



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 21, 2010

Site Vice President
Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360-5508

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION TO SUPPORT THE REVIEW OF
RELOCATION OF PRESSURE-TEMPERATURE LIMITS TO THE PRESSURE
AND TEMPERATURE LIMITS REPORT (TAC NO. ME3253)

Dear Sir or Madam:

By letter dated January 24, 2010, Entergy Nuclear Operations, Inc., the licensee for Pilgrim Nuclear Power Station, submitted a license amendment request (LAR) to revise its Technical Specifications (TS) 1.0, "Definitions," 3.6, "Primary System Boundary," and 5.5, "Programs and Manuals," to revise the pressure-temperature (P-T) limits and to relocate the revised P-T limits from the TS to a licensee controlled document, the pressure and temperature limits report. The licensee revised the P-T limits based on a methodology documented in the SIR-05-044-A report, "Pressure-Temperature Limits Report Methodology for Boiling Water Reactors."

The Nuclear Regulatory Commission staff has been reviewing the submittal and has determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). A response to this RAI is requested to be provided within 30 days.

Sincerely,

A handwritten signature in black ink that reads "James Kim".

James Kim, Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-293

Enclosure:
As stated

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REQUEST FOR ADDITIONAL INFORMATION BY
THE OFFICE OF NUCLEAR REACTOR REGULATION REGARDING
LICENSE AMENDMENT REQUEST TO IMPLEMENT
THE PRESSURE AND TEMPERATURE LIMITS REPORT
PILGRIM NUCLEAR POWER STATION (PNPS)

The NRC staff requests that the licensee provide the following additional information concerning this request:

RAI-1

Some reactor pressure vessel (RPV) materials information in Table 7.8 of the Pressure and Temperature Limits Report (PTLR) in your submittal dated January 24, 2010, differs from those in the recent Pilgrim License Renewal Application. Please provide the following:

1. The calculation of the chemistry factor for the lower shell longitudinal weld # 1, # 2, and # 3, using the Monticello surveillance data,
2. the chemistry factor calculations for any other Table 7.8 RPV materials based on surveillance data, and
3. a revised PTLR providing "supplemental data and calculations of the chemistry factor in the PTLR if the surveillance data are used in the ART [adjusted reference temperature] calculation" to meet the seventh technical criterion in Generic Letter 96-03, "Relocation of Pressure Temperature Limit Curves and Low Temperature Overpressure Protection System Limits."

RAI-2

Page 6 of the PTLR stated, "These [finite element] analyses were performed to determine through-wall thermal and pressure stress distributions for the Pilgrim feedwater nozzles due to a step-change thermal transient..., and for the recirculation inlet nozzles (N2) due to a shutdown transient at 100 °F/hr...."

1. Please confirm whether the finite element models are plant specific. If generic finite element models were used, explain how you adjust the generic results for the Pilgrim application.
2. Confirm that Table 7.5 (Figure 6.2) is the only table in the PTLR which provides results from the finite element analysis. Confirm whether this finite element model is for the feedwater nozzle or for the recirculation inlet nozzle.

Enclosure

RAI-3

Table 7.4 of the PTLR listed the calculated K_{IC} (plane-strain fracture toughness), K_{Im} (allowable membrane stress intensity factor), and P (pressure) values at different fluid temperatures using a K_{IT} (thermal stress intensity factor) value of $6.86 \text{ ksi}(\text{inch})^{1/2}$ for the beltline/core not critical Curve B (Figure 6.2). The Nuclear Regulatory Commission (NRC) staff has verified the calculated values in Table 7.4, but found that the proposed P-T limits do not include temperature and pressure instrument uncertainties. Explain how you handle the temperature and pressure instrument uncertainties in the P-T limit application in accordance with the SIR-05-044-A report, "Pressure-Temperature Limits Report Methodology for Boiling Water Reactors," which requires consideration of these uncertainties in the P-T limits.

RAI-4

Table 7.5 of the PTLR listed the calculated K_{IC} , K_{Im} , and P values at different fluid temperatures using a K_{IT} value of $117.41 \text{ ksi}(\text{inch})^{1/2}$ for the upper vessel region/core not critical Curve B (Figure 6.2). Provide a sample calculation for the K_{Im} value at a low fluid temperature where the K_{IT} value exceeds the K_{IC} value. Explain how your methodology is consistent with the SIR-05-044-A report methodology for the upper vessel region.

RAI-5

Provide an evaluation for the small-diameter, drill-hole type instrument nozzle (e.g., water level nozzle) if it exists in the RPV beltline region. The stress concentration factor associated with the drill-hole type nozzle in the beltline may make it more limiting than the limiting beltline material that is identified in the proposed P-T limits.

RAI-6

As indicated in NRC letter dated November 2, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML092151016), to the Technical Specification (TS) Task Force Traveler (TSTF) regarding a staff position taken on TSTF-419, Revision 0, there is a generic concern related to the inclusion of revision numbers and dates in the PTLR References Section of the TSs. Specifically, the removal of the Topical Report revision numbers or approval dates from the TS in accordance with the subject TSTF Travelers does not provide a direct link to specific TS numerical values relocated to the PTLR, since there is no reference to a specific methodology. The NRC staff has determined that relaxation of specificity regarding TS Topical Report documentation following the framework delineated in TSTF travelers 363, 408, and 419 is not currently acceptable. Therefore, the NRC staff does not currently support the position reflected in TSTF Traveler 419, Revision 0.

In light of the November 2, 2009, letter, and in light of the fact that the licensee is requesting to implement TSTF-419 during continued generic discussions regarding TSTF-419, the NRC staff requests the licensee to provide a revised TS page(s) for PNPS providing the PTLR References Section, citing NRC-approved methodology that includes revision numbers and dates.

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/ra/

James Kim, Project Manager
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OFFICE	LPL1-1/PM	LPL1-1/LA	LPL1-1/BC
NAME	JKim	SLittle	NSalgado
DATE	7/21/10	7/21/10	7/21/10

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