



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

February 11, 2009

Vice President, Operations
Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

SUBJECT: PALISADES PLANT – EVALUATION OF RELIEF REQUEST TO EXTEND THE
THIRD 10-YEAR INSERVICE INSPECTION INTERVAL FOR REACTOR VESSEL
WELD EXAMINATION (TAC NO. MD9265)

Dear Sir or Madam:

By letters to the U.S. Nuclear Regulatory Commission (NRC), dated July 21, 2008, and August 14, 2008, Entergy Nuclear Operations, Inc. (ENO, the licensee) requested approval to use an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure and Vessel Code, Section XI, Paragraph IWB-2412, Inspection Program B, for the Palisades Nuclear Plant (PNP). NRC approval was requested to extend the third inspection interval for examination of the reactor vessel welds (Category B-A), the nozzle-to-vessel welds and inner radius sections (Category B-D) until December 12, 2015.

The NRC staff has completed its review of the subject request for authorization of an alternative. As documented in the enclosed Safety Evaluation, the NRC staff concludes that the proposed alternative is justified on the basis that it would provide an acceptable level of quality and safety. Therefore, the NRC staff authorizes the proposed alternative pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year inservice inspection interval at PNP. The proposed alternative is authorized until December 12, 2015.

Sincerely,

A handwritten signature in black ink, appearing to read "Mahesh L. Chawla".

Mahesh L. Chawla, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosures: Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION (ISI) RELIEF REQUEST

REQUIREMENTS TO COMPLY WITH ASME SECTION XI, PARAGRAPH IWB-2412,

"EXTENSION OF THIRD INSPECTION INTERVAL"

PALISADES NUCLEAR PLANT

ENTERGY NUCLEAR OPERATIONS, INCORPORATED

DOCKET NO. 50-255

1.0 INTRODUCTION

By letters dated July 21, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082040342), as supplemented by letter dated August 14, 2008 (ADAMS Accession No. ML082540053), Entergy Nuclear Operations, Inc. (ENO, the licensee) requested Nuclear Regulatory Commission (NRC) approval to use an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure and Vessel Code (ASME Code), Section XI, paragraph IWB-2412, Inspection program B, for the Palisades Nuclear Plant (PNP). Specifically, pursuant to Title 10 of the *Code of Federal Regulations*, (10 CFR) Section 50.55a(a)(3)(i), the licensee requested approval for the use of an alternative to the requirements of the ASME Code to extend the third inservice inspection (ISI) interval for examination of the reactor vessel (RV) welds (Category B-A), the nozzle-to-vessel welds and inner radius sections (Category B-D) until December 12, 2015. The RV weld ISI consists of ultrasonic examinations intended to discover flaws or other discontinuities. Periodic examination is performed to determine whether flaws have initiated, whether pre-existing flaws have extended, or whether pre-existing flaws that may have been missed using older nondestructive examination technology are discernable using more advanced technology. The examinations are required to be performed at least once during every ISI program interval, as defined in Section XI of the ASME Code.

2.0 REGULATORY EVALUATION

In accordance with 10 CFR 50.55a, licensees are required to perform periodic inspections of components in accordance with the ASME Code, Section XI requirements. The code of record for PNP for the third 10-year ISI interval, which began on May 12, 1995, is the 1989 Edition. Subsection IWA-2430(a) of this edition of the ASME Code states: "The inservice examinations and system pressure tests required by IWB, IWC, IWD, and IWE shall be completed during each of the inspection intervals for the service lifetime of the power unit. The inspections shall

Enclosure

be performed in accordance with the schedules of Inspection Program A of IWA-2431, or optionally Inspection Program B of IWA-2432.” PNP is using Inspection Program B.

ASME Code, Section XI, IWA-2430(d) states, “For components inspected under Program B, each of the inspection intervals may be extended or decreased by as much as 1 year. Adjustments shall not cause successive intervals to be altered by more than 1 year from the original pattern of the intervals.” The licensee has taken advantage of this paragraph for an extension of 1 year. Section XI, IWA-2430(e) states, “for power units that are out of service continuously for 6 months or more, the inspection interval during which the outage occurred may be extended for a period equivalent to the outage and the original pattern of intervals extended accordingly for successive intervals.” The licensee has taken advantage of this paragraph for a 215-day extension due to an extended maintenance outage in 2001. As a result of the ASME Code-allowed extensions, the third inspection interval ended on December 12, 2006.

By letters dated November 29, 2005, December 14, 2005, and September 4, 2007 (ADAMS Accession Nos. ML053200296, ML053460170, and ML071770387 respectively), the NRC staff approved the licensee’s relief request to extend the third ISI interval for PNP’s RV weld examinations for two refueling cycles beyond the 11 years, 215 days permitted by the ASME Code. PNP’s refueling cycles last approximately 18 months, but outage scheduling is such that the NRC staff’s approvals are valid through the end of the spring 2009 refueling outage. In this current submittal, the licensee requested, in accordance with 10 CFR 50.55a(a)(3)(i), to extend the third ISI interval for PNP’s RV weld examinations until December 12, 2015. This request does not affect the other inspection requirements of the PNP’s fourth 10-year ISI interval which began on December 13, 2006.

Title 10 of the Code of Federal Regulation (10 CFR) 50.55a(a)(3) states, in part, that the Director of the Office of Nuclear Reactor Regulation (NRR) may authorize alternatives to the requirements of 10 CFR 50.55a(g). In order for the Director of NRR to authorize an alternative in accordance with 10 CFR 50.55(a)(3)(i), the NRC staff must find that the licensee has demonstrated that the proposed alternative provides an acceptable level of quality and safety.

3.0 TECHNICAL EVALUATION

3.1 Systems/Components for Which Relief Is Requested

The affected component is the PNP RV. The following ASME Code, Section XI, examination categories and item numbers cover the RV:

Examination Category	Item Number	Description
B-A	B1.11	Circumferential Shell Weld
B-A	B1.12	Longitudinal Shell Welds
B-A	B1.21	Circumferential Head Weld
B-A	B1.22	Meridional Head Weld
B-A	B1.30	Shell-to-Flange Weld
B-D	B3.90	Nozzle-to-Vessel Welds
B-D	B3.100	Nozzle Inner Radius Areas

3.2 Basis for Relief

An alternative was requested from the requirement of ASME Code, Section XI, IWB-2412, Inspection Program B, that volumetric examination of essentially 100 percent of RV pressure-retaining welds (Examination Categories B-A and B-D) be performed once each ten-year interval. The licensee requested the extension of the third ISI interval for RV pressure-retaining welds (Examination Category B-A and B-D) until December 12, 2015.

The intent of the requested extension was to allow for the subject examinations to be performed in accordance with the data provided in the industry plan for implementation of a 20-year ISI interval. This plan was provided to the NRC (Reference 1).

The Pressurized Water Reactor Owners Group (PWROG) has performed an evaluation of the change in risk of extending the ISI interval for the RV Examination Category B-A and B-D welds from 10 to 20 years (Reference 2). The NRC staff's safety evaluation (SE) is documented in topical report (TR) WCAP-16168-NP-A, Revision 2 and has been approved by the NRC (Reference 3). The industry plan for implementation of a 20-year ISI interval for RV pressure-retaining welds was based on planned implementation of Revision 1 of WCAP-16168-NP, however, it is also applicable for WCAP-16168-NP, Revision 2.

The analyses in WCAP-16168-NP, Revision 2 used probabilistic fracture mechanics (PFM) tools and inputs from the work described in the pressurized thermal shock (PTS) risk re-evaluation (References 4 and 5). PNP was the pilot plant representing the Combustion Engineering (CE) nuclear steam supply system design. The PWROG analyses incorporated the effects of fatigue crack growth and ISI. Design basis transient data was used as input to the fatigue crack growth evaluation. PNP has operated within its design basis and is not expected to exceed the design basis number of transients before the end of the PNP renewed operating license. The effects of ISI were modeled consistently with the previously-approved PFM codes, Westinghouse Structural and Reliability and Risk Assessment and PC-Praise, developed for evaluating the probability of failure in piping in risk-informed ISI programs (References 6 and 7). These effects were put into evaluations performed with the Fracture Analysis of Vessels-Oak Ridge (FAVOR) code. All other inputs were identical to those used in the PTS risk re-evaluation.

Two cases were evaluated with the FAVOR code. The base case, "10-year ISI interval," calculated the RV through-wall cracking frequency (TWCF) assuming that the current ASME Code, Section XI 10-year ISI interval examinations are performed. The extended ISI interval case, "10-year ISI only," calculated the RV TWCF assuming that only the first ten-year ISI interval examination was performed and then eliminating ISI for the remainder of the plant life. The difference between these cases was taken to conservatively estimate the change-in-risk associated with extending the current ten-year ISI interval to 20 years. To account for any uncertainties, a bounding change-in-risk was taken. That is, the difference was taken between a lower bound for the "10-year ISI interval" case (determined by subtracting two times the standard error output by FAVOR from the mean TWCF) and the upper bound for the "10-year ISI only" case (determined by adding two times the standard error to the mean TWCF). This calculation has the result of maximizing the credit given to the 10-year ISI examinations with regard to reducing RV TWCF. The results of this-change-in-risk assessment are shown in Table 1.

Table 1: Palisades Reactor Vessel Failure Frequency Results	
Case	Through-wall Cracking Frequency (in rx-yr⁻¹)
10-Year ISI Only (Mean Value/Standard Error)	7.62E-08 / 4.08E-09
10-Year ISI Only Upper Bound Value (Mean Value + 2 * Standard Error)	8.44E-08
10-Year ISI Interval (Mean Value/Standard Error)	7.39E-08 / 3.80E-09
10-Year ISI Interval Lower Bound Value (Mean Value - 2 * Standard Error)	6.63E-08
Bounding Change in Failure Frequency (Line 2 – Line 4)	1.81E-08

As shown in Table 1, the bounding change in RV TWCF for PNP is 1.81E-08. As discussed in WCAP-16168-NP, Revision 2, if it is conservatively assumed that a through-wall crack in the RV results in a large early release, the change in large early release frequency (LERF) associated with the proposed extension of the ISI interval for the Category B-A and B-D welds at PNP can be estimated as 1.81E-08 events per year. This is less than the Regulatory Guide (RG) 1.174 (Reference 8) criterion of 1.0E-7 events per year for an acceptably small change in LERF.

The proposed alternative is requested to extend the third ISI interval 10 years beyond the ASME Code required 10-year inspection interval and the ASME Code-allowed 215-day extension for the Category B-A and B-D welds at PNP. This request is applicable to the third 10-year inspection interval only. If the relief request is approved, the third ISI interval for the subject examinations would end on December 12, 2015. Pending approval of this proposed alternative, future examination of the subject welds would be performed in, or before, 2015. ENO has submitted a license amendment request (Reference 9) concurrent with this proposed alternative per the requirements of the final safety evaluation for WCAP-16168-NP, Revision 2.

3.3 NRC Staff Evaluation

The staff's conclusion in its SE for WCAP-16168-NP, Revision 2 indicates that the methodology presented in WCAP-16168-NP, Revision 2, in concert with the guidance provided by RG 1.174, is acceptable for referencing in requests to implement alternatives to ASME Code inspection requirements for pressurized-water reactor (PWR) plants in accordance with the limitations and conditions in Section 4.0 of the SE.

Evaluation of Compliance with Section 4.0 of the SE for WCAP-16168-NP, Revision 2

Section 4.0 of the SE for WCAP-16168-NP, Revision 2 indicates:

1. Each licensee shall identify the years in which future inspections will be performed. The dates provided must be within plus or minus one refueling cycle of the dates identified in the implementation plan provided to the NRC in Reference 1.
2. Within one year of completing each of the ASME Code, Section XI, Category B-A and B-D RV weld inspections required in the proposed ISI interval, the licensee must provide the information and analyses requested in Section (e) of the final 10 CFR 50.61a (or the proposed 10 CFR 50.61a, given in 73 FR 46557 prior to issuance of the final 10 CFR 50.61a). Licensees that do not implement

10 CFR 50.61a must amend their licenses to require that the information and analyses requested in Section (e) of the final 10 CFR 50.61a (or the proposed 10 CFR 50.61a, given in 73 FR 46557 prior to issuance of the final 10 CFR 50.61a) will be submitted for NRC staff review and approval. The amendment to the license shall be submitted at the same time as the request for alternative.

3. Licensees that implement 10 CFR 50.61a must perform the ISIs required in Section (e) of the rule and must submit the required information for review and approval to the Director, Office of NRR, in accordance with Section (c) of the rule, at least three years before the limiting RT_{PTS} value calculated under 10 CFR 50.61 is projected to exceed the PTS screening criteria in 10 CFR 50.61. Licensees implementing Section (c) of 10 CFR 50.61a must perform the inspections and analyses required by Section (e) of 10 CFR 50.61a prior to implementing the extended interval.
4. Each licensee shall demonstrate that the methodology in the TR is applicable to all its plant by confirming the applicability of the parameters in Appendix A of the TR on a plant-specific basis. Licensees must submit a request for an alternative that contains all the information in Section 3.4 of the SE for WCAP-16168-NP, Revision 2. However, since the analysis documented in the TR used plant-specific data for Beaver Valley, Unit 1, PNP, and Oconee, Unit 1, these plants need not confirm the applicability of the parameters in Appendix A of the TR for the current license term.

The license has indicated that the next ISI of the reactor vessel will be performed in, or before, 2015. Since this is the same ISI date as listed in Reference 1, it is acceptable and satisfies item 1 in Section 4.0 of the SE for WCAP-16168-NP, Revision 2.

In a letter dated July 21, 2008, (Reference 10) the licensee has requested an amendment to their license. This amendment indicates that the licensee will, within one year of completing each of the ASME Code, Section XI, Category B-A and B-D RV weld inspections, submit information and analyses requested in Section (e) of the final 10 CFR 50.61a (or the proposed 10 CFR 50.61a, given in 73 FR 46557 prior to issuance of the final 10 CFR 50.61a) to the NRC. The ASME Code, Section XI Category B-A and B-D weld inspections will monitor the flaw distribution in the RV welds and adjacent base metal. Hence, the licensee has provided the amendment required by item 2 from Section 4.0 of the SE for WCAP-16168-NP, Revision 2 and will monitor the flaw distribution in the RV welds and adjacent base metal.

Although the licensee has indicated that the next ISI of the RV will be performed in, or before 2015, it is likely that the ISI will be performed earlier than 2015 because PNP is projected to be the first PWR plant to exceed the PTS screening criterion in 10 CFR 50.61. According to the licensee renewal SE (Reference 10) for PNP, the PNP reactor vessel is projected to exceed the PTS screening criterion in 10 CFR 50.61 in 2014. Hence, if the licensee planned to implement 10 CFR 50.61a, the licensee would have to provide the results of its ISI in 2011. In order for the licensee to provide the results of its ISI in 2011, the ISI would need to be performed during a refueling outage prior to 2011. In response to a staff request during a telephone conference of July 21, 2008, and a subsequent electronic mail on August 6, 2008, the licensee indicated (Reference 11) that ENO plans to conduct a reactor vessel examination during the 2010

refueling outage in anticipation of issuance of the proposed PTS rule, 10 CFR 50.61a. In accordance with WCAP-16168-NP-A, Revision 2, the subsequent RV examination would occur in 2030 or earlier, with the interval not exceeding 20 years. This addresses item 3 in Section 4.0 of the SE for the WCAP-16168-NP, Revision 2.

As noted above, since PNP was one of the three pilot plants used in the WCAP-16168-NP, Revision 2 analyses, item 4 in Section 4.0 of the SE for WCAP-16168-NP, Revision 2 has been satisfied.

Evaluation of Compliance with Section 3.4 of the SE for WCAP-16168-NP, Revision 2

Section 3.4 of the SE for WCAP-16168-NP, Revision 2 indicates that licensees that submit a request for an alternative based on the TR need to submit the following plant-specific information:

1. Licensees must demonstrate that the embrittlement of their RV is within the envelope used in the supporting analyses.
2. Licensees must report whether the frequency of the limiting design basis transients during prior plant operation are less than the frequency of the design basis transients identified in the PWROG fatigue analysis that are considered to significantly contribute to fatigue crack growth.
3. Licensees must report the results of prior ISI of RV welds and the proposed schedule for the next 20 year ISI interval. The 20 year inspection interval is a maximum interval. In its request for an alternative, each licensee shall identify the years in which future inspections will be performed. The dates provided must be within plus or minus one refueling cycle of the dates identified in the implementation plan (Reference 1).
4. Licensees with B&W [Babcox & Wilcox Co.,(now Framatome)] plants must (a) verify that the fatigue crack growth of 12 heat-up and cool-down transients per year that was used in the PWROG fatigue analysis bound the fatigue crack growth for all of its design basis transients and (b) identify the design bases transients that contribute to significant fatigue crack growth. (Note: this item is not applicable for PNP, since it is a CE designed plant).
5. Licensees with RVs having forgings that are susceptible to underclad cracking and with RT_{MAX-FO} values exceeding 240 °F must submit a plant-specific evaluation to extend the inspection interval for ASME Code, Section XI, Category B-A and B-D RV welds from 10 to a maximum of 20 years because the analyses performed in the TR are not applicable.

As discussed in Section 3.2 of this SE, PNP was one of the pilot plants for the analyses performed in WCAP-16168-NP, Revision 2. This TR indicates that PNP's TWCF at 60 effective full-power years (EFPY) using the correlations from NUREG-1874 (Reference 5) is 3.16E-7 events per year. The staff's SE for PNP's license renewal indicates that the end of the license renewal period for PNP corresponds to 42.37 EFPY. Since the PNP reactor vessel was one of

the pilot plants and 60 EFPYs exceeds the EFPY for the license renewal term, the analyses in the WCAP are applicable throughout the license renewal term and may be used as the basis for the extension of the ISI interval. This satisfies item 1 from Section 3.4 of the SE for the WCAP-16168-NP, Revision 2 and demonstrates that past and projected future operation will not result in embrittlement that could invalidate the results of the analyses in WCAP-16168-NP, Revision 2.

The frequency of the limiting design basis transients used in the WCAP-16168-NP, Revision 2 analysis for PNP was 13 heat-up and cool-down cycles per year. The licensee reported that on average, PNP has operated with fewer than 13 such cycles per year. Therefore, the frequency of the limiting design basis transients during prior PNP's operation are less than the frequency of the design basis transients utilized in the WCAP-16168-NP, Revision 2 analyses. This satisfies item 2 from Section 3.4 of the SE for the WCAP-16168-NP, Revision 2 and demonstrates that the past operation has not resulted in transients that could invalidate the fatigue growth analysis in WCAP-16168-NP, Revision 2.

The licensee indicated that PNP has performed two ISIs of the Category B-A and B-D welds to date. These inspections were performed in accordance with RG 1.150, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations," (Reference 12). No reportable indications were found in any of the RV welds. Inspection coverage was greater than 90 percent for all the welds in the RV beltline region. There are a total of four recordable indications in the RV beltline. All the indications in the plate material, are acceptable per ASME Code Section XI, Table IWB-3510-1, and meet the "Allowable Number of Flaws" criterion in the proposed PTS rule, 10 CFR 50.61a. The licensee's assessment is provided in Table 2 of the Enclosure to the July 21, 2008 letter.

The NRC staff has confirmed that the flaw sizes and density reported in Table 2 meet the "Allowable Number of Flaws" criterion in the proposed PTS rule, 10 CFR 50.61a. Also as discussed in Section 3.2 of this SE, the applicant has committed to perform the next ISI of the RV welds during, or before, December 2015. Since the licensee has reported the size and density of the flaws in the RV beltline and has identified when the next ISI is to be performed, the licensee has satisfied item 3 from Section 3.4 of the SE for the WCAP-16168-NP, Revision 2.

In Attachment 2 to the July 21, 2008, letter, the licensee indicated that RT_{MAX-FO} value for its forgings is 0 °F. Therefore, the forgings have adequate fracture toughness and the licensee has demonstrated that the plant-specific evaluation referenced in item 5 from Section 3.4 of the SE for the WCAP is not required for PNP.

Evaluation of Compliance with RG 1.174

RG 1.174 identifies guidelines that must be evaluated in making a risk-informed decision about proposed alternatives. These guidelines include the 5 key principles that risk-informed plant changes are expected to meet. These principles are:

1. The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change, i.e., a "specific exemption" under 10 CFR 50.12 or a "petition for rulemaking" under 10 CFR 2.802.

2. The proposed change is consistent with the defense-in-depth philosophy.
3. The proposed change maintains sufficient safety margins.
4. When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.
5. The impact of the proposed change should be monitored using performance measurement strategies.

The staff's SE for WCAP-16168-NP, Revision 2 concludes that proper application of the methodology described in the TR provides confidence that principles 1, 2, and 3 are met.

As discussed in Section 3.2 of this SE, the alternative results in a bounding change in RV failure frequency for PNP of 1.81E-08/year. This value was calculated using the methodology described in WCAP-16168-NP, Revision 2. In Section 3.2.2 of the SE for WCAP-16168-NP, Revision 2, the NRC staff concluded the analyses described in the TR provided a reasonable or bounding estimate of the increase in risk associated with extending the inspection interval for RV from 10 to 20 years. The estimated increase in RV failure frequency indicates that any increase in core damage frequency and LERF caused by implementing the proposed alternative is expected to be less than the very small acceptance guideline for LERF and therefore the proposed action satisfies principle 4.

Principle 5 states that the impact of the proposed change should be monitored using performance measurement strategies. As described in Section 3.3 of this SE, the licensee has monitored the number of transient cycles that could affect the fatigue crack growth analysis, the fracture toughness of the limiting RV material, and the flaw distribution in the RV welds and adjacent base metal. The proposed monitoring program that the licensee will undertake when future ISI results are obtained supports the relief request which extends the current RV ISI interval until December 12, 2015. The licensee will need to address future plans for monitoring the aforementioned parameters if an alternative is sought for the fourth ISI interval at PNP.

The staff's SE on the TR concluded that, upon implementation of these monitoring activities, the planned monitoring program provides confidence that no adverse safety degradation will occur because of the proposed changes and that the engineering evaluation conducted to examine the impact of the proposed changes continues to be valid after the change has been implemented. Therefore principle 5 is met.

Since the change in RV failure frequency is less than 1E-07 and the licensee has provided sufficient information to determine that the proposed change in the PNP RV ISI program has been evaluated according to the methodology approved in the TR, the staff concludes that the proposal meets the RG 1.174 guidelines discussed in the SE for WCAP-16168-NP, Revision 2.

4.0 CONCLUSION

Based upon the above discussion, the NRC staff concludes that: (a) the licensee has provided all the information requested in Sections 3.4 and 4.0 of the SE for WCAP-16168-NP, Revision 2,

(b) the licensee has provided sufficient information to demonstrate that the proposed change in the PNP RV ISI program will meet the RG 1.174 guidelines discussed in the SE for WCAP-16168-NP, Revision 2, and (c) the licensee's proposed alternative provides reasonable assurance of an adequate level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the NRC staff authorizes the extension of the third 10-year ISI interval until December 12, 2015, for PNP RV ASME Code, Section XI Category B-A welds and Category B-D nozzle-to-vessel welds and nozzle inner radius areas.

All other requirements of the ASME Code for which relief has not been specifically requested remain applicable including third party review by the Authorized Nuclear Inservice Inspector.

5.0 REFERENCES

1. PWROG Letter OG-06-356, "Plan for Plant Specific Implementation of Extended Inservice Inspection per WCAP-16168-NP, Revision 1, "Risk-Informed Extension of the Reactor Vessel In-Service Inspection Interval," MUHP 5097-99, Task 2059, October 31, 2006, (ADAMS Accession No. ML082210245).
2. Letter from F. P. Schiffley, PWR Owners Group, "Responses to the NRC Request for Additional Information (RAI) on PWR Owners Group (PWROG) WCAP-16168-NP, Revision 1, "Risk-Informed Extension of Reactor Vessel In-Service Inspection Interval", MUHP-5097/5098/5099, Task 2008/2059," October 16, 2007, and Enclosure 1, RAI Responses (ADAMS Accession No. ML072920412). Enclosure 2, WCAP-16168-NP, Revision 2, "Risk-Informed Extension of Reactor Vessel In-Service Inspection Interval", October 2007 (ADAMS Accession No. ML072920413).
3. Letter from H. K. Nieh (NRC) to G. Bischoff (Manager Owners Group, Westinghouse Electric Company), "Final Safety Evaluation for Pressurized Water Reactor Owners Group (PWROG) Topical Report (TR) WCAP-16168-NP, Revision 2, "Risk-Informed Extension of the Reactor Vessel In-Service Inspection Interval, (TAC. NO. MC9768)," May 8, 2008, (ADAMS Accession Nos. ML081060051 and ML081060045).
4. NUREG-1806, "Technical Basis for Revision of the Pressurized Thermal Shock (PTS) Screening Limits in the PTS Rule (10 CFR 50.61): Summary Report," May 2006, (ADAMS Accession No. ML061580318).
5. NUREG-1874, "Recommended Screening Limits for Pressurized Thermal Shock (PTS)," March 2007, (ADAMS Accession No. ML070860156).
6. WCAP-14572-NP-A, "Westinghouse Owners Group Application of Risk-Informed Methods to Piping Inservice Inspection Topical Report" Revision 1, February 1999 (ADAMS Accession Nos. ML012630327, ML012630349, and ML012630313).
7. NUREG/CR-5864, Theoretical and Users Manual for PC-PRAISE, July 1992.
8. Regulatory Guide 1.174. "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," November 2002 (ADAMS Accession No. ML023240437).

9. NUREG-1871, "Safety Evaluation Report Related to the License Renewal of the Palisades Nuclear Plant," USNRC, September 2006 (ADAMS Accession No. ML062710074).
10. Entergy Letter (C. J. Schwarz) to U.S. Nuclear Regulatory Commission, "License Amendment Request for License Condition to Support Implementation of Extended In-Service Inspection Interval," July 21, 2008, (ADAMS Accession No. ML082030796).
11. Entergy Letter (C. J. Schwarz) to U.S. Nuclear Regulatory Commission, "Request for Additional Information Concerning Authorization to Extend the Third 10-Year Inservice Inspection Interval for Reactor Vessel Weld Examination," August 14, 2008 (ADAMS Accession No. ML082540053).
12. Regulatory Guide 1.150, Revision 1, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations," February 1983, (ADAMS Accession No. ML003739996).

February 11, 2009

Vice President, Operations
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Sincerely,

/RA/

Mahesh L. Chawla, Project Manager
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Enclosures: Safety Evaluation

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* Memorandum dated 12/29/08

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