.07.027	A.2.1.32 and B.1.29.2
47	Submit to the NRC an action plan to improve benchmarking data to support approval of new P-T curves for Pilgrim.	Sept.15, 2007	Letter 2.07.027	4.2.2, A.2.2.1.1, and A.2.2.1.2
48	On or before June 8, 2010, Entergy will submit to the NRC calculations consistent with Regulatory Guide 1.190 that will demonstrate limiting fluence values will not be reached during the period of extended operation.	June 8, 2010	Letter 2.07.027	4.2, 4.7.1, A.1.1 and A.2.2.1

ATTACHMENT B to Letter Number 2.07.064

(2 pages)

Entergy Response to the NRC Request for Additional Information
Related to Pilgrim LRA Commitment 31

ATTACHMENT B to Letter Number 2.07.064

RAI 4.3.3-1:

The license renewal application (LRA) for the Pilgrim Nuclear Power Station listed several reactor coolant pressure boundary components that did not receive a plant-specific metal fatigue analysis and cumulative usage factor (CUF). The applicant generated LRA Commitment No. 31 to address this issue. In the commitment, the applicant committed to take one of the following options or a combination of options to ensure that the time-limited aging analysis (TLAA) on environmentally-assisted fatigue (EAF) of these components, and any other Class 1 components requiring reanalysis for EAF, will be acceptable under 10 CFR 54.21(c)(1) for the period of extended operation:

Option (1): either refine the existing fatigue analyses or perform new fatigue analyses using at least one of four sub options under this option.

Option (2): manage aging by an aging management program for the period of extended operation.

Option (3): repair or replace the impacted component prior to exceeding a CUF of 1.0.

In order to make a determination on the acceptability of the applicant's TLAA on EAF under the requirements of 10 CFR 54.21(c)(1), the staff requests that the applicant provide additional information on the option(s) that will be used for LRA Commitment No. 31. The applicant is requested to describe the methodology that will be used for the chosen option(s) in sufficient detail for staff review. Specifically, the staff requests that:

- A. If Option (1) is chosen, describe the methodology and the process that will be used to ensure that assumptions, transients, cycles, external loadings, F_{en} values, and analysis methods are valid for the refined or new fatigue analyses.

In the event the refined analyses performed under Option (1) result in CUFs greater than 1.0, describe the option(s) that may be used in addition to Option (1).

- B. If Option (2) is chosen, describe the AMP in sufficient detail with regard to inspection scope, inspection methods, inspection frequency, and inspection qualification techniques.
- C. If Option (3) is chosen, describe how the repair or replacement activity will be implemented in accordance with applicable repair or replacement requirements of the ASME Code Section XI.

ATTACHMENT B to Letter Number 2.07.064

RAI 4.3.3-1 Response:

Pilgrim Nuclear Power Station (PNPS) intends to comply with Commitment 31 by demonstrating, through the implementation of Option (1), that the cumulative usage factors (CUF) of the most fatigue sensitive locations are less than 1.0 throughout the license renewal period, considering both mechanical and environmental effects. The processes that will be used to develop the calculations for Option (1) are established design and configuration management processes. These processes are governed by Entergy's 10 CFR 50 Appendix B Quality Assurance (QA) program and include design input verification and independent reviews ensuring that valid assumptions, transients, cycles, external loadings, analysis methods, and environmental fatigue life correction factors will be used in the refined or new fatigue analyses.

The analysis methods for determination of stresses and fatigue usage will be in accordance with an NRC endorsed Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III Rules for Construction of Nuclear Power Plant Components Division 1 Subsection NB, Class 1 Components, Sub articles NB-3200 or NB-3600 as applicable to the specific component.

PNPS will utilize design transients from PNPS Design Specifications as well as design transient information from typical BWR-3 references to bound all operational transients. The numbers of cycles used for evaluation will be based on the design number of cycles and actual PNPS cycle counts projected out to the end of the license renewal period (60 years).

Environmental effects on fatigue usage will be assessed using methodology consistent with the Generic Aging Lessons Learned Report, NUREG-1801, Rev. 1, (GALL) that states; "The sample of critical components can be evaluated by applying environmental life correction factors (F_{en} Methodology) to the existing ASME Code fatigue analyses. Formulae for calculating the environmental life correction factors are contained in NUREG/CR-6583 for carbon and low-alloy steels and in NUREG/CR-5704 for austenitic stainless steels."

The Fatigue Monitoring Program currently tracks actual plant transients and evaluates these against the design transients. Current cycle counts show no limits are approached or are expected to be approached for the current license term. The Fatigue Monitoring Program will ensure that the numbers of transient cycles experienced by the plant remain within the analyzed numbers of cycles and hence, the component CUFs remain below the values calculated in the design basis fatigue evaluations. If ongoing monitoring indicates the potential for a condition outside that analyzed above, PNPS may perform further reanalysis of the identified configuration using established configuration management processes as described above.

If Option (2) of revised Commitment 31 becomes necessary, the inspection program submitted for approval by the NRC will be described in terms of the ten elements specified in Branch Technical Position RLSB-1 (NUREG-1800, Appendix A-1). Parameters monitored will be the presence and sizing of cracks. Frequency of inspection and acceptance criteria will be established such that detection of aging effects will occur before there is a loss of the component intended function(s). The method of inspection will be a qualified volumetric technique based on plant-specific and industry-wide operating experience.

If Option (3) becomes necessary, repair or replacement of the affected component(s) will be in accordance with established plant procedures governing repair and replacement activities. These established procedures are governed by Entergy's 10 CFR 50 Appendix B QA program and meet the applicable repair or replacement requirements of the ASME Code Section XI.

ATTACHMENT C to Letter Number 2.07.064

Revision to Pilgrim LRA Commitment 31

As a result of the NRC Request for Additional Information (RAI) in Attachment B to this letter, Entergy hereby revises Commitment 31. This revised commitment is listed in Attachment A to this letter and reads as follows:

31	<p>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:</p> <ol style="list-style-type: none">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. <p>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:</p> <ol style="list-style-type: none">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.
----	--