May 2, 2001

Mr. Mike Bellamy
Site Vice President
Entergy Nuclear Generation Company
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360

SUBJECT: PILGRIM NUCLEAR POWER STATION - RELIEF REQUEST REGARDING APPROVAL OF ALTERNATIVE RISK-INFORMED INSERVICE INSPECTION PROGRAM FOR THE THIRD INSPECTION INTERVAL (TAC NO. MB0841)

Dear Mr. Bellamy:

By letter dated December 27, 2000 (ENGC Letter 2.00.084), as supplemented on January 19 (ENGC Letter 2.01.013), March 8 (ENGC Letter 2.01.034), March 27 (ENGC Letter 2.01.044), and April 11, 2001 (ENGC Letter 2.01.049), Entergy Nuclear Generation Company (Entergy/the licensee) requested the U.S. Nuclear Regulatory Commission (NRC) staff to review and approve an alternative risk-informed inservice inspection (RI-ISI) for the remainder of the third inspection interval for the Pilgrim Nuclear Power Station (Pilgrim). The relief is being requested as an alternative to the current 1989 American Society of Mechanical Engineers (ASME) Section XI requirements for Class I code category B-J and B-F piping welds. The Pilgrim RI-ISI program was developed in accordance with the EPRI methodology contained in EPRI TR 112657, "Risk-Informed Inservice Inspection Evaluation Procedure."

Based on our review of the information provided in your submittals, the staff finds that the licensee's proposed RI-ISI program is an acceptable alternative to the requirements of the ASME Section XI for Code Class 1 piping (Categories B-F and B-J welds) only. The staff therefore authorizes, pursuant to 10 CFR 50.55a(a)(3)(i), the proposed alternative on the basis that the licensee's proposed alternative provides an acceptable level of quality and safety.

The basis for the staff's conclusion is in the enclosed safety evaluation. This action closes TAC No. MB0841. If you have any questions regarding the relief request, please contact Alan Wang at (301) 415-1445.

Sincerely,

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-293

Enclosure: Safety Evaluation

cc w/encl: See next page

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Enclosure: Safety Evalution

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**See previous concurrence

ACCESSION NUMBER: ML011020131 ***SE dated 4/12/01; no major changes made.***

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Official Record Copy

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RISK-INFORMED INSERVICE INSPECTION PROGRAM

ENTERGY NUCLEAR GENERATION COMPANY

PILGRIM NUCLEAR POWER STATION

DOCKET NO. 50-293

1.0 INTRODUCTION

By letter dated December 27, 2000 (Ref. 1), the Entergy Nuclear Generation Company (Entergy/the licensee) proposed a risk-informed inservice inspection (RI-ISI) program for Pilgrim Nuclear Power Station (Pilgrim) as an alternative to a portion of their current inservice inspection (ISI) program. Additional clarifying information was provided by Entergy letters dated January 19 (Ref. 2), March 8 (Ref. 3), March 27 (Ref. 4), and April 11, 2001 (Ref. 9). The scope of the RI-ISI program is limited to the American Society of Mechanical Engineers (ASME) Code Class 1 piping (Categories B-F and B-J welds) only. The licensee's RI-ISI program was developed in accordance with the methodology contained in the Electric Power Research Institute (EPRI) report EPRI TR-112657, Rev. B-A (Ref. 5), which was previously reviewed and approved by the staff by letter dated October 28, 1999. Pilgrim is currently in the second period of the third 10-year ISI interval. The licensee proposed the RI-ISI program as an alternative pursuant to Section 50.55a(a)(3)(i) of Title 10 of the *Code of Federal Regulations* (10 CFR) for the third 10-year ISI interval.

2.0 BACKGROUND

2.1 Applicable Requiremnts

Pursuant to 10 CFR 50.55a(g), ISI of ASME Code Class 1, 2, and 3 components must be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code, "Rules for Inservice Inspection of Nuclear Power Plant Components" (hereinafter called Code) and applicable addenda, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). The regulations at 10 CFR 50.55a(a)(3) state in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the Director of the Office of Nuclear Reactor Regulation, if the licensee demonstrates that the proposed alternative would provide an acceptable level of quality and safety, or if the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements set forth in the Code, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that ISI of components conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. For Pilgrim, the applicable edition of the Code for the third 10-year ISI interval, which began in July 1995, is the 1989 Edition.

2.2 Summary of Proposed Approach

The licensee has proposed to use an RI-ISI program for ASME Class 1 piping (Examination Categories B-F and B-J welds), as an alternative to the ASME Code, Section XI requirements. The ASME Code requires in part that for each successive 10-year ISI interval, 100% of Category B-F welds and 25% of Category B-J welds for the ASME Code Class 1 piping greater than 1 inch in nominal diameter be selected for volumetric and/or surface examination, based on existing stress analyses and cumulative usage factors. The submittal follows the staff-approved RI-ISI process and methodology delineated in EPRI TR-112657, Rev. B-A. By assessing piping failure potential and piping failure consequences, and performing probabilistic risk assessments (PRA) and safety significance ranking of piping segments, inspection locations are significantly reduced. However, the program retains the fundamental requirements of the Code, such as inspection methods, acceptance guidelines, pressure testing, corrective measures, documentation requirements, and quality control requirements. Thus, ISI program requirements of other non-related portions of the ASME Code Section XI are unaffected.

In addition, the licensee indicated that the augmented ISI program implemented in response to NRC Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant Systems," has been subsumed into the RI-ISI program, because the potential for thermal fatigue is explicitly considered in the application of the EPRI RI-ISI process. Other remaining augmented ISI programs are either unaffected, or modified in accordance with the guidance of the EPRI report.

3.0 EVALUATION

Pursuant to 10 CFR 50.55a(a)(3), the staff has reviewed and evaluated the licensee's proposed RI-ISI program, including those portions related to the applicable methodology and processes contained in Reference 5, based on guidance and acceptance criteria provided in Regulatory Guides (RGs) 1.174 (Ref. 6) and 1.178 (Ref. 7) and in Standard Review Plan (SRP) Chapter 3.9.8 (Ref. 8).

3.1 Proposed Changes to the ISI Program

The scope of the licensee's RI-ISI program is limited to include Category B-J piping welds and Category B-F dissimilar metal nozzle welds only. The RI-ISI program was proposed as an alternative to the existing ISI program which is based on examination requirements of the ASME Code, Section XI. A general description of the proposed changes to the ISI program was provided in Sections 3 and 6 of Reference 1.

3.2 Engineering Analysis

In accordance with the guidance provided in RGs 1.174 and 1.178, an engineering analysis of the proposed changes using a combination of traditional engineering analysis and supporting insights from PRA was performed. The licensee discussed how the engineering analyses conducted for the Pilgrim RI-ISI program ensure that the proposed changes are consistent with the principles of defense-in-depth, and that adequate safety margins will be maintained. The licensee evaluated a piping location's susceptibility to a particular degradation mechanism that may be a precursor to leak or rupture, and then performed an independent assessment of the consequence of a failure at that location. In general, the approach is consistent with the process approved in EPRI TR-112657.

The Pilgrim RI-ISI program is limited to ASME Class 1 piping welds - Examination Category B-F and B-J welds only. The licensee stated in Reference 1 that other non-related portions of the ASME Section XI Code requirements, such as inspection methods, acceptance guidelines, pressure testing, corrective measures, documentation requirements, and quality control requirements, will be unaffected by the RI-ISI program. This is consistent with the guidelines provided in EPRI TR-112657, and therefore, is acceptable.

The licensee also stated in Reference 1 that Relief Request PRR-1, which was previously approved by the NRC regarding inaccessible welds selected for examination in the current ASME Section XI Program, will be withdrawn. This is acceptable because these welds are not selected for examination in the RI-ISI program, and as such, Relief Request PRR-1 is no longer needed.

In Reference 1, the licensee stated that current augmented ISI programs will not be affected, with the exception of the augmented examinations on welds in response to NRC Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant System," which is subsumed into the RI-ISI program. Since the potential for thermal fatigue is explicitly considered in the application of the EPRI RI-ISI process, this is acceptable.

Pilgrim is currently at the start of the second period of the third ISI interval. The licensee indicated that 34% of the examinations required by the ASME Code, Section XI have been completed in the first period, and proposed to complete the remaining 66% of the examinations in the second and third periods based on the requirements of the RI-ISI program. The staff prefers completion of all examinations under a single program in an ISI interval. However, since the licensee had completed the Code-required minimum percentage (34%) of examinations in the first period, the staff concludes that the total number of examinations to be performed under the RI-ISI program as proposed by the licensee is acceptable.

In response to a staff request, the licensee provided (Ref. 2) a detailed listing regarding the number of Category B-F and B-J welds selected for inspection in the RI-ISI program. The RI-ISI program reduces the total number of B-F and B-J welds to be examined to 71 from a total of 635 under the current ASME Code, Section XI program. In Reference 2, the licensee informed the staff that 68 out of a total of 518 butt welds in these B-F and B-J categories (13.1%) were selected for inspection, and 71 out of a total of 635 B-F and B-J welds (11.2%) were selected for inspection in the RI-ISI program. The staff concludes that the selected numbers, although greatly reduced, exceed the criteria in our safety evaluation contained in our

letter dated October 28, 1999, for a minimum of 10% for defense-in-depth consideration, and therefore, are acceptable.

The licensee also described its alternative thermal stratification, cycling, and striping (TASCS) susceptibility screening criteria, which consist of additional considerations to the previously approved criteria stated in EPRI TR-112657. The additional considerations include conditions of potential mixing of fluid in the turbulent penetration region at branch piping connections, diminished stratified temperature differences at locations which lack a sustained source of cold or hot fluid, and situations with a low potential for cyclic thermal fluctuation at a leaking valve. The licensee stated in Reference 4 that the alternative screening criteria are consistent with the criteria recently submitted by EPRI for generic approval as contained in the report "Interim Thermal Fatigue Management Guidelines (MRP-24)." The MRP-24 report is currently undergoing a separate NRC staff review. The alternative criteria appear to be based on reasonable engineering judgment, and therefore, are acceptable for interim application to Pilgrim. By letter dated April 11, 2001, the licensee has committed to address staff concerns which may arise as a result of a separate ongoing review on the generic report MRP-24 regarding alternative TASCS screening criteria.

Piping systems within the scope of the RI-ISI program were divided into piping segments. Pipe segments are defined as lengths of pipe whose failure would lead to the same consequence and which are exposed to the same degradation mechanism. The licensee's submittal also stated that failure potential estimates were generated utilizing industry failure history, plant-specific failure history, and other relevant information using the guidance provided in EPRI TR-112657. The staff concludes that the licensee has met the SRP 3.9.8 guidelines to confirm that a systematic process was used to identify pipe segments' susceptibility to common degradation mechanisms, and to categorize these degradation mechanisms into the appropriate degradation categories with respect to their potential to result in a postulated leak or rupture.

Additionally, the licensee stated that the consequences of pressure boundary failure were evaluated and ranked based on their impact on core damage frequency (CDF) and large early release frequency (LERF), and that the impact due to both direct and indirect effects was considered using guidance provided in EPRI TR-112657. The licensee reported no deviations from the consequence evaluation methodology in EPRI TR-112657. Based on above discussion, the staff finds the consequence evaluation performed for this application to be acceptable.

3.3 Probabilistic Risk Assessment

The licensee used its original 1992 Level 2 Individual Plant Examination (IPE) as a base model and used conditional core damage probability (CCDP) values from their 1995 IPE supplement to evaluate the consequences of pipe rupture for the RI-ISI assessment. In its submittal, the licensee reported a base core damage frequency (CDF) of 2.84E-5/year and stated that a LERF was not calculated.

The Pilgrim IPE was submitted in September 1992 and supplemented by a response to a staff Request for Additional Information (RAI) response in December 1995. The IPE identified a CDF of 5.85E-5/year. The staff evaluation report (SER) dated October 30, 1996, concluded that the Pilgrim IPE satisfied the intent of GL 88-20, "Individual Plant Examination for Severe

Accident Vulnerabilities." However, in its SER the staff noted that the licensee did not analyze human errors related to calibration of equipment, used small screening human error probabilities to determine the most important human events, and that it appeared that the screening values were not modified to account for dependencies. Furthermore, the staff noted that the licensee took 100% credit for inhibiting automatic depressurization system (ADS) under anticipated transient without scram (ATWS) conditions and took 100% credit for two human actions in the back-end analysis (initiating drywell sprays and initiating containment venting).

In Reference 1, the licensee stated that in consideration of the NRC staff concern regarding taking 100% credit for inhibiting ADS under ATWS conditions, ATWS sequences were added to the large early release category in its RI-ISI consequence evaluation. The licensee also stated that the other concerns in the NRC staff's SER, as well as some improvements suggested during a 1999 Boiling Water Reactor Owner's Group peer certification review, were considered during the RI-ISI program development. The licensee concluded that any changes made in order to address the concerns would have, at most, a conservative impact (decrease the number of welds in the RI-ISI program) on the conclusions from the RI-ISI evaluation of Class 1 piping.

The staff recognizes that the quantitative results of the IPE are used as order of magnitude estimates for several risk and reliability parameters used to support the assignment of segments into three broad consequence categories. The staff did not review the IPE analysis to assess the accuracy of the quantitative estimates. The staff believes that inaccuracies in the models or in assumptions large enough to invalidate the broad categorizations developed to support RI-ISI should have been identified during the staff's review of the IPE and by the licensee's model update control program. The EPRI methodology applied by the licensee requires that ten percent of the Class 1 elements be inspected in the RI-ISI program, regardless of the quantitative results of the risk analyses. Therefore, while minor errors or inappropriate assumptions in the IPE could affect the consequence categorization of a few segments and thus the location of several inspections, these errors will not invalidate the general results or conclusions of the SE. The staff finds the quality of the licensee's IPE sufficient to support the application of the approved EPRI methodology and the proposed RI-ISI program.

The degradation category and the consequence category were combined according to the approved methodology described in the EPRI TR-112657 to categorize the risk significance of each segment. The risk significance of each segment is used to determine the number of weld inspections required in each segment.

The licensee conducted a bounding analysis to estimate the change in risk expected from replacing the current ISI program with the RI-ISI program. The calculations estimated the change in risk due to removing locations and adding locations to the inspection program. For high consequence category segments, the licensee used the CCDP and conditional large early release probability (CLERP) based on the highest estimated CCDP and CLERP. For medium consequence category segments, bounding estimates of CCDP and CLERP were used. The licensee estimated the change in risk using bounding pipe failure rates from the EPRI methodology.

The licensee performed its bounding analysis with and without taking credit for an increased probability of detection (POD). In Reference 3 the licensee estimated the aggregate change in CDF to be about 1.74E-8/yr and estimated the aggregate change in LERF to be about 1.74E-8/yr excluding credit for any increased POD due to the use of improved inspection techniques. Including the expected increased POD results in an aggregate estimated change in CDF of –3.0E-8/yr and aggregate estimated change in LERF of –3.0E-8/yr. The CDF and LERF estimates are the same because the highest maximum CCDP and CLERP are the same value (2E-2) and the change in risk is dominated by the high consequence segments. CLERP requires failure or bypass of the containment in addition to a core damage event and is normally smaller than CCDP.

The staff finds the licensee's process to evaluate and bound the potential change in risk reasonable because it accounts for the change in the number and location of elements inspected, recognizes the difference in degradation mechanism related to failure likelihood, and considers the effects of enhanced inspection. System level and aggregate estimates of the changes in CDF and LERF are less than the corresponding guideline values in the EPRI-TR with the exception of an estimated increase in LERF, without improved POD, of 1.74E-8/yr compared to the guideline value of 1E-8/yr. The staff finds that the magnitude with which the estimated change in LERF exceeds the guideline value is inconsequential given the unusually high estimated CLERP and the estimated risk decrease when improved POD is included, and that the change in risk is consistent with the intent of the EPRI guidance. The staff finds that re-distributing the welds to be inspected with consideration of the risk-significance of the segments provides assurance that segments whose failure have a significant impact on plant risk receive an acceptable and often improved level of inspection. Therefore, the staff concludes that the implementation of the RI-ISI program as described in the licensee's application will have a small impact on risk consistent with the guidelines of RG 1.174, and thus, will not cause the NRC safety goals to be exceeded.

3.4 Integrated Decisionmaking

As described in the licensee's submittal, an integrated approach is utilized in defining the proposed RI-ISI program by considering in concert the traditional engineering analysis, risk evaluation, and the implementation and performance monitoring of piping under the program. This is consistent with the guidelines of RG 1.178.

The selection of pipe segments to be inspected is described in Section 4.5 of the submittal using the results of the risk category rankings and other operational considerations. Table 4.5-2 of the submittal provides the number of locations and inspections by risk category for the various Pilgrim systems. Table 4.6-1 of Reference 3 provides the final summary table comparing the number of inspections required under the existing ASME Section XI ISI program with the alternative RI-ISI program, and presents the risk impact results by each system. The licensee used the methodology described in EPRI TR-112657 to guide the selection of examination elements within high and medium risk ranked piping segments. The methodology described in EPRI TR-112657 calls for maintaining existing augmented programs, other than thermal fatigue and IGSCC Category A piping welds which the RI-ISI program supersedes. The EPRI report describes targeted examination volumes (typically associated with welds) and methods of examination based on the type(s) of degradation expected. The staff has reviewed

these guidelines and has determined that, if implemented as described, the RI-ISI examinations should result in improved detection of service-related degradations over that currently required by the ASME Code, Section XI.

The staff finds that the location selection process is acceptable since it is consistent with the process approved for EPRI TR-112657, takes into account defense-in-depth, and includes coverage of systems subjected to degradation mechanisms in addition to those covered by augmented inspection programs.

The objective of ISI required by ASME Section XI is to identify conditions (i.e., flaw indications) that are precursors to leaks and ruptures in the pressure boundary that may impact plant safety. Based on the integrated approach for the improved detection of service-related degradation and location selection, the staff has concluded the proposed RI-ISI program does meet this objective. Further, since the risk-informed program is based on inspection for cause, the element selection targets specific degradation mechanisms.

Chapter 4 of EPRI TR-112657 provides guidelines for the areas and/or volumes to be inspected as well as the examination method, acceptance standard, and evaluation standard for each degradation mechanism. Based on review of the cited portion of the EPRI report, the staff concludes that the examination methods for the proposed RI-ISI program are appropriate since they are selected based on specific degradation mechanisms, pipe sizes, and materials of concern.

3.5 Implementation and Monitoring

Implementation and performance monitoring strategies require careful consideration by the licensee and are addressed in Element 3 of RG 1.178 and SRP 3.9.8. The objective of Element 3 is to assess performance of the affected piping systems under the proposed RI-ISI program by implementing monitoring strategies that confirm the assumptions and analyses used in the development of the RI-ISI program. Pursuant to 10 CFR 50.55a(a)(3)(i), a proposed alternative, in this case the implementation of the RI-ISI program, including inspection scope, examination methods, and methods of evaluation of examination results, must provide an acceptable level of quality and safety.

The licensee stated in its letter dated December 27, 2000, that upon approval of the RI-ISI program, they will prepare procedures that comply with the EPRI TR-112657 guidelines to implement and monitor the RI-ISI program. The licensee confirmed that the applicable portions of the ASME Code, such as inspection methods, acceptance guidelines, pressure testing, corrective measures, documentation requirements, and quality control requirements would be retained.

The licensee stated in Section 5 of the December 27, 2000, submittal that the RI-ISI program is a living program and its implementation will require feedback of new relevant information to ensure the appropriate identification of safety-significant piping locations. The submittal also states that, as a minimum, risk ranking of piping segments will be reviewed and adjusted on an ASME period basis and that significant changes based on NRC bulletins or generic letters, or industry and plant-specific feedback may require more frequent adjustments.

The proposed periodic reporting requirements meet existing ASME Code requirements and applicable regulations, and therefore, are considered acceptable. The staff finds that the proposed process for RI-ISI program updates meets the guidelines of RG 1.174 which provide that risk-informed applications should include performance monitoring and feedback provisions; therefore, the licensee's proposed process for program updates is acceptable.

4.0 CONCLUSION

The regulation at 10 CFR 50.55a(a)(3)(i) permits alternatives to specified regulatory requirements when authorized by the Director of the Office of Nuclear Reactor Regulation on the basis that an alternative provides an acceptable level of quality and safety. In this case, the licensee's proposed alternative is to use the risk-informed process described in the NRC-approved EPRI-TR 112657. As discussed in Section 3.0, the staff concludes that the licensee's proposed RI-ISI program, as described in its submittal, will provide an acceptable level of quality and safety pursuant to 10 CFR 50.55a with regard to the number of inspections, locations of inspections, and methods of inspections.

The staff finds that the results of the different elements of the engineering analysis are considered in an integrated decision making process. The impact of the proposed change in the ISI program is founded on the adequacy of the engineering analysis and acceptable change in plant risk in accordance with RG 1.174 and 1.178 guidelines.

The licensee's methodology also considers implementation and performance monitoring strategies. Inspection strategies ensure that failure mechanisms of concern have been addressed and there is adequate assurance of detecting damage before structural integrity is affected. The risk significance of piping segments is taken into account in defining the inspection scope for the RI-ISI program.

System pressure tests and visual examination of piping structural elements will continue to be performed on all Class 1, 2, and 3 systems in accordance with the ASME Code Section XI program. The RI-ISI program applies the same performance measurement strategies as existing ASME Code requirements and, in addition, increases the inspection volumes at weld locations that are exposed to thermal fatigue.

The Pilgrim methodology provides for conducting an engineering analysis of the proposed changes using a combination of engineering analysis with supporting insights from a PRA. Defense-in-depth quality is not degraded in that the methodology provides reasonable confidence that any reduction in existing inspections will not lead to degraded piping performance when compared to existing performance levels. Inspections are focused on locations with active degradation mechanisms as well as selected locations that monitor the performance of system piping.

As discussed above, the staff's review of the licensee's proposed RI-ISI program concludes that the program is an acceptable alternative to the current ISI program, which is based on ASME Code, Section XI, requirements for Class 1 welds. Therefore, the staff authorizes the proposed alternative pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that the request provides an acceptable level of quality and safety. This safety evaluation authorizes implementation of the proposed RI-ISI program for the third 10-year ISI interval, which began in July 1995 and ends in

July 2005. As discussed in Section 3.2, by letter dated April 11, 2001, the licensee has committed to address staff concerns which may arise as a result of a separate ongoing review on the generic report MRP-24 regarding alternative thermal stratification, cycling, and striping screening criteria.

5.0 REFERENCES

1. Letter dated December 27, 2000, J. Alexander to U.S. Nuclear Regulatory Commission, containing *Pilgrim Risk-Informed Inservice Inspection Program*.

2. Letter dated January 19, 2001, J. Alexander to U.S. Nuclear Regulatory Commission, containing *Additional Information Related to Pilgrim Risk-Informed Inservice Inspection Program.*

3. Letter dated March 8, 2001, J. Alexander to U.S. Nuclear Regulatory Commission, containing *Update to the Pilgrim Risk-Informed Inservice Inspection Program*.

4. Letter dated March 27, 2001, J. Alexander to U.S. Nuclear Regulatory Commission, containing *Clarification Concerning Pilgrim Risk-Informed Inservice Inspection Program*.

5. EPRI TR-112657, Revision B-A, *Revised Risk-Informed Inservice Inspection Evaluation Procedure*, January 2000.

6. NRC Regulatory Guide 1.174, *An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis*, July 1998.

7. NRC Regulatory Guide 1.178, *An Approach for Plant-Specific Risk-Informed Decision Making: Inservice Inspection of Piping*, September 1998.

8. NRC NUREG-0800, Chapter 3.9.8, *Standard Review Plan for Trail Use for the Review of Risk-Informed Inservice Inspection of Piping*, September 1998.

9. Letter dated April 11, 2001, J. Alexander to U.S. Nuclear Regulatory Commission, containing *Implementation of Interim Thermal Fatigue Management Guideline (MRP-24) For Pilgrim Risk-Informed Inservice Inspection Program*

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