

January 6, 2005

Mr. Michael R. Kansler, President
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

SUBJECT: PILGRIM NUCLEAR POWER STATION RELIEF REQUEST NO. PRR-29,
RELIEF FROM SYSTEM HYDROSTATIC TEST REQUIREMENTS FOR SMALL
BORE (# 1-INCH) AMERICAN SOCIETY OF MECHANICAL ENGINEERS
BOILER AND PRESSURE VESSEL CODE CLASS 1 REACTOR COOLANT
PRESSURE BOUNDARY VENT, DRAIN AND BRANCH LINES AND
CONNECTIONS (TAC NO. MC1472)

Dear Mr. Kansler:

By letter dated November 7, 2003, Entergy Nuclear Operations, Inc. (the licensee) submitted a relief request for Pilgrim Nuclear Power Station (Pilgrim). The licensee requested relief from selected requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1989 Edition, Table IWB-2500-1, Examination Category B-P, Items B15.51 and B15.71, which require a system hydrostatic test to include all ASME Code Class 1 components within the system boundary. Specifically, the licensee proposed to perform an ASME Code Class 1 System Hydrostatic Test with the same reactor coolant pressure boundary (RCPB) vent, drain, and branch (VTDB) lines and connections in the closed position.

The Nuclear Regulatory Commission (NRC) staff has reviewed the proposed alternative in the subject relief request. The results are provided in the enclosed safety evaluation.

The NRC staff has concluded that the proposed alternative to the ASME Code requirements in PRR-29 provides for reasonable assurance of structural integrity.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(ii), the licensee's proposed alternative inspection provides reasonable assurance of structural integrity and complying with the ASME Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the staff authorizes the proposed alternative, request for relief PRR-29, described in the licensee's letter dated November 7, 2003, for Pilgrim's third 10-year inservice inspection interval which is until June 30, 2005. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

M. Kansler

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If you have any questions regarding this approval, please contact the Pilgrim Project Manager, Robert J. Fretz, at 301-415-1324.

Sincerely,

/RA/

Darrell J. Roberts, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Reactor Regulation

Docket No. 50-293

Enclosure: Safety Evaluation

cc w/encl: See next page

M. Kansler

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cc w/encl: See next page

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*No substantive changes made

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Pilgrim Nuclear Power Station

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PILGRIM STATION RELIEF REQUEST NO. 29

ENTERGY NUCLEAR OPERATIONS, INC.

PILGRIM NUCLEAR POWER STATION

DOCKET NO. 50-293

1.0 INTRODUCTION

The inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, Class 2, and Class 3 components is to be performed in accordance with Section XI of the ASME Code and applicable edition and addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g), except where specific written relief has been granted by the Nuclear Regulatory Commission (NRC or the Commission) pursuant to 10 CFR 50.55a(g)(6)(I). Section 50.55a(a)(3) of 10 CFR states, in part, that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (I) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements 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, except the design and access provisions and the pre-service examination requirements, set forth in ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first ten-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The third 10-year ISI interval for Pilgrim Nuclear Power Station (Pilgrim) began July 1, 1995, and will end June 30, 2005. The ISI code of record for Pilgrim's third 10-year interval is the 1989 Edition with no Addenda. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed therein and subject to Commission approval.

By letter dated November 7, 2003, Entergy Nuclear Operations, Inc. (the licensee) submitted a relief request (PRR-29) for Pilgrim. The licensee requested relief from selected requirements of the ASME Code, Section XI, 1989 Edition, Table IWB-2500-1, Examination Category B-P,

Enclosure

Items B15.51 and B15.71 which require a system hydrostatic test to include all ASME Code Class 1 components within the system boundary.

2.0 REGULATORY EVALUATION

2.1 Components For Which Relief Is Requested

Small bore (#1-inch), ASME Code Class 1 reactor coolant pressure boundary (RCPB) vent, drain and branch (VTDB) lines and connections.

2.2 Code Requirements

ASME Code Section XI, 1989 Edition, Table IWB-2500-1, Examination Category B-P, Items B15.51 and B15.71 require the system hydrostatic test to include all ASME Code Class 1 components within the system boundary.

2.3 Relief Requested

The licensee is requesting relief to perform the ASME Code Class 1 System Hydrostatic Test with these VTDB lines and connections in the closed position.

2.4 Licensee's Basis

The VTDB lines and connections are equipped with manual valves, which provide double isolation of the RCPB. These valves are generally maintained closed during normal operation. The piping outboard of the first isolation valve is not normally pressurized. Under normal operating conditions, the VTDB lines and connections see reactor coolant system pressures and temperatures only if leakage through the inboard valves occurs. To perform the Code-required test, it would be necessary to manually open the inboard valves to pressurize the VTDB lines and connections. Pressurization by this method defeats the double-isolation and potentially presents safety concerns for the personnel performing the test. Furthermore, performing the test with the inboard isolation valves open requires several man-hours to position the valves for the test and restore the valves after the test is complete. These valves are located in close proximity of the RCPB main steam loop piping and, thus, require personnel entry into high radiation areas within the containment. Based on previous outage data, estimated radiation exposure associated with valve alignment and realignment would be approximately 1-man-rem per test. Since this test would be performed near the end of an outage when all RCPB work has been completed, the time required to open and close these VTDB lines and connections would impact the outage schedule. Thus, compliance with this specific Code requirement results in unnecessary hardship pursuant to 10 CFR 50.55a(a)(3)(ii) without a sufficient compensating increases [increase] in the level of quality and safety. The proposed alternative provides an acceptable level of safety and quality based on the following:

1. ASME Code Section XI, paragraph IWA-4700, provides the requirements for hydrostatic pressure testing of piping and components after repairs by welding to the pressure boundary. IWA-4700(b)(5) excludes component connections,

piping and associated valves that are 1-inch nominal pipe size and smaller from the hydrostatic pressure test requirement after welded repairs. Therefore, requiring a hydrostatic test and visual examination of these # 1-inch diameter RCPB VTDB lines and connections once each 10-year interval is unwarranted considering that hydrostatic pressure testing a repair weld on the same connections is not required by ASME Code Section XI.

2. The non-isolable portion of the RCPB VTDB lines and connections will be pressurized and visually examined as required. Only the isolable portion of those small diameter VTDB lines and connections will not be pressurized.
3. A typical VTDB line and connection includes two manual valves separated by a short pipe nipple, which is connected to the RCPB via another short pipe nipple and a half coupling. All connections are typically socket-welded and the welds receive a surface examination after installation. The piping and valves are normally heavy wall (Sch. 160 pipe and 600# valve bodies). The VTDB lines and connections are not subject to high stresses or cyclic loads and design ratings are significantly greater than RCPB operating or design pressure.
4. Pilgrim's Technical Specifications (TSs) 3.2.E and 3.6.C require drywell and RCPB leakage monitoring during normal operation. Should TS limits be exceeded, appropriate corrective actions, which may include shutting the plant down, are required to identify the source of leakage and restore the integrity of the RCPB.

2.5 Licensee's Proposed Alternative

The RCPB VTDB lines and connections will be visually examined for leakage and any evidence of past leakage with the isolation valves in the normally closed position each refueling outage during the ASME Code Section XI Class 1 System Leakage Test (IWB-5221).

The RCPB VTDB lines and connections will also be visually examined with the isolation valves in the normally closed position during the 10-year ISI pressure test (IWB-5222 and ASME Code Case -498-1). This examination will be performed with the RCPB at nominal operating pressure associated with 100% reactor power after satisfying the required four-hour hold time.

The above-proposed alternative provides for an acceptable level of quality and safety.

3.0 TECHNICAL EVALUATION

The ASME Code requires that all Class 1 components within the reactor coolant system (RCS) boundary undergo a system hydrostatic test once per interval. The licensee has proposed an alternative to the hydrostatic test requirements of the ASME Code for some line segments as described in PRR-29. The line segments, as stated by the licensee, include two manually operated valves separated by a short pipe nipple that is connected to the RCS via another short pipe nipple and half coupling. The line configuration, as outlined, provides double-isolation of

the RCS system. Under normal plant operating conditions, the subject line segments would see RCS temperatures and pressures only if leakage through the inboard valves occurs. For the licensee to perform the ASME Code-required test, it would be necessary to manually open the inboard valves to pressurize the line segments. Pressurization by this method would defeat the RCS double-isolation and may cause safety concerns for the personnel performing the examination.

Typical line/valve configurations are in close proximity to the primary and secondary RCS piping. Manual actuation (opening and closing) of these valves is estimated to expose plant personnel to 1-man-rem per test. The licensee proposed to visually examine the isolation valves in the normally closed position for leaks and evidence of past leakage during the system leakage test each refueling outage. Also, the RCS vent and drain connections will be visually examined with the isolation valves in the normally closed position during the 10-year ISI pressure test. The licensee's proposed alternative will provide reasonable assurance that structural integrity is maintained for the subject line segments. The proposed alternative will also keep the workers' radiation exposure as low as reasonably achievable. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for Pilgrim's third 10-year ISI interval.

4.0 CONCLUSION

The licensee's proposed alternative inspection provides reasonable assurance of structural integrity and complying with the ASME Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the NRC staff authorizes the proposed alternative, described in the licensee's letter dated November 7, 2003, for Pilgrim's third 10-year inservice inspection interval which is until June 30, 2005. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributors: J. Collins
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Date: January 6, 2005