Entergy

Entergy Operations, Inc.
1340 Echelon Parkway
Jackson, Mississippi 39213-8298
Tel 601-368-5758

F. G. Burford
Acting Director
Nuclear Safety & Licensing

CNRO-2005-00053

September 16, 2005

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Request WF3-R&R-004
Request to Deviate from Provisions of ASME Code Case N-523-2

Waterford Steam Electric Station, Unit 3
Docket No. 50-382
License No. NPF-38

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a(a)(3)(ii) Entergy Operations, Inc., (Entergy) requests approval to deviate from the requirements of paragraph 1.0(a) of ASME Section XI Code Case N-523-2, *Mechanical Clamping Devices for Class 2 and 3 Piping*. Code Case N-523-2 has been unconditionally approved by the NRC in Regulatory Guide 1.147, Revision 13. Paragraph 1.0(a) prohibits the use of clamping devices on portions of a piping system that "form the containment pressure boundary". Entergy requests approval to use a clamping device on piping that is designated containment boundary. This request, contained in Enclosure 1 as Request for Alternative W3-R&R-004, applies to Waterford Steam Electric Station, Unit 3 (Waterford 3). Entergy has also provided additional background information regarding our repair and monitoring plans in Enclosure 2.

The NRC staff recently approved a similar request for Turkey Point Nuclear Power Plant, Unit 4 (TAC No. MC7338). The Turkey Point relief request was based on the 1998 Edition/2000 Addenda of ASME Section XI which had incorporated Code Case N-523-2 into Mandatory Appendix IX.

Entergy requests that the staff approve the use of WF3-R&R-004 on an emergency basis.

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This letter contains commitments as identified in Enclosure 3.

Should you have any questions regarding this submittal, please contact Guy Davant at (601) 368-5756.

Very truly yours,

FGB/GHD/ghd

Enclosures:
1. Request for Alternative W3-R&R-004
2. Background Information for Waterford 3 Repair and Monitoring Plan
3. Licensee-Identified Commitments

cc: Mr. W. A. Eaton (ECH)
Mr. J. P. DeRoy (ECH)
Mr. J. E. Venable (W3)

Dr. Bruce S. Mallett
Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
Waterford 3
P. O. Box 822
Killona, LA 70066-0751

U. S. Nuclear Regulatory Commission
Attn: Mr. N. Kalyanam
MS O-7D1
Washington, DC 20555-0001

ENCLOSURE 1

CNRO-2005-00053

REQUEST FOR ALTERNATIVE
W3-R&R-004

ENTERGY OPERATIONS, INC.
WATERFORD STEAM ELECTRIC STATION, UNIT 3
REQUEST FOR ALTERNATIVE
W3-R&R-004

I. COMPONENTS

Component/Number: 2MS2-123

Description: 2-inch NPS Piping Off of Drip Pot to the #2 Main Steam Isolation Valve

Code Class: 2

References:

1. ASME Section XI, 1992 Edition with portions of the 1993 Addenda as listed in Reference 2
2. CEP-ISI-001, "*Waterford 3 Steam Electric Station Inservice Inspection Plan*"
3. ASME Section III, Subsection NC, 1971 Edition/Winter 1972 Addenda
4. ASME Section XI Code Case N-523-2, *Mechanical Clamping Devices for Class 2 and 3 Piping*
5. NRC Regulatory Guide 1.147, *Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1*

Unit: Waterford Steam Electric Station, Unit 3 (Waterford 3)

Inspection Interval: Second (2^{nd}) 10-Year Interval

II. CODE REQUIREMENTS

ASME Section XI Code Case N-523-2 establishes requirements that "may be used for mechanical clamping devices to control leakage through the pressure boundary and to maintain the structural integrity of Class 2 and Class 3 piping". The NRC has unconditionally approved the use of Code Case N-523-2 in Regulatory Guide 1.147, Revision 13.

Paragraph 1.0(a) of Code Case N-523-2 states in part, "The provisions of this Case apply to piping and tubing, and their associated fittings and flanges, and the welding ends of pumps, valves, and pressure vessels except for those that form the containment boundary."

III. PROPOSED ALTERNATIVE

A. Background

On September 14, 2005, an operator identified a non-radioactive steam leak on line 2MS2-123, which is an ASME Class 2 drain line (off a drain pot) located outside the Reactor Containment Building but upstream of #2 Main Steam Isolation Valve on the +46-foot elevation (roof) of the Reactor Auxiliary Building. (See Figure 1) The piping for 2MS2-123 is 2-inch, Schedule 80 (0.218-inch wall thickness), SA106 Grade B piping and designed in accordance with the 1971 Edition, Winter 1972 Addenda of ASME Section III, Subsection NC. The design and operating conditions for 2MS2-123 are as follows:

- Design: 1085 PSIG @ 555°F
- Operating: 985 PSIG @ 545°F

The leak on 2MS2-123 is located in the base material of the SA106, Grade B piping – not in a weld. Based on visual examination of the defect area, the leak source was determined to be a 1/16-inch diameter through-wall pinhole that appears to be the result of an outside diameter environmental initiated corrosion mechanism. In addition, an ultrasonic (UT) examination also demonstrated that the base material region surrounding the pinhole complies with minimum wall requirements and is of sufficient thickness to install a mechanical clamp device. An engineering evaluation will be performed to confirm this initial assessment. Since the time of discovery, the leak has been closely monitored and has remained stable.

Entergy has determined that a permanent ASME Code Section XI repair is not possible during power operation since the leak is unisolable and subject to full steam generator pressure. Therefore, Entergy intends to implement a code repair in accordance with design provisions of the ASME Section XI Code Case N-523-2. However, a deviation is required from a provision of Code Case N-523-2 as described below.

B. Proposed Alternative

According to paragraph 1.0(a) of Code Case N-523-2, "the provisions of this Case apply to piping and tubing, and their associated fittings and flanges... except for those that form the containment boundary." Pursuant to the provisions of 10 CFR 50.55a(a)(3)(ii), Entergy requests a deviation from the containment boundary restriction of paragraph 1.0(a) of the Case so that a repair may be performed on line 2MS2-123 using a mechanical clamping device that meets the provisions of Code Case N-523-2. All other provisions of the Case will be met.

As required by paragraph 1.0(c) of the Case, the proposed clamping device will remain in service until the next scheduled outage exceeding 30 days, but no longer than the next refueling outage at which time the defect will be repaired or piping replaced in accordance with IWA-4000 of ASME Section XI

IV. BASIS FOR PROPOSED ALTERNATIVE

A permanent ASME Code repair is not possible during plant operation as the affected piping cannot be isolated. Although a mechanical clamping device would provide an acceptable repair to control leakage and ensure continued structural integrity of line 2MS2-123, paragraph 1.0(a) of Code Case N-523-2 prohibits its use in a containment boundary. Under these conditions, it would be necessary for Waterford 3 to shutdown in order to perform a permanent Code repair. This creates a hardship in that the shutdown and subsequent restart unnecessarily cycles plant systems and components.

Entergy prefers to use a mechanical clamping device to control the leak and to ensure structural integrity of the piping. The proposed mechanical clamping device will comply with the requirements of Code Case N-523-2 with the exception that it will be located on system piping that is considered a containment boundary. Entergy understands that the basis for the scope limitation is to prevent temporary repair of containment boundaries, which could depressurize and have the potential for communicating with the post-accident environment inside containment.

The Main Steam System containment isolation design utilizes a closed system inside containment and isolation valves outside containment. The mechanical clamping device will be located on a small pipe outside containment; the closed system will continue to provide a passive containment isolation barrier. The normal operating pressure at the location of the mechanical clamping device is in the range of 800 - 1000 psig. As such, positive verification of the leak-tight integrity of the mechanical clamping device will be detected by visual observations performed once per shift.

The use of a mechanical clamping device on a portion of a system which is considered containment boundary is acceptable based on the fact that the system will be continuously pressurized at pressures significantly greater than containment post-accident conditions as well as ambient atmospheric pressure. Because this is the case, leakage during operation would be readily detected by visual observation.

V. CONCLUSION

10 CFR 50.55a(a)(3) states:

> "Proposed alternatives to the requirements of (c), (d), (e), (f), (g), and (h) of this section or portions thereof may be used when authorized by the Director of the Office of Nuclear Reactor Regulation. The applicant shall demonstrate that:
>
> (i) The proposed alternatives would provide an acceptable level of quality and safety, or
>
> (ii) Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Since a permanent ASME Code repair is not possible during plant operation as the affected piping cannot be isolated, it would be necessary to shutdown Waterford 3 in order to affect the permanent repair. This creates a hardship without a compensating increase in the level of quality and safety in that the shutdown and subsequent restart unnecessarily cycles plant systems and components. Entergy would prefer to use the above request to perform a temporary ASME Code repair using a mechanical clamping device as a replacement for the piping pressure boundary containing the leak.

Therefore, Entergy requests approval of this deviation from the provision in paragraph 1.0(a) of Code Case N-523-2 regarding the use of clamping devices on piping that forms the containment boundary in that compliance would result in hardship without a compensating increase in the level of quality or safety.

TYPICAL DRAIN POT
ARRANGEMENT

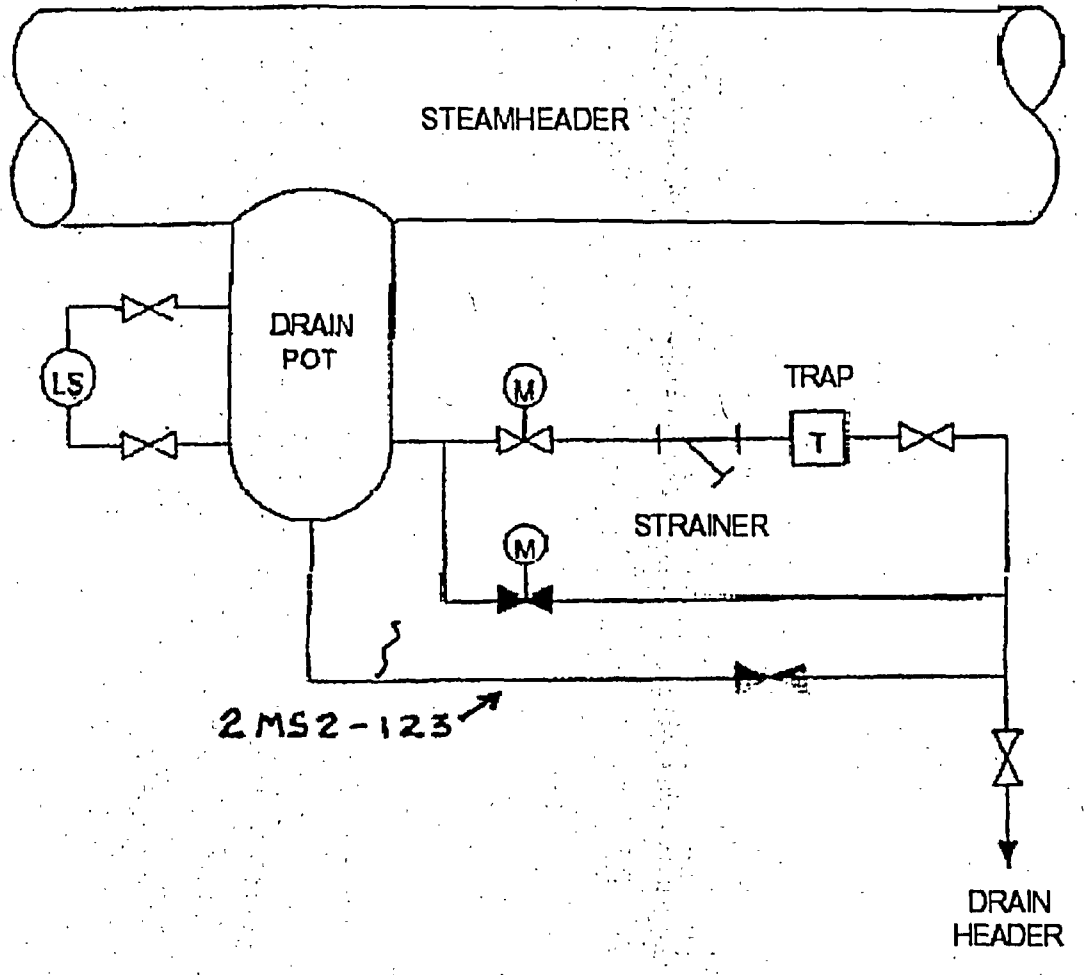

FIGURE 1

MAIN STEAM LINE DRAIN

ENCLOSURE 2

CNRO-2005-00053

BACKGROUND INFORMATION FOR
WATERFORD 3 REPAIR AND MONITORING PLAN

BACKGROUND INFORMATION FOR WATERFORD 3 REPAIR AND MONITORING PLAN

1.0 Introduction

Entergy Operations, Inc. (Entergy) performed an OPERABILITY determination to address the impact of the steam leak located on line 2MS2-123 on containment integrity and the requirements of Technical Specification 3/4.6.1, *Primary Containment Integrity*. This determination considered offsite and control room dose consequences due to secondary steam leakages from the Atmospheric Dump Valves (ADV) and the Main Steam Safety Valves (MSSV) during an accident. The two accidents considered limiting are the Steam Generator Tube Rupture (SGTR) and the Small Break Loss of Coolant Accident (SBLOCA). Calculations demonstrate that the control room doses are limiting with respect to secondary steam releases. Analyses performed considering a bounding estimate of the leakage resulted in a maximum control room dose within the 5 REM total effective dose equivalent (TEDE) limit of 10 CFR 50.67. Therefore, primary containment remains OPEARBLE.

However, to ensure continued structural integrity of the degraded pipe and to prevent further degradation that may be caused by the leak, Entergy plans to design and install a clamping device in accordance with the requirements of ASME Section XI Code Case N-523-2. Materials, fabrication, and pressure testing will satisfy the requirements of Sections 6.0, 7.0, and 8.0 of the Case.

2.0 Defect Characterization

According to Section 4.0 of the Case, the size, location, and apparent cause of the defect shall be determined. However, if the defect size cannot be directly determined, a conservative bound of the size shall be determined and documented. Visual and ultrasonic examinations of the defect area have been performed. Based on these examinations, the source of the existing leak is a through-wall pinhole that is approximately 1/16-inch in diameter. Entergy believes that the cause of the leak is due to environmental corrosion that initiated on the outside diameter of the base material (SA106, Grade B) of the piping. The degradation is limited to a single location and does not exist in any piping welds.

3.0 Design of the Mechanical Clamping Device

Encapsulating the pipe with an ASME Code clamping device will repair the leak. The mechanical clamping device will include an axial restraint to accommodate thrust loads resulting from a complete failure of the pipe. The clamping device is being designed to meet or exceed the design rating of the associated piping. A piping stress review is being completed to ensure that the additional mass does not adversely affect the qualification of the existing piping system. The clamping device is being designed in full compliance with the requirements of Section 5.0 using materials that comply with Section 6.0 of the Case. Therefore, the proposed mechanical clamp will be suitable for the intended application and capable of performing the specified design functions. The mechanical clamp will completely enclose the piping defect and any projected growth.

4.0 Monitoring Plan

As required by Section 9.0 of the Case, Entergy will develop a monitoring plan to monitor potential defect growth in the area immediately adjacent to the clamping device. The monitoring plan will include the following:

- As required by Paragraph 9.0(a), the area immediately adjacent to the clamping device will be examined using a volumetric method except where precluded by the clamping device configuration. The volumetric examination will be performed on a frequency not to exceed three months and shall be specified in the Repair/Replacement Plan. If the examination reveals defect growth of a size greater than that projected in paragraph 5.1(b), then a repair or replacement will be performed in accordance with IWA-4000 of ASME Section XI.
- In addition to monitoring the defect size in accordance with Paragraph 9.0(a), the clamping device will also be monitored for leakage once per shift. If leakage is identified at any time, the leakage will be evaluated and dispositioned.

LICENSEE-IDENTIFIED COMMITMENTS

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
1. An engineering evaluation will be performed to confirm this initial assessment.			
2. As such, positive verification of the leak-tight integrity of the mechanical clamping device will be detected by visual observations performed once per shift.			
3. As required by paragraph 1.0(c) of the Case, the proposed clamping device will remain in service until the next scheduled outage exceeding 30 days, but no longer than the next refueling outage at which time the defect will be repaired or piping replaced in accordance with IWA-4000 of ASME Section XI			
4. As required by Paragraph 9.0(a), the area immediately adjacent to the clamping device will be examined using a volumetric method except where precluded by the clamping device configuration. The volumetric examination will be performed on a frequency not to exceed three months and shall be specified in the Repair/Replacement Plan. If the examination reveals defect growth of a size greater than that projected in paragraph 5.1(b), then a repair or replacement will be performed in accordance with IWA-4000 of ASME Section XI.			
5. In addition to monitoring the defect size in accordance with Paragraph 9.0(a), the clamping device will also be monitored for leakage once per shift. If leakage is identified at any time, the leakage will be evaluated and dispositioned.			