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TECHNICAL EVALUATION REPORT ON THE
SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN:
BOSTON EDISON COMPANY,
PILGRIM NUCLEAR POWER STATION, UNIT 1,
DOCKET NUMBER 50-293

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ABSTRACT

This report presents the results of the evaluation of the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval Inservice Inspection (ISI) Program Plan, Revision 3, submitted December 12, 1986, and Amendment ISI 87-02 submitted March 2, 1988. The December 12, 1986 submittal included new and revised requests for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI requirements which the Licensee has determined to be impractical. Revision 3 of the Program Plan reflects the current plant configuration including the recirculation pipe replacement made during the 1983-1984 outage. The Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, is evaluated in Section 2 of this report. The ISI Program Plan is evaluated for (a) compliance with the appropriate edition/addenda of Section XI, (b) acceptability of the examination sample, (c) exclusion criteria, and (d) compliance with ISI-related commitments identified during the Nuclear Regulatory Commission (NRC) review of previous submittals by the Licensee. The new and revised requests for relief from the ASME Code requirements which the Licensee has determined to be impractical for the second 10-year inspection interval are evaluated in Section 3 of this report.

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SUMMARY

The Licensee, Boston Edison Company, has revised the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval Inservice Inspection (ISI) Program Plan, Revision 3, to meet the requirements of the 1980 Edition, Winter 1980 Addenda (80W80) of the ASME Code Section XI. The second 10-year interval began December 8, 1982 and ends December 8, 1992.

The information in the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, submitted December 12, 1986, and Amendment ISI 87-02 submitted March 2, 1988, was reviewed. The December 12, 1986 submittal contained revised and new requests for relief from the ASME Code Section XI requirements which the Licensee has determined to be impractical. Revision 3 of the Program Plan reflects the current plant configuration including all modifications made during the 1983-1984 refueling outage (i.e. recirculation pipe replacement project) and utilizes the newer Code Edition and Addenda (80W80) for weld selection. As a result of this review, a Request for Additional Information (RAI) was prepared describing the information and/or clarification required from the Licensee in order to complete the review.

Based on the review of the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, the Licensee's response to the Nuclear Regulatory Commission's RAI, and the recommendations for the granting of relief from the ISI examination requirements that have been determined to be impractical, it has been concluded that the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, is acceptable and in compliance with 10 CFR 50.55a(g)(4).

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1. INTRODUCTION

Throughout the service life of a water-cooled nuclear power facility, 10 CFR 50.55a(g)(4) (Reference 1) requires that components (including supports) which are classified as American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Class 1, Class 2, and Class 3 meet the requirements, except the design and access provisions and the preservice examination (PSI) requirements, set forth in the ASME Code Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," (Reference 2) to the extent practical within the limitations of design, geometry, and materials of construction of the components. This section of the regulations also requires that inservice examinations of components and system pressure tests conducted during successive 120-month inspection intervals shall comply with the requirements in the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the start of the 120-month inspection interval, subject to the limitations and modifications listed therein. The components (including supports) may meet requirements set forth in subsequent editions and addenda of this Code which are incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein. The Licensee, Boston Edison Company, has prepared the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval Inservice Inspection (ISI) Program Plan, Revision 3, to meet the requirements of the 1980 Edition, Winter 1980 Addenda (80W80) of the ASME Code Section XI. The second 10-year interval began December 8, 1982 and ends December 8, 1992.

As required by 10 CFR 50.55a(g)(5), if the licensee determines that certain Code examination requirements are impractical and requests relief from them, the licensee shall submit information and justifications to the Nuclear Regulatory Commission (NRC) to support that determination.

Pursuant to 10 CFR 50.55a(g)(6), the NRC will evaluate the licensee's determinations under 10 CFR 50.55a(g)(5) that Code requirements are impractical. The Commission may grant relief and may impose alternative requirements as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

The information in the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, through Revision 3 (Reference 3), submitted December 12, 1986, and Amendment ISI 87-02 (Reference 4), submitted March 2, 1988 was reviewed. This review included the requests for relief from the ASME Code Section XI requirements which the Licensee has determined to be impractical. Revision 3 of the Program Plan contained six new requests for relief which document limitations in the implementation of the hydrostatic test program, as well as revisions to relief requests which had been evaluated by the NRC staff in previous Safety Evaluation Reports (References 5 and 6). The review of the ISI Program Plan was performed using the Standard Review Plans of NUREG-0800 (Reference 7), Section 5.2.4, "Reactor Coolant Boundary Inservice Inspections and Testing," and Section 6.6, "Inservice Inspection of Class 2 and 3 Components".

In a letter dated July 14, 1987 (Reference 8), the NRC requested additional information that was required in order to complete the review of the ISI Program Plan. The requested information was provided by the Licensee in submittals dated October 2, 1987 (Reference 9), October 30, 1987 (Reference 10), and December 28, 1987 (Reference 11). In these responses, the Licensee provided an itemized listing of components being examined during the second 10-year interval, isometric drawings, a listing of the ultrasonic calibration blocks being used during the second 10-year interval, and clarifications on examinations. Two requests for relief from ASME Code Section XI requirements which the Licensee had previously determined to be impractical were withdrawn.

As a result of a telephone conversation on February 10, 1988, the Licensee submitted an April 15, 1988 letter (Reference 12) discussing augmented examinations being performed at Pilgrim Nuclear Power Station, Unit 1, during the second 10-year interval.

The Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, is evaluated in Section 2 of this report. The ISI Program Plan is evaluated for (a) compliance with the appropriate edition/addenda of Section XI, (b) acceptability of examination sample, (c) exclusion criteria, and (d) compliance with ISI-related commitments identified during the NRC's review of previous Pilgrim, Unit 1, PSI and ISI Program Plans.

The new and revised requests for relief are evaluated in Section 3 of this report. The remaining relief requests, applicable to the second 10-year interval but not revised, are also listed in Section 3 and the document containing the staff evaluation is referenced. Unless otherwise stated, references to the Code refer to the ASME Code, Section XI, 1980 Edition including Addenda through Winter 1980. Specific inservice test (IST) programs for pumps and valves are being evaluated in other reports.

2. EVALUATION OF INSERVICE INSPECTION PROGRAM PLAN

This evaluation consisted of a review of the applicable program documents to determine whether or not they are in compliance with the Code requirements and any license conditions pertinent to ISI activities. This section describes the submittals reviewed and the results of the review.

2.1 Documents Evaluated

Review has been completed on the following information:

- (a) Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, submitted December 12, 1986;
- (b) Safety Evaluation Report related to requests for relief from ISI requirements for Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, dated August 13, 1985 (Reference 5);
- (c) Safety Evaluation Report related to requests for relief from ISI requirements for Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, dated March 26, 1987 (Reference 6);
- (d) Letter dated October 2, 1987, containing the Licensee's response to the NRC's July 14, 1987 request for additional information with regard to Revision 3 of the ISI Program Plan;
- (e) Letter dated October 30, 1987, containing additional response from the Licensee with regard to the NRC's July 14, 1987 request for additional information;
- (f) Letter from the Licensee dated December 28, 1987, containing the final information requested in the NRC's July 14, 1987 request for additional information;

- (g) Letter dated March 2, 1988, containing Amendment ISI 87-02 to Revision 3 of the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan; and
- (h) Letter dated April 15, 1988, containing information about the augmented examinations being performed at Pilgrim Nuclear Power Station, Unit 1, during the second 10-year interval.

2.2 Compliance with Code Requirements

2.2.1 Compliance with Applicable Code Editions

The Inservice Inspection Program Plan shall be based on the Code editions defined in 10 CFR 50.55a(g)(4) and 10 CFR 50.55a(b). Based on the starting date of December 8, 1982, the Code applicable to the second 10-year interval is the 1980 Edition with Addenda through Winter 1980. As stated in Section 1 of this report, the Licensee has prepared the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, to meet the requirements of the 1980 Edition, Winter 1980 Addenda (80W80) of the ASME Code Section XI.

2.2.2 Acceptability of the Examination Sample

Inservice volumetric, surface, and visual examinations shall be performed on ASME Code Class 1, 2, and 3 components and their supports using sampling schedules described in Section XI of the ASME Code and 10 CFR 50.55a(b). Sample size and weld selection have been implemented in accordance with the Code and appear to be correct.

2.2.3 Exclusion Criteria

The criteria used to exclude components from examination shall be consistent with Paragraphs IWB-1220, IWC-1220, IWD-1220, and 10 CFR 50.55a(b). The exclusion criteria have been applied by the

Licensee in accordance with the Code as discussed in Section 2.1, "Program Description," of the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, and appear to be correct.

2.2.4 Augmented Examination Commitments

The Licensee has stated in the October 2, 1987 and April 15, 1988 submittals that augmented examinations will be implemented during the second 10-year inspection interval in accordance with the following documents:

- (a) Regulatory Guide 1.150, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations," Revision 1 (Reference 13);
- (b) NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking," (Reference 14);
- (c) IE Bulletin 80-13, "Cracking in Core Spray Spargers," (Reference 15);
- (d) NUREG-0803, "Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping," (Reference 16);
- (e) Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping" (Reference 17) [NUREG-0313, Revision 2, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping" (Reference 18), describes the technical bases for the NRC positions on IGSCC problems.];
- (f) Generic Letter 87-05, "Assessment of Licensee Measures to Mitigate and/or Identify Potential Degradation of Mark 1 Drywells" (Reference 19); and
- (g) NUREG-0800, Section 3.6.1, "Plant Design for Protection Against Postulated Piping Failures in Fluid Systems Outside Containment."

The Licensee reports that these augmented examinations are being scheduled and implemented independently from the ASME Code Section XI required examinations, and that they are not conducted as part of the Second 10-Year Interval ISI Program Plan at Pilgrim Station.

2.3 Conclusions

Based on the review of the documents listed above, it is concluded that the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval Inservice Inspection Program Plan, Revision 3, is acceptable and in compliance with 10 CFR 50.55a(g)(4).

3. EVALUATION OF RELIEF REQUESTS

The requests for relief from the ASME Code requirements which the Licensee has determined to be impractical for the second 10-year inspection interval are evaluated in the following sections. Relief requests which have been resubmitted in Revision 3 of the Program Plan without revision are documented in previous Safety Evaluation Reports. Therefore, for those relief requests, this report will only identify the report in which the evaluation is contained and the NRC staff conclusion.

3.1 Class 1 Components

3.1.1 Reactor Pressure Vessel

3.1.1.1 Request for Relief PRR-4, Revision 1, Examination Category B-A, Items B1.11 and B1.12, Reactor Pressure Vessel Beltline Region Welds

NOTE: Relief Request PRR-4 has been previously granted by the NRC in the Safety Evaluation Report (SER) dated August 13, 1985 provided that the Licensee: (a) examines the accessible weld areas, and (b) performs a visual examination of the vessel and shield annulus area during system pressure tests. In Revision 1 of PRR-4, the Licensee committed to the above conditions. Therefore, the relief request evaluation as reported in the SER should remain unchanged.

3.1.1.2 Request for Relief PRR-5, Revision 1, Examination Category B-A, Items B1.21 and B1.22, Reactor Pressure Vessel Bottom Head Welds

NOTE: Relief Request PRR-5 has not been revised. Therefore, the relief request evaluation, as reported in the SER dated August 13, 1985, should remain unchanged and relief be granted as requested.

3.1.1.3 Request for Relief PRR-9, Revision 1, Examination Category B-D, Items B3.90 and B3.100, Reactor Pressure Vessel Nozzle-to-Vessel Weld and Inside Radius Section

NOTE: The revised Request for Relief PRR-9 (Revision 1), as received in the Licensee's December 12, 1986 submittal of Revision 3 of the Program Plan, has been evaluated by the NRC in a Supplemental SER issued March 26, 1987. The subject report granted relief provided that: (a) the examinations are performed to the maximum extent possible; and (b) the Code-required system pressure tests are performed in accordance with IWB-5000. In Revision 1 of PRR-9, the Licensee committed to the above conditions. Therefore, the relief request evaluation as reported in the SER should remain unchanged.

3.1.2 Pressurizer (Does not apply to BWRs)

3.1.3 Heat Exchangers (No relief requests)

3.1.4 Piping Pressure Boundary

3.1.4.1 Request for Relief PRR-1, Revision 3, Examination Category B-J, Items B9.11 and B9.21, and Examination Category B-K-1, Item B10.10, Class 1 Circumferential Pressure Retaining Piping Welds and Integrally Welded Attachments Within Flued Head Penetrations

NOTE: This evaluation supercedes the evaluation in the SER dated August 13, 1985.

Code Requirement: Section XI, Table IWB-2500-1, Examination Category B-J, Item B9.11 requires a 100% surface and volumetric examination of circumferential pressure retaining piping welds 4 inch and greater nominal pipe size. Item B9.21 requires a

100% surface examination on circumferential pressure retaining piping welds less than 4 inch nominal pipe size. These examinations are to be performed as defined by Figure IWB-2500-8.

Section XI, Table IWB-2500-1, Examination Category B-K-1, Item B10.10 requires a 100% volumetric or surface examination, as applicable, on Class 1 piping integrally welded attachments as defined by Figures IWB-2500-13, 14, and 15.

Licensee's Code Relief Request: Relief is requested from performing the Code-required examination(s) on the inaccessible welds within the following flued head penetrations:

<u>System</u>	<u>Line Size</u>	<u>Penetration</u>
RHR	20"	X-12
	18"	X-51A, X-51B
	4"	X-17
Core Spray	10"	X-16A, X-16B
RCIC	3"	X-53
RWCU	6"	X-14
SBLC	1.5"	X-42
Feedwater	18"	X-9A, X-9B
Main Steam	20"	X-7A, X-7B
		X-7C, X-7D
HPCI	3"	X-8
	10"	X-52

Licensee's Proposed Alternative Examination: The first accessible pipe weld outside the subject penetrations will be volumetrically examined each interval, except for the 1.5 inch SBLC line which will receive a surface examination. The examinations required by IWB-5000 will be conducted on the alternative weld in accordance with the Code.

A VT-3 examination of the subject penetrations will be conducted each interval, to the extent practical.

Licensee's Basis for Requesting Relief: As stated in 10 CFR 50.55a(g)(1) for plants whose construction permits were

issued prior to January 1, 1971, components shall meet Section XI requirements to the extent practical. Since examination requirements for these welds did not exist at the time Pilgrim, Unit 1, was designed, accessibility for their inspection was not considered. The design constraints make it extremely impractical to examine the subject welds by volumetric or surface techniques. Boston Edison Company feels that this constitutes a basis for relief from the examination requirements of Section XI.

Evaluation: In Revision 3 of Relief Request PRR-1, one additional penetration has been added (penetration X-8, 3 inch line in Main Steam system) and, in addition to the inaccessible circumferential pressure retaining welds, the relief request has been expanded to include inaccessible integrally welded attachments within the flued head penetrations. The subject welds are completely inaccessible for volumetric and/or surface examination because the welds are located within the containment penetration. These welds can only be examined by inspecting for evidence of leakage during the system hydrostatic tests.

Conclusions: Based on the evaluation of Revision 3 to PRR-1 and the previous staff evaluation in the SER, dated August 13, 1985, which granted relief for PRR-1, it is concluded that the proposed alternative examination, along with the Code-required pressure test, ensures an acceptable level of inservice structural integrity and that compliance with the specific requirements of Section XI would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety. Therefore, it is recommended that relief continue to be granted as requested.

3.1.4.2 Request for Relief PRR-6, Examination Category B-J, Items B9.10 and B9.40, Pressure Retaining Welds in Class 1 Piping Systems

Note: The request for relief from performing surface examinations on all pressure retaining welds in Class 1 piping systems was denied by the NRC in the SER dated August 13, 1985. Therefore, this request for relief was withdrawn by the Licensee in the submittal dated December 12, 1986.

3.1.5 Pump Pressure Boundary

3.1.5.1 Request for Relief PRR-2, Revision 0, Examination Category B-L-2, Item B12.20, Recirculation Pump Casings

Note: Relief Request PRR-2 has not been revised. Therefore, the relief request evaluation, as reported in the SER dated August 13, 1985, should remain unchanged with relief granted as requested.

3.1.6 Valve Pressure Boundary

3.1.6.1 Request for Relief PRR-3, Revision 1, Examination Category B-M-2, Item B12.40, Class 1 Valve Bodies

NOTE: This relief request was submitted to obtain relief from the requirement to examine Class 1 valve body internals except when the valves are disassembled for maintenance. For the first ten year interval, 56 Class 1 valves were divided into 20 groups according to manufacturer, manufacturing method, constructional design and function. This grouping was provided to the NRC and subsequently used in the earlier versions of the Second 10-Year Interval ISI Program Plan.

Revision 3 of the Program Plan incorporated the later Code (80W80) which eliminates the requirement to group the valves by manufacturer. The valves included in the original 20 categories have been regrouped and reduced to seven categories according to the later Code requirements. The original list of 56 valves has been reduced to 48 with the deletion of eight valves removed during Refueling Outage #6. The Licensee also reports that 36 of the subject valves were inspected during the refueling outage, including valves from all seven groups.

As Revision 1 of PRR-3 only changes the grouping of valves as outlined in the later Code Edition and Addenda (80W80), the relief request evaluation, as reported in the SER dated August 13 1985, should remain unchanged and relief should be granted as requested.

3.1.7 General (No relief requests)

3.2 Class 2 Components

3.2.1 Pressure Vessels

3.2.1.1 Request for Relief PRR-8, Revision 1, Examination Category C-B, Item C2.21, RHR Heat Exchanger Nozzle-to-Vessel Welds and Inside Radius Sections

NOTE: The revised Request for Relief PRR-8 (Revision 1), as received in the Licensee's December 12, 1986 submittal of Revision 3 of the Program Plan, has been evaluated by the NRC in a Supplemental SER issued March 26, 1987. The subject report granted relief provided that: (a) the proposed alternative surface examination is performed on the reinforcing ring (saddle) welds that make the nozzle-to-vessel welds

inaccessible; and (b) visual examination of the saddle welds for leakage is performed during periodic system pressure and hydrostatic tests in accordance with Subsection IWC-5000 requirements. In Revision 1 of PRR-8, the Licensee committed to the above conditions. Therefore, the relief request evaluation as reported in the SER should remain unchanged.

3.2.2 Piping

3.2.2.1 Request for Relief PRR-6, Examination Category C-F, Items C5.10 and C5.32, Pressure Retaining Welds in Class 2 Piping Systems

NOTE: Relief from performing surface examinations on all pressure retaining welds in Class 2 piping systems was denied by the NRC in the SER dated August 13, 1985. Therefore, this request for relief has been withdrawn by the Licensee in the submittal dated December 12, 1986.

3.2.2.2 Request for Relief PRR-7, Revision 1, Examination Category C-F, Items C5.11 and C5.12, Pressure Retaining Welds in the Containment Atmospheric Control System

NOTE: Relief Request PRR-7 has not been revised. Therefore, the relief request evaluation as reported in the SER dated August 13, 1985, should remain unchanged with relief granted as requested.

3.2.3 Pumps (No relief requests)

3.2.4 Valves (No relief requests)

3.2.5 General (No relief requests)

3.3 Class 3 Components (No relief requests)

3.4 Pressure Tests

3.4.1 Class 1 System Pressure Tests (No relief requests)

3.4.2 Class 2 System Pressure Tests

3.4.2.1 Request for Relief PRR-12, Revision 0, Examination
Category C-H, Hydrostatic Test of the Control Rod Drive
Hydraulic System

NOTE: Relief Request PRR-12 requested relief from the Code-required hydrostatic test for Class 2 Control Rod Drive (CRD) piping from the hydraulic control units (HCUs) to the Reactor Pressure Vessel due to design configuration and impracticality. In the basis for relief, the Licensee stated that: "Portions of the lines cannot be isolated for Class 2 hydrostatic testing due to design configuration. Isolation of the remaining piping at the HCUs is impractical due to the large number of valves to be realigned."

In the NRC request for additional information, dated July 14, 1987, it was pointed out that the staff does not consider the determination of impracticality justified based solely on valve realignment. Therefore, Relief Request PRR-12 was withdrawn in the Licensee's response dated October 2, 1987.

3.4.2.2 Request for Relief PRR-13, Revision 0, Examination
Category C-H, Hydrostatic Test of the Class 2 Portions of the
Containment Atmospheric Control System

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires a hydrostatic test of all Class 2 pressure retaining components each 10-year interval as outlined by IWC-5222.

Licensee's Code Relief Request: Relief is requested from performing the Code-required hydrostatic test on the Class 2 portions of the Containment Atmospheric Control System.

Licensee's Proposed Alternative Examination: The non-isolable portions of the Containment Atmospheric Control System will be tested for integrity during the Appendix J, Type A, integrated leak rate test once each period. The isolable portions of the sample lines will be tested during the performance of Appendix J, Type C, local leak rate tests once each period.

Licensee's Basis for Requesting Relief: The Licensee reports that the purge and vent lines are open to the primary containment atmosphere and are unable to be isolated for hydrostatic or pneumatic testing. The sample lines can be isolated outside of containment but would require that extensive supports be added for hydrostatic testing.

Evaluation: The Licensee's submittal has been reviewed and it has been determined that footnote (1) of Table IWC-2500-1, Examination Category C-H, excludes the open ended portion of the purge and vent lines from the Code-required hydrostatic test. It is also determined that, as the Containment Atmospheric Control System is designed for operation with air, the Code-required hydrostatic testing requirement for the sample lines is impractical.

Conclusions: Based on the above evaluation, it is concluded that: (a) Relief is not required for the open ended portions of the purge and vent lines; and (b) For the sample lines, the Code hydrostatic testing requirements are impractical and compliance with the specific requirements of Section XI would result in hardship without a compensating increase in the level of quality and safety. Therefore, it is recommended that relief be granted as requested.

3.4.2.3 Request for Relief PRR-15, Revision 0, Examination, Category C-H, Hydrostatic Test of the High Pressure Coolant Injection Turbine Exhaust Drain Line

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires a hydrostatic test of all Class 2 pressure retaining components each 10-year interval as outlined by IWC-5222.

Licensee's Code Relief Request: Based on impracticality, relief is requested from performing the Code-required hydrostatic test on the Class 2 High Pressure Coolant Injection Turbine Exhaust Drain System bounded by M0-3, CV-52, 2301-112, 2301-33, 2301-33A, and the second flange on the turbine exhaust line.

Licensee's Proposed Alternative Examination: The Licensee proposes that, within each inspection period, a VT-2 examination be performed on the components bounded by M0-3, CV-52, 2301-112, 2301-33, 2301-33A, and the second flange on the turbine exhaust line. This VT-2 examination will be conducted during a system functional test as required by the Code.

Licensee's Basis for Requesting Relief: The Class 2 High Pressure Coolant Injection Turbine Exhaust Drain System collects condensate from the turbine exhaust line, turbine casing, turbine steam rings, body drains on the stop valve, and the steam chest drain. The 1-inch (reduced to 3/4-inch) turbine casing drain line is non-isolable between the turbine and the turbine exhaust drain pot. This line prevents isolation of the following piping off the exhaust drain pot: (1) The piping from the turbine exhaust nozzle flange to the first down-stream flange; (2) The steam ring drain lines; (3) The drain lines from H0-2 and the steam chest drain line downstream of H0-1; (4) The 3/4-inch drain line from the exhaust drain pot to 2301-112; (5) The 1-inch line from the exhaust drain pot to 2301-131B; and (6) The 2-inch and 1-inch lines from the exhaust drain pot bounded by 2301-131A, 2301-33, 2301-33A, and CV-32.

Evaluation: The Licensee's submittal has been reviewed including the referenced diagram. The portion of Class 2 piping as outlined above cannot be isolated, therefore, for this portion of piping, the system hydrostatic testing requirements for Class 2 piping are impractical. The proposed VT-2 visual examination during a system functional test is acceptable.

Conclusions: Based on the above evaluation, it is concluded that, for the subject portions of piping, the Code-required hydrostatic test is impractical and that the proposed VT-2 examination will ensure an acceptable level of inservice structural integrity. Compliance with the specific requirements of Section XI would result in hardship without a compensating increase in the level of quality and safety. Therefore, it is recommended that relief be granted as requested.

3.4.3 Class 3 System Pressure Tests

3.4.3.1 Request for Relief PRR-10, Revision O, Examination

Category D-B, Hydrostatic Test of Two 10-Liter Shielded Sample Chambers

Code Requirement: Section XI, Table IWD-2500-1, Examination Category D-B, requires a hydrostatic test of Class 3 pressure retaining components in support of Residual Heat Removal System each 10-year interval as outlined by IWD-5223.

Licensee's Code Relief Request: Relief is requested from performing the Code-required hydrostatic test on two 10-liter shielded sample chambers which are a part of the Reactor Building Closed Cooling Water (RBCCW) System.

Licensee's Proposed Alternative Examination: The Licensee proposes that, within each inspection period, a VT-2 exam will be performed on the two 10-liter shielded sample chambers. This VT-2 examination will be conducted during the Code-required inservice leakage test.

Licensee's Basis for Requesting Relief: The Code-required hydrostatic test pressure for the RBCCW system is 165 psig which exceeds the design pressure of 125 psig for the two 10-liter shielded sample chambers.

Evaluation: As a result of the NRC request for additional information dated July 14, 1987, the Licensee revised Relief Request PRR-10 in the October 30, 1987 submittal. This revision requests relief for the two 10-liter shielded sample chambers only. Each of the two sample chambers carries a sidestream of Reactor Building cooling water past an immersed radiation detector. The chamber holds ten liters of cooling water to increase the sensitivity of the detector, and a shield

surrounds the chamber/detector to reduce background radiation. The design pressure of the chamber is 125 psig, which is lower than the system design pressure of 150 psig but 25% higher than the maximum operating pressure. In addition, the RBCCW system is protected from loss of chamber integrity by a 1/4-inch restricting orifice on the high-pressure side. The Licensee reports that there is no allowable hydrostatic test pressure in the design documentation, since the chambers are treated as instruments.

Conclusions: Based on the above evaluation it is concluded that, for the two sample chambers listed, failure during operation would not affect the RBCCW system function, the Code-required hydrostatic test is impractical, and that the proposed VT-2 examination will ensure an acceptable level of inservice structural integrity. Compliance with the specific requirements of Section XI would result in hardship without a compensating increase in the level of quality and safety. Therefore, it is recommended that relief be granted as requested.

3.4.3.2 Request for Relief PRR-11, Revision 0, Examination
Category D-8, Hydrostatic Test of the Salt Service Water System

Code Requirement: Section XI, Table IWD-2500-1, Examination Category D-8, requires a hydrostatic test of Class 3 pressure retaining components in support of Emergency Core Cooling, Containment Heat Removal, Atmosphere Cleanup, and Reactor Residual Heat Removal systems each 10-year interval as outlined by IWD-5223.

Licensee's Code Relief Request: Relief is requested from the requirements to hydrostatically test the Salt Service Water System pumps up to the expansion joints on the pump discharge lines on the basis of impracticality.

Licensee's Proposed Alternative Examination: The Licensee proposes to perform a VT-2 examination of the pump discharge piping up to the expansion joints during the Code-required system inservice leakage test.

Licensee's Basis for Requesting Relief: The Salt Service Water System has been designated Class 3 and provides cooling to the Reactor Building and Turbine Building Closed Cooling Water Systems. The system includes five pumps whose pump casings are located under water. The hydrostatic test of the pumps and the discharge line would require disassembly and removal of the pumps. The requirements to remove the pumps for the sole purpose of performing a test of the pressure boundary has only a very small potential of increasing plant safety margins and a disproportionate impact on expenditures of plant manpower.

Evaluation: The disassembly and removal of the pumps for the sole purpose of performing the Code required hydrostatic test is a major effort and, in addition to the possibility of additional wear or damage to the pumps, could result in personnel receiving large amounts of radiation exposure.

Conclusions: Based on the above evaluation, it is concluded that, for the submerged Salt Service Water System pumps, the Code-required hydrostatic test is impractical and that compliance with the specific requirements of Section XI would result in hardship without a compensating increase in the level of quality and safety. Therefore, it is recommended that relief be granted as requested.

3.4.4 General

3.4.4.1 Request for Relief PRR-14, Revision 0, Examination Categories C-H, D-A, D-B, and D-C, Hydrostatic Test of Class 2 and 3 Systems Containing Relief Valves and Instrumentation

NOTE: Relief Request PRR-14, submitted, was considered generic in nature as it did not provide information regarding the specific systems or components involved. Therefore, as a result of the NRC request for additional information dated July 14, 1987, the Licensee withdrew Relief Request PRR-14 in the submittal dated October 2, 1987.

3.5 General (No relief requests)

4. CONCLUSION

Pursuant to 10 CFR 50.55a(g)(6), it has been determined that certain Section XI required inservice examinations are impractical. In these cases, the Licensee has demonstrated that either the proposed alternatives would provide an acceptable level of quality and safety or that compliance with the requirements would result in hardships or unusual difficulties without a compensating increase in the level of quality and safety.

This technical evaluation has not identified any practical method by which the existing Pilgrim Nuclear Power Station, Unit 1, can meet all the specific inservice inspection requirements of Section XI of the ASME Code. Requiring compliance with all the exact Section XI required inspections would require redesign of a significant number of plant systems, sufficient replacement components to be obtained, installation of the new components, and a baseline examination of these components. The reactor pressure vessel and a number of the piping and component support systems are examples of components that would require redesign to meet the specific inservice examination provisions. Even after the redesign efforts, complete compliance with the Section XI examination requirements probably could not be achieved. Therefore, it is concluded that the public interest is not served by imposing certain provisions of Section XI of the ASME Code that have been determined to be impractical. Pursuant to 10 CFR 50.55a(g)(6), relief is allowed from these requirements which are impractical to implement.

The development of new or improved examination techniques will continue to be monitored. As improvements in these areas are achieved, the NRC may require that these techniques be incorporated in the next inspection interval ISI program plan examination requirements.

Based on the review of the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, the Licensee's response to the NRC's Request for Additional Information, and the recommendations for

the granting of relief from the ISI examination requirements that have been determined to be impractical, is concluded that the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval Inservice Inspection Program Plan, Revision 3, is acceptable and in compliance with 10 CFR 50.55a(g)(4).

5. REFERENCES

1. Code of Federal Regulations, Volume 10, Part 50.
2. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Division 1, 1980 Edition through Winter 1980 Addenda.
3. Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval Inservice Inspection Program Plan, Revision 3, submitted December 12, 1984.
4. Letter, dated March 2, 1988, R.G. Bird [Boston Edison Company (BECO)] to NRC, "Amendment (ISI 87-02) to Second Ten-Year Interval Inservice Inspection Program."
5. Safety Evaluation Report Related to Requests for Relief from Inservice Inspection Requirements for the Second 10-Year Inspection Program at Pilgrim Nuclear Power Station, Unit 1, dated August 13, 1985.
6. Supplemental Safety Evaluation Report Related to Requests for Relief from Inservice Inspection Requirements for the Second 10-Year Inspection Program at Pilgrim Nuclear Power Station, Unit 1, dated March 26, 1987.
7. NUREG-0800, Standard Review Plans, Section 3.6.1, "Plant Design for Protection Against Postulated Piping Failures in Fluid Systems Outside Containment," Section 5.2.4, "Reactor Coolant Boundary Inservice Inspection and Testing," and Section 6.6, "Inservice Inspection of Class 2 and 3 Components," July 1981.
8. Letter, dated July 14, 1976, R.H. Wessman (NRC) to R.G. Bird (BECO), "Request for Additional Information on Second 10-Year Interval Inservice Inspection Program Plan for Pilgrim Nuclear Power Station, Unit 1."
9. Letter, dated October 2, 1987, R.G. Bird (BECO) to NRC, "Response to NRC Request for Additional Information - Second 10-Year Interval Inservice Inspection Program Plan."

10. Letter, dated October 30, 1987, R.G. Bird (BEC0) to NRC, "Design Allowances for Seal Coolers and Sample Chambers."
11. Letter, dated December 28, 1987, R.G. Bird (BEC0) to NRC, "Itemized Component Listing - Second 10-Year Interval Inservice Inspection Program Plan."
12. Letter, dated April 15, 1988, R.G. Bird (BEC0) to NRC, "Augmented Inspections."
13. Regulatory Guide 1.150, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations," Revision 1, dated February 1983.
14. NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking," dated November 1980.
15. IE Bulletin 80-13, "Cracking in Core Spray Spargers," issued December 15, 1980.
16. NUREG-0803, "Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping," dated August 1981.
17. Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping," dated January 25, 1988.
18. NUREG-0313, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping," Revision 2, dated January 1988.
19. Generic Letter 87-05, "Assessment of Licensee Measures to Mitigate and/or Identify Potential Degradation of Mark 1 Drywells" dated March 12, 1987.

NRC FORM 326 (2-84) NRCM 1102 2001 2202 BIBLIOGRAPHIC DATA SHEET SEE INSTRUCTIONS ON THE REVERSE		U.S. NUCLEAR REGULATORY COMMISSION REPORT NUMBER (Assigned by FCC and NRC) EGG-MS-8042	
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13. ABSTRACT (200 words or less) <p>This report presents the results of the evaluation of the Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval Inservice Inspection (ISI) Program Plan, Revision 3, submitted December 12, 1986, including Amendment ISI 87-02 to the ISI Program Plan, submitted March 2, 1988. The December 12, 1986 submittal included new and revised requests for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI requirements which the Licensee has determined to be impractical. Revision 3 of the Program Plan reflects the current plant configuration including the recirculation pipe replacement made during the 1983-1984 outage. The Pilgrim Nuclear Power Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 3, is evaluated in Section 2 of this report. The ISI Program Plan is evaluated for (a) compliance with the appropriate edition/addenda of Section XI, (b) acceptability of the examination sample, (c) exclusion criteria, and (d) compliance with ISI-related commitments identified during the Nuclear Regulatory Commission (NRC) review of previous submittals by the Licensee. The new and revised requests for relief from the ASME Code requirements which the Licensee has determined to be impractical for the second 10-year inspection interval are evaluated in Section 3 of this report.</p>			
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