August 2, 2005

Mr. Paul D. Hinnenkamp
Vice President - Operations
Entergy Operations, Inc.
River Bend Station
5485 US Highway 61N
St. Francisville, LA 70775

SUBJECT: RIVER BEND STATION, UNIT 1 - RE: REQUEST FOR RELIEF FROM THE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE (TAC NO. MC4562)

Dear Mr. Hinnenkamp:

By letter dated September 30, 2004, Entergy Operations, Inc. (Entergy) submitted a request for the use of alternatives to certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Section XI requirements at River Bend Station, Unit 1 (RBS). Specifically, Entergy proposed to test certain check valves on a frequency commensurate with the refueling outage frequency currently allowed by ASME Code OMa-10, but during the operating cycle.

The U.S. Nuclear Regulatory Commission (NRC) staff concludes that testing the specified valves on a quarterly frequency during plant operation is impractical due to extensive test set-up time and that the proposed testing provides reasonable assurance that the component is operationally ready. Therefore, the staff finds that granting the relief pursuant to 50.55a(f)(6)(i) of Title 10 of *Code of Federal Regulations* is authorized by law and will not endanger life or property or the common defense and security, and is 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 duration of this alternate testing frequency has been granted until December 2007, at which time RBS is scheduled to update to a later edition of ASME Code Section XI.

The NRC staff's safety evaluation is enclosed.

Sincerely,

/RA/

David Terao, Chief, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-458

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST NO. RBS-VRR-009

ENTERGY OPERATIONS, INC.

RIVER BEND STATION, UNIT 1

DOCKET NO. 50-458

1.0 INTRODUCTION

By letter dated September 30, 2004, Entergy Operations, Inc. (Entergy) submitted a valve relief request RBS-VRR-009 seeking relief from certain inservice test requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI which references the ASME/American National Standards Institute (ANSI)-1987 Edition and 1988 Addenda of OMa Part 10 Standard for inservice testing of valves at the River Bend Station (RBS), Unit 1. In the relief request, Entergy proposed an alternative testing frequency for certain check valves. These check valves will be tested on a frequency of at least once during each operating cycle in lieu of the Code-allowed frequency of once at each refueling outage.

2.0 BACKGROUND

Section 50.55a of Title 10 of the *Code of Federal Regulations* (10 CFR), requires that inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with the ASME Code, Section XI and applicable addenda, except when 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 alternatives will 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 would be impractical for its facility. The regulations in 10 CFR 50.55a authorize the Commission to approve alternatives and to grant relief from ASME Code requirements upon making the necessary findings. The Nuclear Regulatory Commission (NRC) guidance contained in Generic Letter (GL) 89-04, “Guidance on Developing Acceptable Inservice Testing Programs,” provides alternatives to Code requirements which are acceptable to NRC staff. Further guidance is given in GL 89-04, Supplement 1, and NRC NUREG-1482, “Guidelines for Inservice Testing at Nuclear Power Plants,” dated April 1995.

For the second 10-year IST interval, the licensee’s Code of record is ASME/ANSI-OM Part 6 and 10-1987 Edition, 1988 OMa addenda, for pump and valve IST, respectively. The NRC staff

has completed the review of relief request RBS-VRR-009, and its findings with respect to authorizing alternatives and granting the IST relief request are given below:

3.0 EVALUATION OF VALVE RELIEF REQUEST RBS VRR-009

3.1.1 The Items for which Relief is Requested

System: Containment and Drywell Air Locks

Component Identification	Code Class	Code Category	Component Function
JRB-V1A	2	AC	Reactor Door Seal 1 Air Supply Check Valve
JRB-V1B	2	AC	Reactor Door Seal 2 Air Supply Check Valve
JRB-V1C	2	AC	Reactor Outer Door Seal 3 Air Supply Check Valve
JRB-V1D	2	AC	Reactor Outer Door Seal 4 Air Supply Check Valve
JRB-V1I	2	AC	Inner Door Outer Pressure Relief Check Valve
JRB-V1J	2	AC	Inner Door Inner Pressure Relief Check Valve
JRB-V2A	2	AC	Reactor Door Seal 1 Air Supply Check Valve
JRB-V2B	2	AC	Reactor Door Seal 2 Air Supply Check Valve
JRB-V2C	2	AC	Reactor Outer Door Seal 3 Air Supply Check Valve
JRB-V2D	2	AC	Reactor Outer Door Seal 4 Air Supply Check Valve
JRB-V2I	2	AC	Inner Door Outer Pressure Relief Check Valve
JRB-V2J	2	AC	Inner Door Inner Pressure Relief Check Valve

JRB-V1A, B, C, and D, and JRB-V2A, B, C, and D are check valves that isolate the safety-related seal air system in the upper and lower primary containment personnel air locks from the non-safety-related make-up air piping/tubing supplied by the instrument air system. These valves are normally closed unless makeup air is being supplied to the seal air system. They have a safety function to close following the addition of makeup air. Since credit is not taken for the instrument air supply to the air locks after a seismic event, these valves do not have a safety-related function to open. These valves are considered Category A because the air lock seal air system meets the definition of a system for which valve seat leakage is limited to a specific maximum amount in the closed position for fulfillment of its required function.

JRB-V1I and J, and JRB-V2I and J are spring-loaded check valves that perform a safety-related pressure relief (open) function to prevent over-pressurizing the air lock barrel. They also have a closed safety function to prevent containment leakage into the air lock. These valves are considered Category C since they are self-actuating check valves, and also Category A since they perform a containment isolation function.

The licensee has requested relief for check valves JRB-V1A, V1B, V1C, V1D, V1I, V1J, V2A, V2B, V2C, V2D, V2I, and V2J from the requirements of Part 10 of OMa (OM-10). Paragraph 4.3.2.2(e) of OM-10 states that if exercising is not practicable during operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages. Currently, these valves are tested once at each refueling outage. The licensee proposes to test these valves on a frequency of at least once during each operating cycle.

3.1.2 Code Requirement:

Paragraph 4.3.2.2 of ASME/ANSI-1987 Edition, OMa-1988 Addenda, Part 10 addresses exercising requirements. Specifically, Paragraph 4.3.2.2(e) states, "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages."

3.1.3 Impracticality of Compliance (as stated)

Background

Entergy has determined that testing the identified check valves on a quarterly frequency during plant operation is not practical due to extensive test set-up time; therefore, they are currently tested on a refueling outage frequency in accordance with Paragraph 4.3.2.2(e) of OMa-10. Energy's position is supported by Section 4.1.4 of NUREG-1482, *Guidelines for Inservice Testing at Nuclear Power Plants* (Reference 2), which states, "The NRC has determined that the need to set up test equipment is adequate justification to defer backlog testing of a check valve until a refueling outage."

Burden caused by Compliance

Upon further investigation and pursuant to 10 CFR 50.55a(f)(5)(iii), Energy has determined that testing the identified check valves during refueling outages is impractical due to ingress and egress restrictions placed on personnel traffic through the air lock. Specifically, testing during refueling outages would impede the flow of personnel and equipment into and out of containment as the opposite air lock door would be locked closed if performed when containment is required. If performed at times during the refueling outage when containment is not required, flow would also be impeded due to the air lock being roped off for testing.

[...]

Based on review of test history, testing these valves on a single air lock door can be accomplished in approximately 18 to 24 hours, thereby, requiring up to 48 hours to test each air lock and impeding personnel traffic into and out of containment for that period of time. This time is doubled to 96 hours for testing both air locks.

3.1.4 Licensee's Proposed Alternative (as stated):

Energy proposes an alternative testing frequency for performing inservice testing for the valves identified above. Specifically, Energy proposes to test the identified check valves on a frequency commensurate with the refueling outage frequency currently allowed by Paragraph 4.3.2.2(e) of ASME/ANSI OMa-10, but during the operating cycle.

3.1.5 Licensee's Basis for Relief (as stated):

As more system outages are performed on-line, it is evident that the inservice testing described above could be performed during system outages while the plant is operating without sacrificing the level of quality or safety. System outages are determined and scheduled in accordance with 10 CFR 50.65(a)(4). The tests to satisfy TS [Technical Specification] SR [Surveillance Requirement] 3.6.1.2.1 and SR 3.6.1.2.4 are currently performed on-line. The proposed inservice testing can be performed during these system outages. The proposed alternative would permit testing on an operating cycle frequency in lieu of a refueling outage frequency. The following points justify performing this testing at a frequency of at least once each operating cycle:

1. Inservice testing performed on a refueling outage frequency is currently acceptable in accordance with ASME/ANSI OMa-10. By specifying testing activities on a frequency commensurate with each refueling outage, OMa-10 recognizes and establishes an acceptable time period between testing. Historically, the refueling outage has provided a convenient and defined time period in which testing activities could be safely and efficiently performed. However, the acceptable time period between testing activities may be maintained separate from the refueling outage milestone. Inservice testing performed on a frequency that maintains the acceptable time period between testing activities during the operating cycle is consistent with the intent of OMa-10.

2. 10 CFR 50.65(a)(4) requires licensees to assess and manage the increase in risk that may result from proposed maintenance activities. Energy complies with the requirements of §50.65(a)(4) at RBS via the application of a program governing maintenance scheduling. This program dictates the requirements for risk evaluations as well as the necessary levels of action required for risk management in each case. The program also controls operation of the on-line risk monitoring system, which is based on the RBS probabilistic risk assessment (PRA). In addition, this program provides methods for assessing risk of maintenance activities for components not directly in the RBS PRA model. With the use of risk evaluation for various aspects of plant operations, Energy has initiated efforts to perform additional maintenance, surveillance, and testing activities during normal operation. Planned activities are evaluated utilizing risk insights to determine the impact on safe operation of the plant and the ability to maintain associated safety margins. Individual system components, a system train, or a complete system may be planned to be out of service to allow maintenance, or other activities, during normal operation.

Testing on-line will involve opening the inside or outside containment air lock door, which requires entry into a TS Limited Condition for Operation (LCO) REQUIRED ACTION statement. The action requires that the OPERABLE air lock door be closed and locked. The procedures currently contain steps to ensure the door not being tested is locked closed prior to testing, thereby maintaining containment integrity. Hence, the testing activity does not increase the risk of a breach of containment.

RBS currently performs on-line maintenance and testing on the containment air lock doors, which includes tasks such as testing the seals, inspecting, lubricating and testing the interlocks, and testing and inspecting the seal air system components. These activities are performed on a single door at a time while the opposite door is locked closed under administrative controls. Therefore, these activities have no impact on the overall OPERABILITY of the affected air lock since a single closed door is sufficient to provide a leak tight barrier following postulated events.

Based on review of testing history, testing the seal air system on a single door can be accomplished in approximately 18 to 24 hours. Inservice testing JRB-V1A-D, and JRB-V2A-D, as applicable, is included in this timeframe. Additionally, the air lock leakage rate test is performed on a single door at a time and can be accomplished in approximately 18 to 24 hours per door. Testing JRB-V1 I and J, and JRB-V2 I and J, as applicable, is included in this timeframe. Therefore, because these activities are currently performed on-line to satisfy TS surveillance requirements, crediting them with satisfying IST requirements would change neither the duration of the on-line testing activities, nor the core damage probability (CDP) associated with the containment air lock on-line testing activities. For these reasons, the risk/CDP over the entire operating/shutdown spectrum would remain unchanged.

Risk associated with on-line maintenance/testing activities is controlled through the work control process. This process includes preventive measures for maintaining safety and minimizing risk while performing on-line maintenance/testing such as:

a. Assessing work activities by multiple independent personnel to ensure work activities in one system do not affect the ability of redundant systems or trains to perform their safety functions.

b. Establishing redundant systems or trains as “protected," so that these systems are less likely to be inadvertently made INOPERABLE while they are being credited to operate during the period that another safety system is out of service.

c. Providing additional management oversight for significant maintenance activities being conducted while in TS LCO REQUIRED ACTION statements.

d. Conducting shift briefings to ensure that personnel are aware of active TS LCO REQUIRED ACTION statements.

e. Using human performance tools including pre-job briefings, self-checking, and peer-checking to reduce or eliminate human errors.

The level of quality associated with IST activities is independent of whether the activity is performed on-line or during an outage. The same personnel, procedures, and acceptance criteria are used in either case. The safe conduct of maintenance and IST activities [are] built into the RBS work control process.

3. Over time, the same number of tests would be performed using the proposed operating cycle test frequency as would be performed at the current refueling outage frequency. Thus, IST activities performed at the proposed operating cycle test frequency provide an equivalent level of quality and safety as IST activities performed on a refueling outage frequency.

3.1.6 Evaluation

ASME/ANSI OM-10, Paragraph 4.3.2 requires check valves to be exercised to their safety positions quarterly, if practical, otherwise at cold shutdowns. If this is also not practical, the Code allows testing to be deferred to refueling outages. Energy has determined that testing the identified check valves on a quarterly frequency during plant operation is not practical due to extensive test set-up time, and therefore, the affected valves are being tested at each refueling outage. However, Energy has determined that testing the identified check valves during refueling outages is impractical due to ingress and egress restrictions placed on personnel traffic through the air lock. Specifically, testing during refueling outages would impede the flow of personnel and equipment into and out of containment as the opposite air lock door would be locked closed if performed when containment is required. If performed at times during the refueling outage when containment is not required, flow would also be impeded due to the air lock being roped off for testing. As such, in lieu of testing the identified valves at refueling outages, the licensee proposed to perform the required test on-line at least once during the operating cycle.

With regard to refueling outage test frequency, the NRC staff has determined (Section 4.1.4 of NUREG-1482) that the need to set up test equipment is adequate justification to defer backlog testing of a check valve until the refueling outage. Testing the valve during the refueling outage, with sufficient justification, also meets the Code requirements of 4.3.2.2(e) of OM-10 and is acceptable.

In lieu of the Code-allowed refueling test frequency, the licensee proposes to test the affected check valves once during each operating cycle but on a frequency commensurate with the

refueling outage frequency, i.e., approximately every 18 months. The NRC staff finds that this proposal of Energy meets the intent of the Code-required test frequency because it produces the same number of tests at approximately the same test interval as would be allowed at the current refueling outage frequency.

Therefore, testing the check valves identified in Section 3.1.1 of this safety evaluation once each operating cycle (approximately every 18 months) is consistent with the Code-allowed test frequency. The alternative testing frequency of at least once during each operating cycle in lieu of once during each refueling outage provides reasonable assurance that the valves described herein are operationally ready. Therefore, the staff finds the alternative testing frequency for these valves is acceptable.

As defined in the TSs, the refueling cycle for RBS is nominally 18 months. However, the test frequency for cycles that include extended intermediate outages may exceed an 18-month test interval. RBS TS 1.25 allows a 25 percent maximum frequency extension for operational considerations that applies to the test intervals. TS 1.25 also applies to IST, and therefore, the interval between two consecutive tests may vary but must be limited to 22.5 months.

4.0 CONCLUSION

The NRC staff concludes that testing the check valves listed in Section 3.1.1 of this safety evaluation, on a quarterly frequency during plant operation, is impractical due to extensive test set-up time and that the licensee's proposal in relief request RBS-VRR-009, to test the check valves, on a frequency commensurate with the refueling outage frequency currently allowed by ASME Code OMa-10, but during the operating cycle, provides reasonable assurance that the components are operationally ready. Therefore, the staff finds that granting relief pursuant to 10 CFR 50.55a(f)(6)(i), is authorized by law and will not endanger life or property or the common defense and security, and is 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 duration of this alternate testing frequency has been granted until December 2007, at which time RBS is scheduled to update to the ASME Code for Operation and Maintenance of Nuclear Power Plants.

All other requirements of the ASME Code, Section XI, for which relief has not been specifically requested and granted remain applicable including third party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Y.S. Huang

Date: August 2, 2005

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