Entergy

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December 4, 2002

US. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

SUBJECT: Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
Docket No. 50-293
License No. DPR-35

Proposed Change to Applicability of Pilgrim's Pressure-Temperature Curves as Described in Technical Specification Figures 3.6.1, 3.6.2, and 3.6.3, Revision 1

REFERENCES:

1. Entergy Letter No. 2.02.021, Change to Applicability of Pilgrim's Pressure-Temperature Curves as Described in Technical Specification Figures 3.6.1, 3.6.2, and 3.6.3, dated May 1, 2002.

2. Entergy Letter No. 2.02.048, "Appendix K Measurement Uncertainty Recovery-Power Uprate Request", dated July 5, 2002

LETTER NUMBER: 2.02.100

Dear Sir or Madam:

By Reference 1, Entergy requested NRC review and approval of changes to Pilgrim's pressure-temperature (P-T) curves described in Technical Specification Figures 3.6.1, 3.6.2, and 3.6.3 in accordance with 10 CFR 50.90. In subsequent discussions, the NRC staff has requested changes to the submittal, including a review for impact of Reference 2 to support the NRC's review. This letter provides the information requested by the NRC Staff and replaces the original submittal.

Entergy requests approval of the proposed amendment by March 2003 to support RFO# 14. RFO# 14 is scheduled to commence in April 2003. Once approved, the amendment shall be implemented within 60 days.

If you have any questions or require additional information, please contact Bryan Ford at (508) 830-8403.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 4th day of December, 2002

Sincerely,

Charles M. Dugger

WGL/dd

A001

202100

Attachments:
1. Evaluation of Proposed Technical Specifications Amendment –10 pages
2. Proposed Technical Specifications Changes (mark-up) – 3 pages
3. List of Regulatory Commitments - 1 page

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ATTACHMENT 1

Evaluation of Proposed Technical Specifications Amendment

Attachment 1

Subject: Change to Applicability of Pilgrim's Pressure-Temperature Curves as Described in Technical Specification Figures 3.6.1, 3.6.2, and 3.6.3.

1. Description

This letter is a request to amend Operating License DPR-35 for Pilgrim Nuclear Power Station. The proposed change applies to Pilgrim Technical Specification Figures 3.6.1, 3.6.2, and 3.6.3. These figures provide Pilgrim reactor vessel pressure-temperature (P-T) limits for 20, 32, and 48 Effective Full Power Years (EFPYs). The current wording in the title block of these Figures limit the applicability of the P-T curves to operating cycles (OC) 13 and 14. Thus changes are required to restart Pilgrim from Refueling Outage (RFO) 14.

The License Amendment (LA) 190, dated April 13, 2001 (Reference 1) limited the use of current P-T curves to OC 14 due to concern over the conservatism in the neutron transport (fluence) analysis used to develop the P-T curves. This submittal addresses the concern over the conservatism and proposes to limit the use of Figures 3.6.1, 3.6.2, and 3.6.3 to the more conservative curves identified as "48 EFPY". The "48 EFPY" curves were reviewed and approved by the NRC in LA 190. The revised figures now have a design margin in excess of two which is sufficiently conservative to represent Pilgrim reactor vessel pressure-temperature (P-T) limits through operating cycle OC 16.

Since the approval of LA 190, information obtained concerning the original capsule pull indicates that the jet pumps did not mask neutron exposure of the withdrawn capsules, and the core has also received a large number of new (high exposure) fuel bundles. Both factors indicate the existing fluence calculations are conservative. As discussed in this submittal , there is sufficient conservatism in the P-T curves to support extending the applicability of the figures through OC 16.

Entergy requests approval of the proposed amendment by March 2003 to support RFO# 14. RFO# 14 is scheduled to commence in April 2003. Once approved, the amendment shall be implemented within 60 days.

2. Proposed Change

Currently, the title blocks for Figures 3.6.1, 3.6.2, and 3.6.3 contain, in part, the words:

> "These curves apply to remainder of Operating Cycle 13 and Operating Cycle 14".

The proposed amendment changes the words to:

> "The curve applies through Operating Cycle 16."

The proposed change deletes the 20 and 32 EFPY curves and removes the EFPY designators from the graph.

3. Background

The proposed amendment changes the application of P-T curves intended to ensure the long-term integrity of Pilgrim's reactor pressure vessel. Information on Pilgrim's reactor pressure vessel may be found in Pilgrim's Updated Final Safety Analysis Report (UFSAR) Section 1.6.1.3.2, "Reactor Vessel and Internals," and UFSAR Appendix M, "Reactor Pressure Vessel Design Report."

By letter dated November 22, 2000, Entergy requested Technical Specification changes to update the pressure-temperature curves (Reference 7.2). This request was modified by letter dated February 2, 2001 (Reference 7.3). The fluence values for 20, 32 and 48 EFPYs were established from measurements and calculations related to the first surveillance capsule removed in 1980. The methodology is described in Southwest Research Institute (SwRI) report SwRI Project No. 02-5951(Reference 7.4) and supplement GE report MDE 277-1285 (Reference 7.5).

The requested change was issued by the NRC as Amendment 190 on April 13, 2001 (Reference 7.1). In the safety evaluation supporting the LA 190 the NRC staff concluded that "the proposed P-T limits for the reactor coolant system for hydro testing, heat up, cool down, and criticality satisfy the requirements in Appendix G to Section XI of the ASME Code, as amended by Code Cases N-588 and N-640, and Appendix G of 10 CFR Part 50 for 20, 32, and 48 EFPYs. The proposed P-T limits also satisfy GL 88-11 since the licensee used the method in RG 1.99, Rev. 2 to calculate ART (Adjusted Reference Temperature). However, pending staff review of a new method to calculate neutron fluence, the proposed P-T limit curves may be incorporated into the Pilgrim TSs only through Operating Cycle 14."

The NRC noted in their supporting safety evaluation for Amendment 190 that NRC believed Pilgrim's plant-specific dosimetry and/or calculations for the original fluence value were outdated. However, use of the pressure-temperature curves was acceptable for an interim period (one OC) because there are two conservatisms in Pilgrim's fluence value: (1) the curves are estimated for 32 EFPYs and were to be used by Amendment 190 to about 19 EFPYs which is a conservatism factor of 1.7; and (2) MDE Report No. 277-1285, (Reference 7.5) projects a conservatism of 25 percent in the predicted peak vessel fluence. The 32 EFPYs P-T curves are bounding for operation until the end of the current license. Based on these conservatisms and considering the limited time of applicability (OC 14) of the proposed P-T curves, LA 190 was issued by the NRC. OC 14 is expected to end in May 2003.

4. Technical Analysis

4.1 Analysis

The proposed change is to Pilgrim Technical Specification Figures 3.6.1, 3.6.2, and 3.6.3, which provide P-T limits for Pilgrim's reactor pressure vessel. This proposed change does not alter the curves issued by the NRC in LA 190. The proposed change replaces wording in the figures' title blocks that currently limit the curves' use to OC 14. The replacement wording will also limit operation to a more restrictive curve and extend use of the proposed curves through the end of OC 16. The proposed change removes the 20 and 32 EFPY curves and the 20, 32 and 48 EFPY designators for human factor reasons.

The SER supporting LA 190 states that there are two conservatisms in the evaluation of the Pilgrim fluence value: (1) the proposed curves were estimated for 32 EFPYs and are to be used to about 19 EFPYs which is a conservatism factor of 1.7; and (2) MDE Report No. 277-1285, "Pilgrim Nuclear Power Station Reactor Pressure Vessel Fast Neutron Flux as a Function of Fuel Cycle, Revision 1," projects a conservatism of 25 percent in the predicted peak vessel fluence. Based, in part, on these conservatisms, and considering the limited time of applicability of the proposed pressure-temperature curves, NRC issued LA 190.

Pilgrim began with 3 surveillance capsules located circumferentially along the reactor vessel inside radius at the 30-degree, 120-degree and 300-degree azimuths and axially at the reactor vessel core mid-plane. Each surveillance capsule consists of three flux wires made of Copper, Iron and Nickel. The 30-degree capsule was withdrawn in 1980 after 4.17 EFPYs of operation. The flux wire measurements derived from the Pilgrim surveillance capsule removed from the Pilgrim reactor vessel during the 1980 refueling outage and the neutron transport calculations performed in 1985 form the bases of the calculations of projected fluence values used to predict future adjustments to the reactor vessel pressure-temperature limits.

These fluence calculations are very conservative for the following reasons:

The vessel jet pumps do not mask the capsules because the capsules are positioned between two separate pairs of jet pumps. Thus the capsules are not shadowed by the jet pumps and receive full exposure from the core. The dosimeter (fluence) measurements taken in 1980, when projected out to 1985, were less than the calculated fluence derived from the 1985 neutron transport calculations using the one-dimensional neutron transport code ANSIN. This also indicated that the calculated fluence values are conservative when compared to actual measurements.

The fluence data of 1980 was taken at the end of OC 4. Pilgrim's OC 4 had an unusually large number of new fuel bundles and consequently high exposure bundles were placed in the edge bundle locations. It was found that the vessel flux decreased with fuel cycles after OC 4. OCs 4, 5, 6, and 7 were used as a composite model for future core reloads and fluence values are projected out to the end of life based on the results of this composite model. Projections of fluence based on this model would thus be conservatively high and the conservatism would compound when extrapolated out to end-of-life.

As noted in the NRC SER supporting LA 190, the neutron energy spectrum calculations were not included as part of the Pilgrim Neutron Flux/ Fuel Cycle report (GE MDE Report No. 277-1285). However, the results from these calculations were addressed. The NRC SER noted that this report provided conservative projections that were 25% higher than predicted peak vessel fluence.

The fluence calculations are used in the analyses of the reactor vessel beltline material to determine the projected shift in the Pilgrim pressure-temperature limit curves. These calculations were performed in accordance with the guidelines of NRC Reg Guide 1 .99, Rev 2, which provides an additional statistical margin of conservatism for plate and weld material adjusted reference temperature. The determination of the shift in reference nil-ductility temperature, which relies on the fluence calculations, must also meet the requirements of 10 CFR 50, Appendix G and the ASME Code Appendix G which also provides additional conservatism to the pressure-temperature limits.

In addition to the above conservatisms, Pilgrim will use new curves that are equivalent to the previous curves designated "48 EFPY" for controlling plant operation. The actual EFPYs at the end of the requested applicability are expected to be at approximately 23 EFPYs. The requested change will provide additional margin and a conservatism factor slightly in excess of 2.

Based on the conservatisms noted above, a two cycles extension continues to provide a significant amount of protection from brittle fracture of the reactor vessel.

Also, an extension to operate through OC 16 will provide the following benefits:

- Pilgrim is a member of the BWRVIP and will participate in the Integrated Surveillance/Supplemental Surveillance (ISP/SSP) programs. These programs will provide new surveillance data that is not currently available but will become available within the next few years. Pilgrim will benefit from the knowledge obtained from this program. However, the information may not be available prior to the next cycle. Pilgrim plans to submit a Technical Specification change request to remove the capsule surveillance schedule from the Technical Specification, and describe the Pilgrim participation in the BWRVIP ISP/SSP.

- Pilgrim intends to perform new neutron transport calculations prior to the end of cycle 16. However, there are only a few vendors currently available to perform these complex calculations. Also, there are a limited number of computer software codes capable of performing these calculations. The Electric Power Research Institute (EPRI) is working to develop a new state-of-the-art computer code to perform these calculations, but the software will not become available before the first quarter of 2003. The extension would give Pilgrim sufficient time to perform new neutron transport calculations and have new dosimetry data available through the ISP/SSP program.

- Pilgrim is currently at approximately 18.5 EFPYs and expects to reach slightly less than 23 EFPY by the end of Cycle 16, (April 2007). Pilgrim will continue to apply the restrictions imposed by the new curves on the reactor vessel pressure-temperature limits. The use of the new pressure-temperature limit curves of the Technical Specifications provides a conservative margin of at least 2 and, along with the additional margins previously discussed, will compensate for limitations of the current neutron transport calculations and compensate for the change in the activation and transport cross sections which have occurred since the calculations were performed.

Additionally, the new curves present bounding curves which take into account the Appendix K Measurement Uncertainty/Recovery-Power Uprate (Reference 6), with no impact on the use of the new curves for OC 15 and 16.

4.2 Summary

The current restriction limits use of the curves to a one OC period during which, it was then believed, Pilgrim could perform plant-specific calculations based on new, NRC approved methodologies that would result in up-to-date pressure-temperature curves. However, delays associated with vendor-supplied calculational tools have delayed Pilgrim's development of new P-T curves, and it is not possible to submit new curves in time to support restart into OC 15.

Furthermore, based on our evaluation, and as reflected in the NRC's SER supporting LA 190, sufficient conservatism exists in the new curves to extend their use at least for two OCs. The current restriction, OC 14, will result in approximately 19 EFPYs, well below the 32 EFPY curve, resulting in a conservatism factor of 1.7. A conservative factor slightly in excess of 2 will result using the equivalent "48 EFPY" curves through the end of OC 16 which is estimated to be approximately 23 EFPYs. Therefore, the EFPY at the end of OC 16 is sufficiently below the proposed bounding curve to provide reduced but satisfactory conservatism. Based on these considerations, Pilgrim has concluded that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) Pilgrim's activities will continue to be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5. Regulatory Safety Analysis

5.1 No Significant Hazards Consideration

Entergy has evaluated whether or not a significant hazards consideration is involved with the proposed amendment extending the applicability of the Pressure-Temperature curves in Figures 3.6.1. 3.6.2, and 3.6.3 by focusing on the three standards set forth in 10 CFR50.92, "Issuance of Amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed License Amendment (LA) does not involve a significant increase in the probability or consequences of an accident previously evaluated. There are no physical changes to the plant being introduced by the proposed changes to a restriction associated with the pressure-temperature curves. The proposed change does not modify the reactor coolant pressure boundary, (i.e., there are no changes in operating pressure, materials, or seismic loading). The proposed change does not adversely affect the integrity of the reactor coolant pressure boundary such that its function in the control of radiological consequences is affected.

The current pressure-temperature curves were generated in accordance with the fracture toughness requirements of 10 CFR Part 50, Appendix G, and American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, Appendix G and NRC Regulatory Guide 1.99, Revision 2. "*Radiation Embrittlement of Reactor Vessel Materials.*" The current pressure-temperature curves were established in compliance with the methodology used to calculate and predict effects of radiation on embrittlement of reactor vessel beltline materials. The use of the proposed pressure-temperature curves through Operating Cycle (OC) 16 is acceptable because sufficient margin exists between the actual Effective Full Power Years (EFPYs) and the Effective Full Power Years used to establish the proposed curve. This proposed license amendment provides compliance with the intent of 10 CFR Part 50, Appendix G, and provides margins of safety that assure reactor vessel integrity.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed license amendment does not create the possibility of new or different kind of accident from any accident previously evaluated. The pressure-temperature curves were generated in accordance with the fracture toughness requirements of 10 CFR Part 50, Appendix G, and ASME B&PV Code, Section XI, Appendix G. Compliance with the proposed pressure-temperature curves will ensure the avoidance of conditions in which brittle fracture of primary coolant pressure boundary materials is possible because such compliance with the current pressure-temperature curves provides sufficient protection against a non-ductile-type fracture of the reactor pressure vessel. No new modes of operation are introduced by the proposed change. The proposed change will not create any failure mode not bounded by previously evaluated accidents. Further, the proposed change does not affect any activities or equipment and is not assumed in any safety analysis to initiate any accident sequence. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The current curves are based on established NRC and ASME methodologies in force when LA 190 was approved. The proposed license amendment requests the use of the proposed curves for two OCs. This is acceptable because sufficient margin exists between actual EFPYs and the EFPYs used in the development of the proposed curves to yield a conservatism factor slightly in excess of 2.

Operation within the current limits ensures that the reactor vessel materials will continue to behave in a non-brittle manner, thereby preserving the original safety design bases. No plant safety limits, set points, or design parameters are adversely affected by the proposed changes. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, ENTERGY concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

5.2.1 Regulations

The NRC has established requirements in Title 10 of the Code of Federal Regulations Part 50 (10 CFR 50) to protect the integrity of the reactor coolant pressure boundary in nuclear power plants. The staff evaluates

the pressure-temperature curves based on the following NRC regulations and guidance: 10 CFR Part 50, Appendix G; Generic Letter (GL) 88-11; GL 92-01; Revision 1; GL 92-01, Revision 1, Supplement 1; Regulatory Guide (RG) 1.99. Revision 2 (Rev.2); and Standard Review Plan (SRP) Section 5.3.2. Generic Letter 88-11 advises licensees that the staff would use RG 1.99, Rev. 2, to review pressure-temperature limit curves. RG 1.99, Rev. 2, contains methodologies for determining the increase in transition temperature and the decrease in upper-shelf energy (USE) resulting from neutron radiation. Generic Letter 92-01, Rev.1, requested that licensees submit their RPV data for their plants to the staff for review. Generic Letter 92-01, Rev. 1, Supplement 1, requested that licensees provide and assess data from other licensees that could affect their RPV integrity evaluations. This data is used by the staff as the basis for the staffs review of pressure-temperature limit curves and as the basis for the staff's review of pressurized thermal shock (PTS) assessments (10 CFR 50.61 assessments). Appendix G to 10 CFR Part 50 requires that pressure-temperature limit curves for the RPV be at least as conservative as those obtained by applying the methodology of Appendix G to Section XI of the ASME Code.

Standard Review Plan (SRP) Section 5.3.2 provides an acceptable method of determining the pressure-temperature curves for ferritic materials in the beltline of the reactor pressure vessel (RPV) based on the linear elastic fracture mechanics (LEFM) methodology of Appendix G to Section XI of the ASME Code. The basic parameter of this methodology is the stress intensity factor K1 that is a function of the stress state and flaw configuration. Appendix G requires a safety factor of 2.0 on stress intensities resulting from reactor pressure during normal and transient operating conditions, and a safety factor of 1.5 for hydrostatic testing curves. The methods of Appendix G postulate the existence of a sharp surface flaw in the RPV that is perpendicular to the direction of the maximum stress. This flaw is postulated to have a depth that is equal to ¼ thickness (1/4T) of the RPV beltline thickness and a length equal to 1.5 times the RPV beltline thickness. The critical locations in the RPV beltline region for calculating heatup and cooldown pressure-temperature curves are the 1/4 T and 3/4 thickness (3/4 T) locations, which correspond to the maximum depth of the postulated inside surface and outside surface defects, respectively.

The Appendix G ASME Code methodology requires that licensees determine the adjusted reference temperature (ART or adjusted RT_{NDT}). ART is defined as the sum of the initial (unirradiated) reference temperature (initial RT_{NDT}), the mean value of the adjustment in reference temperature caused by irradiation (Delta RT_{NDT}), and a margin (M) term. Delta RT_{NDT} is a product of a chemistry factor and a fluence factor. The chemistry factor is dependent upon the amount of copper and nickel in the material and may be determined from the table in RG 1.99, Rev. 2, or from surveillance data. The fluence factor is dependent upon the neutron fluence at the maximum postulated flaw depth. The margin term is dependent upon whether the initial RT_{NDT} is a plant-specific or a generic value and whether the chemistry factor (CF) was determined using the tables in RG 1.99, Rev. 2, or surveillance data. The margin term is used

to account for uncertainties in the values of the initial RT_{NDT}, the copper and nickel content, the fluence, and the calculational procedures. RG 1.99, Rev. 2, describes the methodology to be used in calculating the margin term and the initial RT_{NDT}.

5.2.2 Design Basis (UFSAR)

UFSAR Section 1.6.1.3.2, "Reactor Vessel and Internals, "provides a brief description of the reactor vessel and its internals and some of the parameters to which it was fabricated.

UFSAR Appendix M, "Reactor Pressure Vessel Design Report," provides information on the purchase specifications for the reactor vessel.

5.2.3 Approved Methodologies

The methodologies used to develop the current pressure-temperature curves are as discussed in 5.2.1, "Regulations," provided above. It is also discussed in the NRC's SER in support of issuing LA 190.

5.2.4 Analysis

Entergy used NRC approved codes and methodologies as described in above Section 5.2.1. The NRC reviewed and approved the Entergy analysis results in LA 190. However, due to the age of Pilgrim's fluence calculation a one-cycle (OC 14) restriction was imposed on using the LA 190 curves. The restriction was imposed to allow time to develop and submit new neutron transport calculations, and (if necessary) new pressure-temperature curves. The one cycle restriction was supported by the conservatism within the existing analysis and tributary inputs. Such conservatism resulted in a conservatism factor of 1.7 when the one cycle restriction is applied to the 32 EPFY curves. The application of the proposed curves allow for two additional cycles and results in a conservative margin in excess of 2.

5.2.5 Conclusions

The technical analysis performed by Entergy demonstrates that extending the use of the proposed pressure-temperature curves for two additional OCs results in an increase in this margin of conservatism slightly in excess of 2 and this conservatism factor is sufficient to ensure reactor vessel integrity.

Entergy also concludes that approved methodologies were used, and that regulatory requirements continue to be met.

Therefore, based on the considerations discussed above, Entergy concludes that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6. Environmental Consideration

The amendment changes a requirement with respect to use of a facility component located within the restricted area as defined in 10 CPR Part 20. Pilgrim has determined that the amendment involves no significant increases in the amounts, and no significant change in the types, of any effluents that may be released offsite, and there is no significant increase in individual or cumulative occupational radiation exposure. Pilgrim also finds that the proposed amendment involves no significant hazards consideration. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Hence, pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

7. References

1. Pilgrim Nuclear Power Station – Issuance of Amendment RE: Pressure-Temperature Limit Curves (TAC No. MB0561) License Amendment 190, dated April 13, 2001

2. Letter from M. Bellamy, Entergy Nuclear Generation Company to U.S. NRC "Request for Technical Specification Change Concerning Pressure-temperature Limit Curves of Figures 3.6.1, 3.6.2, and 3.6.3." dated November 22, 2000.

3. Letter from M. Bellamy, Entergy Nuclear Generation Company to U.S. NRC, "Modification of Technical Specification Change Submittal Concerning Pressure-Temperature Limit Curves," dated February 2, 2001.

4. SwRI Project No. 02-5951, " Pilgrim Nuclear Station Unit 1 Reactor Vessel Irradiation Surveillance Program," by E.B. Norris, Southwest Research Institute, July 1981. (Docketed)

5. MDE Report No. 277-1285, "Pilgrim Nuclear Power Station Reactor Pressure Vessel Fast Neutron Flux as A Function of Fuel Cycle," Revision 1, by L.S. Burns General Electric Company, Palo Alto, CA, November 27, 1985. (Docketed)

6. Entergy Letter No. 2.02.048, "Appendix K Measurement Uncertainty Recovery-Power Uprate Request", dated July 5, 2002

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATIONS CHANGES (MARK-UP)

FIGURES 3.6.1, 3.6.2, and 3.6.3

PILGRIM REACTOR VESSEL PRESSURE-TEMPERATURE LIMITS
HYDROSTATIC AND LEAK TESTS

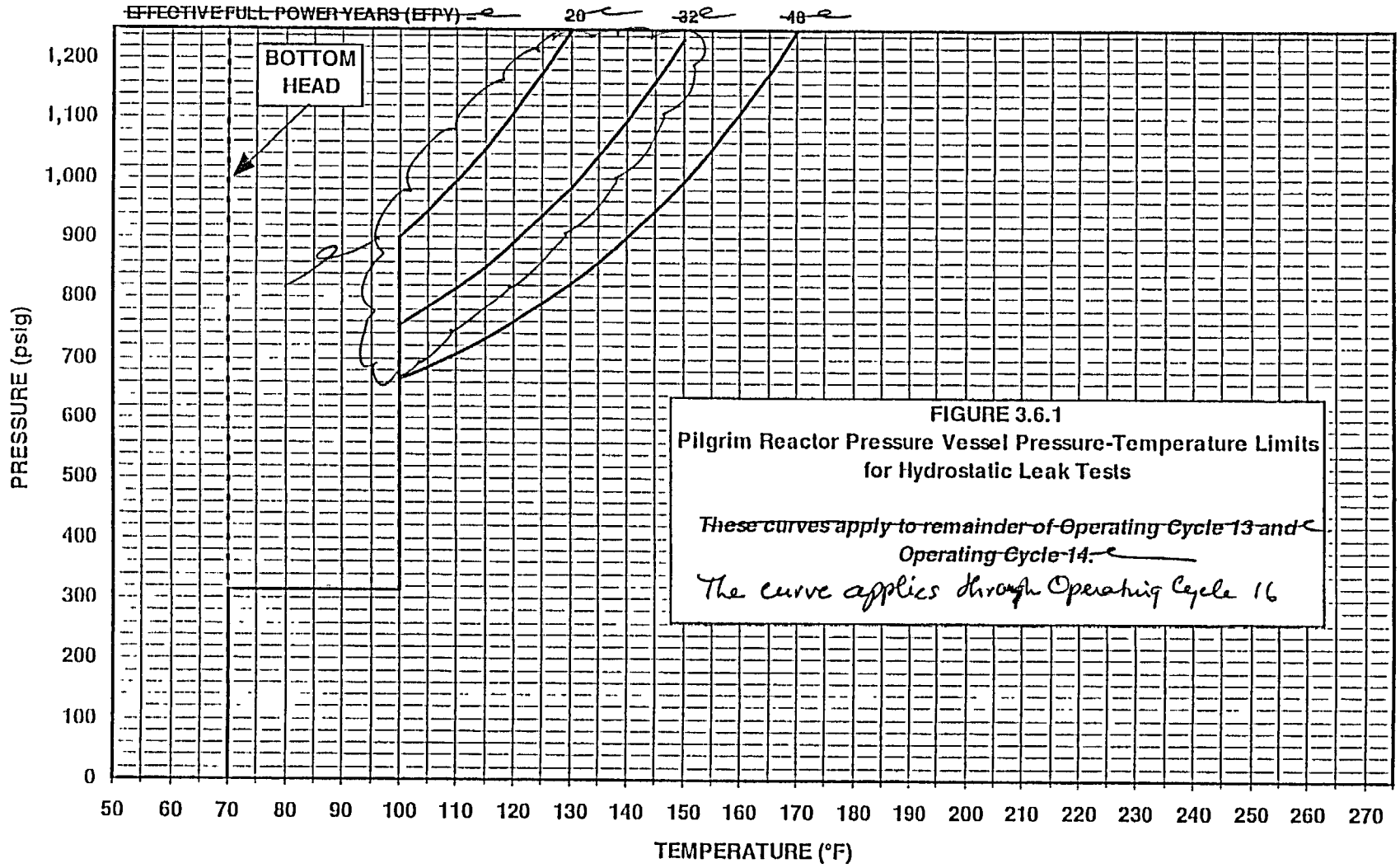

FIGURE 3.6.1
Pilgrim Reactor Pressure Vessel Pressure-Temperature Limits for Hydrostatic Leak Tests

~~*These curves apply to remainder of Operating Cycle 13 and Operating Cycle 14.*~~
The curve applies through Operating Cycle 16

PILGRIM REACTOR VESSEL PRESSURE-TEMPERATURE LIMITS
SUBCRITICAL HEATUP AND COOLDOWN

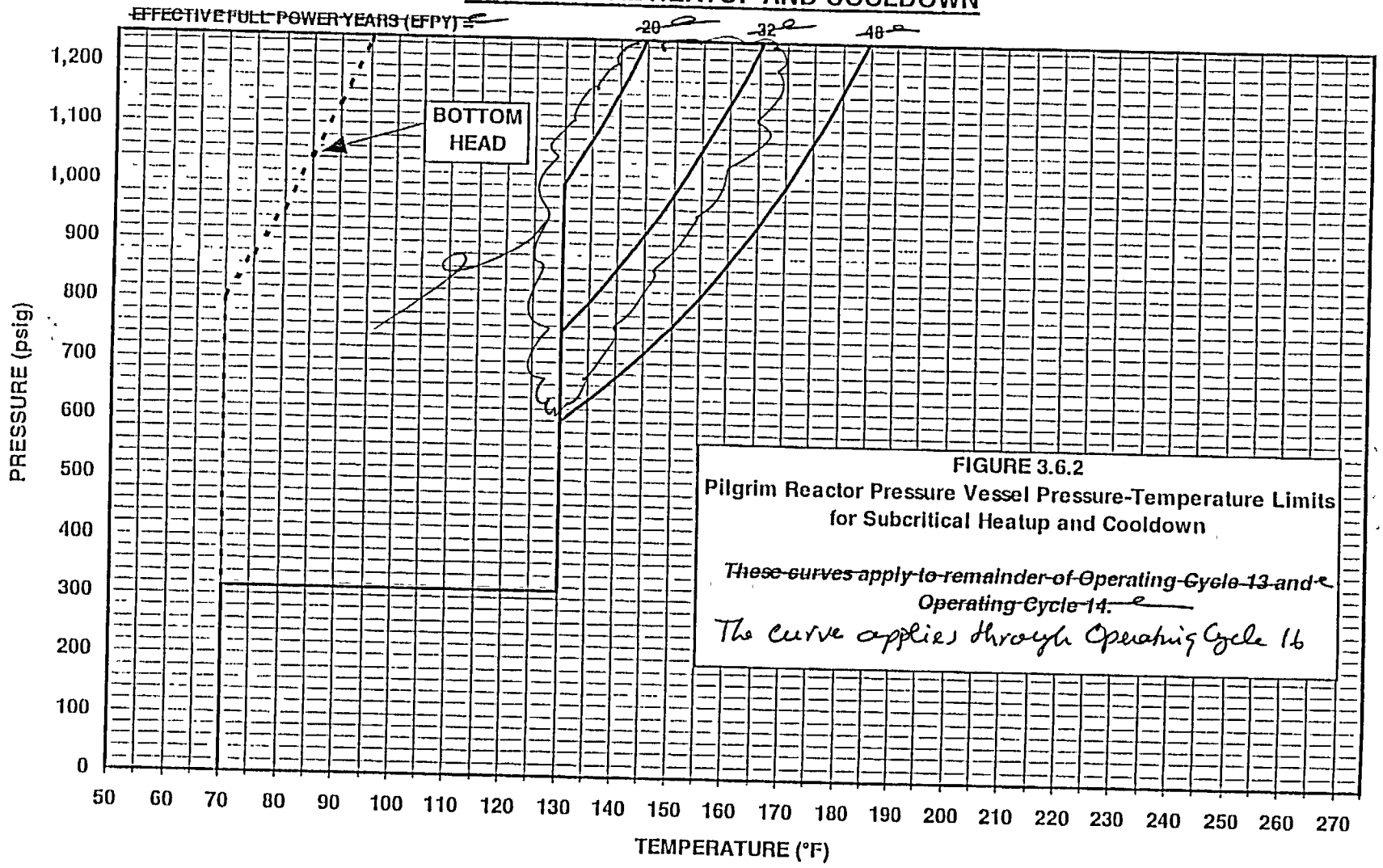

FIGURE 3.6.2
Pilgrim Reactor Pressure Vessel Pressure-Temperature Limits for Subcritical Heatup and Cooldown

~~*These curves apply to remainder of Operating Cycle 13 and Operating Cycle 14.*~~
The curve applies through Operating Cycle 16

PILGRIM REACTOR VESSEL PRESSURE-TEMPERATURE LIMITS
CRITICAL CORE OPERATION

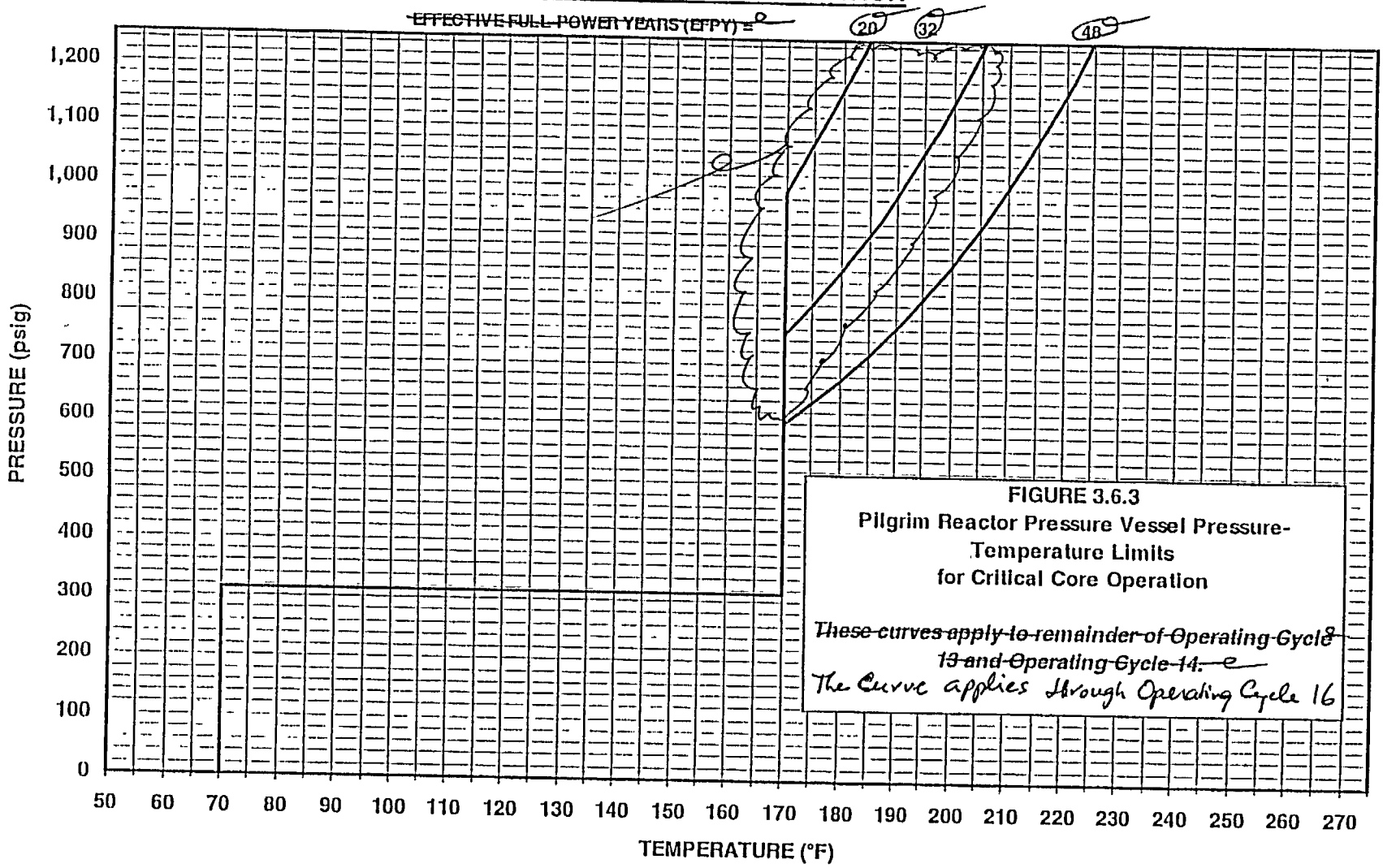

FIGURE 3.6.3
Pilgrim Reactor Pressure Vessel Pressure-Temperature Limits for Critical Core Operation

~~These curves apply to remainder of Operating Cycle 13 and Operating Cycle 14.~~ e
The Curve applies through Operating Cycle 16

ATTACHMENT 3

LIST OF REGULATORY COMMITMENTS

ATTACHMENT 3

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. Please direct questions regarding these commitments to Mr. Bryan Ford at (508) 830-8403.

REGULATORY COMMITMENTS	DUE DATE
Develop and submit to NRC up-to-date pressure-temperature curves for Pilgrim	Prior to RF0 16
Submit revised fluence calculations	Prior to RFO 16
Submit Technical Specification change for Capsule pull, describing BWRVIP ISP for Pilgrim	Prior to RFO 16