Entergy

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

Kevin H. Bronson
Site Vice President

November 4, 2010

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

Retyped Technical Specification and Bases Pages Related to the Proposed License Amendment for the Relocation of Pressure-Temperatures (P-T) Curves to the Pressure and Temperature Limits Report (PTLR) (TAC No. ME3253)

REFERENCE: 1. Entergy Letter No. 2.10.005, "Proposed License Amendment to Technical Specifications: Revised P-T Limit Curves and Relocation of Pressure-Temperature (P-T) Curves to the Pressure and Temperature Limits Report (PTLR)", dated January 24, 2010

LETTER NUMBER: 2.10.049

Dear Sir or Madam:

This letter provides retyped Technical Specification (TS) and Bases pages related to the proposed License Amendment submitted by Reference 1. The retyped TS page 5.0-12, includes in section 5.5.9, item b, the reference to the NRC approved methodology with the added publication date, as requested by the NRC staff.

Attachment A provides all of the retyped Technical Specification and Bases pages.

This submittal supports the proposed License Amendment for relocation of Pressure-Temperature (P-T) Curves into the Pressure-Temperature Limits Report (PTLR) and the No Significant Hazards Consideration determination submitted by Reference 1.

There are no commitments made in this submittal.

A001
NRR

If you have any questions, please call Mr. Joseph Lynch, Pilgrim Licensing Manager at 508-830-8403.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 4th day of November, 2010

Sincerely,

Kevin Bronson
Site Vice President

Attachment A: Retyped Technical Specification and Bases Pages Related to the Relocation of Pressure-Temperature Limits Curves (9 pages)

CC: Mr. Richard Guzman, 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

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

NRC Resident Inspector
Pilgrim Nuclear Power Station

John Giarrusso
Mass Emergency Management Agency
400 Worcester Road
Framingham, MA 01702

Robert Gallaghar, Acting Director,
Massachusetts Department of Public Health
Radiation Control Program
Schrafft Center
529 Main Street
Charlestown MA, 02129

ATTACHMENT A

TO ENTERGY LETTER NO. 2.10.049

RETYPED TECHNCIAL SPECIFICATION AND BASES PAGES RELATED TO THE RELOCATION OF PRESSURE-TEMPERATURE LIMITS CURVES (TAC NO. ME3253)

(9 Retyped Pages)

License Page 3
TS Page 1-4
TS Page 3/4.6-1
TS Page 3/4.6-2
TS Page 3/4.6-9
TS Page 3/4.6-10
TS Page 3/4.6-11
TS BASES Page B3/4.6-1
TS Page 5.0-12

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. Records

ENO shall keep facility operating records in accordance with the requirements of the Technical Specifications.

D. Equalizer Valve Restriction - DELETED

E. Recirculation Loop Inoperable - DELETED

F. Fire Protection

ENO shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility and as approved in the SER dated December 21, 1978 as supplemented subject to the following provision:

ENO may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

G. Physical Protection

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contain Safeguards Information protected under 10 CFR 73.21, is entitled: "Pilgrim Nuclear Power Station Physical Security, Training and Qualification, and Safeguards Contingency Plan, Revision 0" submitted by letter dated October 13, 2004, as supplemented by letter dated May 15, 2006.

OPERABLE - OPERABILITY	A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
OPERATING	OPERATING means that a system or component is performing its intended functions in its required manner.
OPERATING CYCLE	Interval between the end of one refueling outage and the end of the next subsequent refueling outage.
PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	The PTLR is the Pilgrim-Specific document that provides the reactor vessel Pressure-Temperature (P-T) Curves, including heat up and cool down rates and fluence and Adjusted Reference Temperature limits for Specification 3.6.A. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.5.9.
PRIMARY CONTAINMENT INTEGRITY	PRIMARY CONTAINMENT INTEGRITY means that the drywell and pressure suppression chamber are intact and all of the following conditions are satisfied: 1. All manual containment isolation valves on lines connected to the reactor coolant system or containment which are not required to be open during accident conditions are closed. 2. At least one door in each airlock is closed and sealed 3. All blind flanges and manways are closed. 4. All automatic primary containment isolation valves and all instrument line check valves are operable or at least one containment isolation valve in each line having an inoperable valve shall be deactivated in the isolated condition. 5. All containment isolation check valves are operable or at least one containment valve in each line having an inoperable valve is secured in the isolated position.
PROTECTIVE ACTION	An action initiated by the protection system when a limit is reached. A PROTECTIVE ACTION can be at a channel or system level.
PROTECTIVE FUNCTION	A system PROTECTIVE ACTION which results from the PROTECTIVE ACTION of the channels monitoring a particular plant condition.

LIMITING CONDITION FOR OPERATION

3.6 PRIMARY SYSTEM BOUNDARY

Applicability:

Applies to the operating status of the reactor coolant system.

Objective:

To assure the integrity and safe operation of the reactor coolant system.

Specification:

A. **Thermal and Pressurization Limitations**

1. The average rate of reactor coolant temperature change during normal heatup or cooldown shall not exceed the limit in the PTLR.

2. The reactor vessel shall not be pressurized for hydrostatic and/or leakage tests, and subcritical or critical core operation shall not be conducted unless the reactor vessel temperatures are above those defined by the appropriate curves in the PTLR.

SURVEILLANCE REQUIREMENT

4.6 PRIMARY SYSTEM BOUNDARY

Applicability:

Applies to the periodic examination and testing requirements for the reactor cooling system.

Objective:

To determine the condition of the reactor coolant system and the operation of the safety devices related to it.

Specification

A. **Thermal and Pressurization Limitations**

1. During heatups and cooldowns, with the reactor vessel temperature less than or equal to 450°F, verify the RCS heatup and cooldown rates are within limits every 15 minutes.

2. Reactor vessel shell temperatures, including reactor vessel bottom head, and reactor coolant pressure shall be permanently logged at least every 15 minutes whenever the shell temperature is below 220°F and the reactor vessel is not vented.

LIMITING CONDITION FOR OPERATION

3.6 PRIMARY SYSTEM BOUNDARY (Cont)

A. Thermal and Pressurization Limitations (Cont)

In the event this requirement is not met, achieve stable reactor conditions with reactor vessel temperature above that defined by the appropriate curve and obtain an engineering evaluation to determine the appropriate course of action to take.

3. The reactor vessel head bolting studs shall not be under tension unless the temperature of the vessel head flange and the head is greater than the PTLR limit.

4. The pump in an idle recirculation loop shall not be started unless the temperatures of the coolant within the idle and operating recirculation loops are within the PTLR limits.

5. The reactor recirculation pumps shall not be started unless the coolant temperatures between the dome and the bottom head drain are within the PTLR limits.

SURVEILLANCE REQUIREMENTS

4.6 PRIMARY SYSTEM BOUNDARY (Cont)

A. Thermal and Pressurization Limitations (Cont)

3. When the reactor vessel head bolting studs are tensioned and the reactor is in a Cold Condition, the reactor vessel shell temperature immediately below the head flange shall be permanently recorded.

4. Prior to and during startup of an idle recirculation loop, the temperature of the reactor coolant in the operating and idle loops shall be permanently logged.

5. Prior to starting a recirculation pump, the reactor coolant temperatures in the dome and in the bottom head drain shall be compared and permanently logged.

Pilgrim Reactor Vessel Pressure-Temperature Limits Hydrostatic and Leak Rates

is Relocated to PTLR and TS 5.5.9

Pilgrim Reactor Vessel Pressure-Temperature Limits Subcritical Heat up and Cool down

is Relocated to PTLR and TS 5.5.9

Pilgrim Reactor Vessel Pressure-Temperature Limits Critical Core Operation

is Relocated to PTLR and TS 5.5.9

BASES:

3/4.6 PRIMARY SYSTEM BOUNDARY

A. Thermal and Pressurization Limitations

The Pressure and Temperature Limits Report (PTLR) provides Pressure-Temperature Curves for heatup and cooldown for the reactor vessel. This report is developed in compliance with NRC approved methodology prescribed in Structural Integrity Associates Topical Report (TR) SIR-05-044-A, "Pressure -Temperature Report Methodology for Boiling Water Reactors", April 2007.

The PTLR provides Pressure Test Curve A, and Heatup and Cooldown Curves B and C for 34 EFPY operation. These curves are developed in compliance with the requirements of Appendix G to 10 CFR 50 and Appendix G to ASME Section XI and the methodology in NRC approved Structural Integrity Report, SIR-05-044-A.

Pilgrim reactor pressure vessel beltline, bottom head, and feedwater nozzle/upper vessel regions are evaluated. These regions bound all other regions with respect to brittle fracture, including the N2 nozzles through 34 EFPY. In addition, limiting stresses for the bottom head (CRD penetration) region were selected from all applicable design basis transients in order to accommodate any potential inadvertent bottom head cooldown events. The P-T curves for hydrostatic and leak tests, subcritical heatup and cooldown, and critical core operation, were generated with fuel in the vessel for 24, 34, 44, and 54 EFPY operations, however only the curves applicable up to 34 EFPY are included in the PTLR.

Pilgrim Adjusted Reference Temperature Calculations for 24, 34, 44, and 54 EFPYs (Table 3, 4, 5, and 6). These Tables show limiting material (plates and welds) characteristics and fluence values calculated at 24, 34, 44, and 54 EFPYs of operation. Fluence is projected based on actual operation through 20.7 EFPY (April 2005). Fluence at intermediate exposure is linearly interpolated between 20.7 and 54 EFPY.

The allowable rate of heatup and cooldown for the reactor vessel contained fluid is 100°F per hour averaged over a period of one hour. This rate has been chosen based on past experience with operating power plants. The associated time periods for heatup and cooldown cycles when the 100°F per hour rate is limiting provides for efficient, but safe, plant operation.

Specific analyses were made based on a heating and cooling rate of 100°F/hour applied continuously over a temperature range of 100°F to 546°F. Calculated stresses were within ASME Boiler and Pressure Vessel Code Section III stress intensity and fatigue limits even at the flange area where maximum stress occurs.

The coolant in the bottom of the vessel is at a lower temperature than that in the upper regions of the vessel when there is no recirculation flow. This colder water is forced up when recirculation pumps are started. This will not result is stresses which exceed ASME Boiler and Pressure Vessel Code, Section III limits when the temperature differential is not greater than 145°F.

The reactor coolant system is a primary barrier against the release of fission products to the environs. In order to provide assurance that this barrier is maintained at a high degree of integrity, restrictions have been placed on the operating conditions to which it can be subjected.

Appendix G to 10CFR50 defines the temperature-pressurization restrictions for hydrostatic and leak tests, pressurization, and critical operation. These limits have been calculated for Pilgrim and are contained in the PTLR.

5.5.9 Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR)

a. RCS pressure and temperature limits for heatup, cool-down, low temperature operation criticality and hydrostatic testing as well as heatup and cool-down rates shall be established and documented in the PTLR for the following:

i) Limiting Conditions for Operation Section 3.6.A.2

b. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in the following document:

i) SIR-05-044-A "Pressure-Temperature Limits Report Methodology for Boiling Water Reactors", April 2007

c. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any reason or supplement thereto.

(continued)