May 3, 2001

Mr. John T. Herron
Vice President Operations
Entergy Operations, Inc.
17265 River Road
Killona, LA 70066-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 - RELIEF REQUEST NO. VRR-07, RELATED TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS CODE REQUIREMENTS (TAC NO. MB0875)

Dear Mr. Herron:

By letter dated December 19, 2000, Entergy Operations, Inc. submitted a Request for Relief (VRR-07) for the Waterford Steam Electric Station, Unit 3 (Waterford 3), from certain provisions of Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code). The request, based on as low as reasonably achievable considerations for Containment Vacuum Relief (CVR) valves CVR-102 and CVR-202 and location considerations for valves CVR-101 and CVR-201, was submitted pursuant to 10 CFR 50.55a(f)(6)(i), on the basis that code requirements are impractical for these specific applications.

Pursuant to 10 CFR 50.55a(f)(4)(iv), inservice testing (IST) of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (b) of 10 CFR 50.55a, subject to the limitations and modifications listed therein, and subject to Commission approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met.

The 1989 Edition of the ASME Code is the applicable Code of record for the second 10-year interval at Waterford 3. Subsection IWV of the 1989 Edition references Part 10 of the ASME Operations and Maintenance (OM) Standard (OM-10) as the rule for IST of the valves. Subparagraph 1.3.4.3(a) of OM-1-1987, which requires that primary containment vacuum relief devices be tested on a six-month frequency unless historical data indicate a need for more frequent testing, was revised and is now Subparagraph I.1.3.7 in Appendix I of OM Code -1995. This paragraph states that tests shall be performed on all ASME Code Class 2 and 3 containment relief valves at each refueling outage or every 2 years, whichever is sooner, unless historical data require more frequent testing.

Based on the above discussion, a determination on the impracticality of performing the required IST of the subject valves was not necessary. Relief Request VRR-07 for containment vacuum relief valves CVR-101, CVR-102, CVR-201, and CVR-202, is approved, for the second 10-year interval IST program, pursuant to 10 CFR 50.55a(f)(4)(iv), on the basis that the proposed alternative meets the requirements of the 1995 Edition of the OM Code, which has been incorporated by reference into 10 CFR 50.55a.

If you have questions regarding this response to your request, please contact N. Kalyanam, Project Manager, Waterford 3, at (301) 415-1480.

Sincerely,

/RA/

Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Enclosure: Safety Evaluation

Docket No. 50-382

cc: See next page

Based on the above discussion, a determination on the impracticality of performing the required IST of the subject valves was not necessary. Relief Request VRR-07 for containment vacuum relief valves CVR-101, CVR-102, CVR-201, and CVR-202, is approved, for the second 10-year interval IST program, pursuant to 10 CFR 50.55a(f)(4)(iv), on the basis that the proposed alternative meets the requirements of the 1995 Edition of the OM Code, which has been incorporated by reference into 10 CFR 50.55a.

If you have questions regarding this response to your request, please contact N. Kalyanam, Project Manager, Waterford 3, at (301) 415-1480.

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO INSERVICE TESTING PROGRAM RELIEF REQUEST FOR

ENTERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NUMBER 50-382

1.0 INTRODUCTION

Title 10 of the *Code of Federal Regulations*, 10 CFR 50.55a, requires that inservice testing (IST) of certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Code and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to 10 CFR 50.55a(a)(3)(i), 10 CFR 50.55a(a)(3)(ii), or 10 CFR 50.55a(f)(6)(i). In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety, (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety, or (3) conformance is impractical for its facility. Pursuant to 10 CFR 50.55a, the Commission may approve alternatives and grant relief from ASME Code requirements upon making the necessary findings. Guidance related to the development and implementation of IST programs is given in Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," issued April 3, 1989, and its Supplement 1 issued April 4, 1995. NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," and NUREG/CR-6396, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements," provide additional guidance in the area of IST.

The 1989 Edition of the Code is the applicable Code of record for the second 10-year interval IST program at Waterford Steam Electric Station, Unit 3 (Waterford 3). Subsection IWV of the 1989 Edition, which contains the requirements for IST of valves, references Part 10 of the American National Standards Institute /ASME Operations and Maintenance (OM) Standard (OM-10) as the rule for IST of valves. OM-10 replaces specific requirements in previous editions of Section XI, Subsection IWV, of the Code. OM-10 references OM-1 as the rule for IST of safety and relief valves. Subsection IWP of the 1989 Edition, which gives the requirements for IST of pumps, references OM-6 as the rule for IST of pumps. OM-6 replaces specific requirements in previous editions of Section XI, Subsection IWP, of the Code.

By letter dated December 19, 2000, Entergy Operations, Inc. (EOI or licensee) submitted a valve relief request (VRR)-07 for Waterford 3. EOI requests relief for containment vacuum relief (CVR) valves from ASME Code required tests every six months. The staff has reviewed the relief request and is providing the following evaluation.

2.0 EVALUATION

VRR-07 requests relief for valves CVR-101, -102, -201, and -202 from Subparagraph 1.3.4.3(a) of OM-1, which requires that primary CVR valves be tested on a six-month frequency. The testing requirements are specified in Subparagraph 7.3.2.4 of OM-1, which includes actuation to verify open and closed capability, set pressure verification, and the performance check of any pressure and position sensing accessories. For valves CVR-102 and -202, relief is requested from the six-month test frequency to verify open and closed capability, set pressure, and the performance of any pressure and position sensing accessories. However, for valves CVR-101 and -201, relief is requested from the six-month frequency to verify the position sensing accessories.

2.1 Licensee's Basis For Relief Request

The licensee states:

> Manual disc cycling (actuation) to verify open and closed capability and set pressure verification can only be performed locally for containment vacuum relief valves CVR-102 and CVR-202. The location of these valves in containment make it impractical to perform this testing at power for ALARA [as low as reasonably achievable] reasons. (Recent at power surveys indicated 900 mrem/hr neutron / 350 mrem/hr gamma in the vicinity of CRV-102 and 200 mrem/hr neutron / 15 mrem/hr gamma in the vicinity of CRV-202.) Testing at the currently required OM-1 six-month frequency would require at power testing. These check valves do not have pressure or position sensing accessories. The valves are self actuated, magnetically held closed, and of the free swinging disc type for quick opening against small pressure differentials. These check valves constitute the inner isolation valve for their respective containment penetration. The valve setpoint is magnetically adjusted and a function of the distance between the magnet and a metal plate attached to the valve disc. This design configuration is less susceptible to setpoint drift than other Class 2 relief devices for which OM-1 would allow much longer test frequencies. Therefore, an extended test interval is appropriate. The proposed test frequency is consistent with the test frequency used during the first ten year interval. (Set pressure verification was not required during the first ten year interval.)
>
> Verification of the position sensing accessories for containment vacuum relief valves CVR-101 and CVR-201 can only be performed by local observation. The location of these valves in the annulus between the plant containment and shield building makes this testing impractical due to personnel safety concerns. The annulus is considered to be a confined space requiring special monitoring and safety precautions be taken prior to and during entry into the annulus. Access to this confined space is limited during plant operations due to personnel safety concerns and technical specification requirements to maintain a negative pressure in the annulus. CVR-101 and CVR-201 are air-operated butterfly valves that are actuated by a differential pressure switch. The

proposed test frequency is consistent with the test frequency used during the first ten year interval.

This relief became necessary when new test requirements were identified following the upgrade of the IST Program for the second ten year interval as required by 10 CFR 50.55a. Reference Waterford 3 Licensee Event Report 1999-003-00 for further background information.

2.2 Alternative Testing

The licensee states:

> Testing required by OM-1-1987 Subparagraph 7.3.2.4(a), applicable to inside containment isolation valves CVR-102 and CVR-202, will be performed during refueling outages when the valves are accessible for manual exercising to the open and closed position and set pressure verification.
>
> The position sensing accessory check of OM-1-1987 Subparagraph 7.3.2.4(a) for containment isolation valves CVR-101 and CVR-201 will be performed in accordance OM-10, Paragraph 4.1, consistent with the requirements applicable to valves with remote position indicators.

2.3 Evaluation

Subparagraph 1.3.4.3(a) of OM-1-1987 requires that primary containment vacuum relief devices be tested on a six-month frequency unless historical data indicate a requirement for more frequent testing. Paragraph 7.3.2.4(a) of OM-1 requires that these valves be actuated after installation to verify open and closed capability, set pressure verification, and the performance check of any pressure-sensing and position-sensing accessories. However, Subparagraph 1.3.4.3(a) of OM-1-1987 was revised and is now Subparagraph I.1.3.7 in Appendix I of OM Code -1995. This paragraph states that tests shall be performed on all ASME Code Class 2 and 3 containment relief valves at each refueling outage or every 2 years, whichever is sooner, unless historical data require more frequent testing.

2.3.1 Valves CVR-102 and CVR-202

Valves CVR-102 and CVR-202, located inside the containment, are self-actuated, magnetically-held-closed, and free-swinging disc-type check valves for quick opening against pressure differentials. Because the tests required by the Code can only be performed locally, testing these valves at the currently required OM-1 six-month frequency would require entering the containment and performing the test during plant operation. A recent Waterford 3 survey indicated an activity of 900 mrem/hr neutron and 350 mrem/hr gamma in the vicinity of CRV-102, and 200 mrem/hr neutron and 15 mrem/hr gamma in the vicinity of CRV-202. Therefore, compliance with the OM-1987 Code requirements would result in high radiation exposure to plant personnel. NUREG-1482 and OM-10 allow test deferrals to refueling outages if it is not practical to test quarterly or at cold shutdowns. In this instance, the staff finds it appropriate to defer the test until the refueling outage because the test requires entering the containment at power and would result in high radiation exposure to plant personnel. Because the licensee's proposed alternative of performing the Code-required test during refueling

outages meets the later version of OM-1 that appears in the 1995 Edition of the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code), which has been incorporated by reference into 10 CFR 55.55a, the licensee's proposed alternative for valves CVR-102 and CVR-202 is approved pursuant to 10 CFR 50.55a(f)(4)(iv).

2.3.2 Valves CVR-101 and CVR-201

CVR-101 and CVR-201 are air-operated butterfly valves that are actuated by a differential pressure switch, and are located in the annulus between the containment and shield building. These power-operated valves are subjected to test requirements of Paragraphs 4.1, "Valve Position Verification," and 4.2.1, "Valve Exercising Test," of OM-10. Because these valves function as primary containment vacuum relief devices, they are also subjected to the test requirements of Subparagraphs 1.3.4.3(a) and 7.3.2.4(a) of OM-1-1987. The test requirements of OM-10 and OM-1 for valves CVR-101 and CVR-201 are similar with one exception: OM-10 requires valve position verification every two years while OM-1 requires verification of position-sensing accessories every six months.

Position verification for valves CVR-101 and CVR-201 can only be performed by local observation in the annulus. Because the Code-required test can only be performed locally and these valves are located in the annulus, testing these valves at the currently required OM-1 six-month frequency would require entering the annulus and performing the test during plant operation. The annulus is a confined space requiring special monitoring and safety precautions prior to and during entry into the annulus. Access to this confined space is limited during plant operation because of safety concerns for plant personnel and technical specification requirements to maintain a negative pressure in the annulus. Therefore, compliance with the OM-1 (1987) requirements would result in hardship for plant personnel to perform the test. NUREG-1482 and OM-10 allow test deferrals to refueling outages if it is not practical to test quarterly or at cold shutdowns. In this instance, the staff finds it appropriate to defer the test until the refueling outage because the test requires entering the annulus at power and performing the test in a confined space. As noted above, the licensee's proposed alternative of performing the Code-required test during refueling outages is consistent with the later version of OM-1-1995, which has been incorporated by reference into 10 CFR 55.55a. Therefore, pursuant to 10 CFR 50.55a(f)(4)(iv), the licensee's proposed alternative for valves CVR-101 and CVR-201 is approved.

3.0 CONCLUSION

EOI has requested the reliefs based on the ALARA considerations for valves CVR-102 and CVR-202 and the location considerations (in the annulus) for the valves CVR-101 and CVR-201, pursuant to 10 CFR 50.55a(f)(6)(i) on the basis that code requirements are impractical for these specific applications. However, a finding on impracticality is not necessary in these cases.

Pursuant to 10 CFR 50.55a(f)(4)(iv), IST of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (b) of 10 CFR 50.55a, subject to the limitations and modifications listed in paragraph (b) of this section, and subject to Commission approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met.

The 1989 Edition of the ASME Code is the applicable Code of record for the second 10-year interval at Waterford 3. Subsection IWV of the 1989 Edition references OM-10 as the rules for IST of the valves. Subparagraph 1.3.4.3(a) of OM-1-1987, which requires that primary containment vacuum relief devices be tested on a six-month frequency unless historical data indicate a need for more frequent testing, was revised and is now Subparagraph I.1.3.7 in Appendix I of OM Code -1995. This paragraph states that tests shall be performed on all ASME Code Class 2 and 3 containment relief valves at each refueling outage or every 2 years, whichever is sooner, unless historical data require more frequent testing.

Relief Request VRR-07 for containment vacuum relief valves CVR-101, CVR-102, CVR-201, and CVR-202, is granted, pursuant to 10 CFR 50.55a(f)(4)(iv), on the basis that the proposed alternative meets the requirements of the 1995 Edition of the OM Code which has been incorporated by reference into 10 CFR 50.55a.

Pursuant to 10 CFR 50.55a(f)(4)(iv), Relief Request VRR-07 is approved, for the second 10-year interval IST program, on the basis that the proposed alternative meets the requirements in the 1995 Edition of the OM Code which has been incorporated by reference into 10 CFR 50.55a. There are no related requirements that must be met in the 1995 OM Code.

Principal Contributor: Y. S. Huang

Date: May 3, 2001