

February 13, 2003

Mr. Paul D. Hinnenkamp  
Vice President - Operations  
Entergy Operations, Inc.  
River Bend Station  
P. O. Box 220  
St. Francisville, LA 70775

SUBJECT: RIVER BEND STATION, UNIT 1 - RE: RELIEF FROM THE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE, SECTION XI, CONCERNING MAIN STEAM SAFETY/RELIEF VALVE INSERVICE TESTING (TAC NO. MB5138)

Dear Mr. Hinnenkamp:

By letter dated May 14, 2002, as supplemented by letter dated December 6, 2002, Entergy Operations, Inc. (the licensee) submitted a request for relief from certain American Society of Mechanical Engineers Boiler and Pressure Vessel Code (the Code) inservice testing (IST) requirements pertaining to testing of the main steam line safety/relief valves (S/RVs) at River Bend Station, Unit 1 (RBS). Specifically, relief request RBS-VRR-004 seeks relief from performing certain stroke, stroke time, and remote position indication verification testing of the S/RVs.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in Relief Request RBS-VRR-004, and concludes that the licensee's proposed alternative will provide an acceptable level of quality and safety and reasonable assurance that the components are operationally ready. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii). This authorization is valid for the remainder of the second 10-year IST interval.

The NRC staff's evaluation and conclusions are contained in the enclosed safety evaluation (SE). Should you have any questions regarding this SE, please contact Mr. Michael Webb at (301) 415-1347.

Sincerely,

**/RA/**

Robert A. Gramm, 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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March 2002

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO RELIEF REQUESTS RBS-VRR-004

ENTERGY OPERATIONS, INC.

RIVER BEND STATION, UNIT 1

DOCKET NO. 50-458

1.0 INTRODUCTION

By letter dated May 14, 2002, as supplemented by letter dated December 6, 2002, Entergy Operations, Inc. (EOI or the licensee) submitted a request for relief, RBS-VRR-004, from certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) inservice testing (IST) requirements pertaining to testing of the main steam line safety/relief valves (S/RVs) at River Bend Station, Unit 1 (RBS). Specifically, RBS-VRR-004 seeks relief from performing certain stroke, stroke time, and remote position indication verification testing of the S/RVs. The RBS S/RVs are identified below.

S/RVs with Automatic Depressurization System (ADS) function:

B21-RVF041B, C, D  
B21-RVF047A, C,  
B21-RVF051G

S/RVs without ADS function:

B21-RVF041A, F, G, L  
B21-RVF047B, D, F  
B21-RVF051B, C, D

These valves have both a safety mode and a relief mode of operation. The safety mode is the self-actuating function, and the relief mode is accomplished by an automatic or manual control circuit which applies electric power to solenoids which provide control air to the pneumatic actuator piston.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a (10 CFR 50.55a), requires that IST of certain ASME 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 relief has been requested and granted or proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a(a)(3)(i), (a)(3)(ii), or (f)(6)(i). In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) conformance is impractical for its facility; (2) the

proposed alternative provides an acceptable level of quality and safety; or (3) compliance would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Pursuant to 10 CFR 50.55a, the U.S. Nuclear Regulatory Commission (NRC) may authorize alternatives or grant relief from ASME Code requirements upon making the necessary findings. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to the Code requirements that are acceptable to the NRC staff. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants."

For RBS, the regulations in 10 CFR 50.55a require that the IST program meet the requirements of the 1989 Edition of the ASME Code, Section XI which references the Operation and Maintenance (OM) standards, OM-1987, Part 1 (OM-1) and OMa-1988, Part 10 (Part 10). Specifically, for main steam pressure relief valves with auxiliary actuating devices, OM-1, Section 3.4.1.1 requires that each valve that has been maintained or refurbished in place, removed for maintenance and testing, or both, and reinstalled shall be remotely actuated at reduced system pressure to verify open and close capability of the valve prior to resumption of electric power generation. Also, Part 10, Section 4.2.1 requires that Category B power-operated valves be exercised and stroke timed to the safety positions at least once every three months. Additionally, remote position indication is required to be verified at least once every two years in accordance with Section 4.1.

The licensee seeks relief from the OM-1, Section 3.4.1.1 requirement to remotely actuate the plant S/RVs after installation with auxiliary actuating devices to verify opening and closing of the valves. The licensee also seeks relief from the Part 10, Sections 4.2.1 and 4.1 requirements to exercise and stroke-time the S/RVs to the safety-related positions at least once every three months, and to verify the remote position indication at least once every two years. The licensee's proposed alternative testing would be applicable for the second 10-year IST interval which ends on December 1, 2007.

The licensee's requested alternative is consistent with other similar alternatives authorized for other facilities. Further, the alternative is consistent with more recent editions of the ASME OM Code which the staff has incorporated by reference in 10 CFR 50.55a.

The licensee's regulatory and technical analyses in support of its request for relief from ASME OM Code IST requirements are described in Enclosures 1, 2, and 3 of the licensee's submittal dated May 14, 2002. A description of the relief request and the staff evaluation follows.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Licensee's Basis for Relief

The licensee provided a basis for the requested relief. The staff used the following statements from their submittal as the basis for granting relief:

Opening [the S/RVs] during power operation would cause unnecessary transients in the reactor coolant system and require needless alignment and operation of the Residual Heat Removal system in the suppression pool cooling mode. Cycling of these valves during power operation significantly increases the risk of creating undesired seat leakage and/or escalating deterioration of valve seating surfaces due

to such leakage. The initiation and continuation of MSR/V [main steam relief valve] seat leakage increases the amount of valve contamination and may necessitate extensive decontamination efforts on the valve prior to testing. The creation of extensive seat leakage would also require unnecessary alignment and operation of the Residual Heat Removal system in the suppression pool cooling mode. Extensive seat leakage can contribute to MSR/V safety (spring) mode setpoint drift, unnecessarily forcing the removal and testing of additional valves. In addition to the potential seat leakage issues, there is the possibility of an MSR/V sticking open during testing at power, thereby creating a LOCA [loss-of-coolant accident]. Although an inadvertently stuck open MSR/V is an analyzed event in the USAR [Updated Safety Analysis Report], it is not the intent for testing to increase the risk of initiating such a casualty.

...Per OM-1987, Part 1, Paragraph 3.4.1.1(d), the MSR/Vs are required to be stroked at reduced system pressure to verify open and close capability...valve stroking on live steam is not desirable. Additionally, it is RBS's opinion that the purpose of this Part 1 requirement is to verify correct installation of the air and electrical systems associated with the relief mode operation of the MSR/V. Such confirmation can be accomplished without physically lifting the valve disk from the nozzle seat. Thus, RBS believes that an uncoupled actuator test, as described in the Alternative Testing below, is sufficient to perform this installation verification and will provide an acceptable level of quality and safety.

### 3.2 Proposed Alternative Testing

The licensee proposes that the S/RVs be exercised to the open position by manual actuation of the valve control system during Emergency Operability testing and other certification activities on the valve test bench. After installation in the plant, following setpoint and certification testing, the valve actuator of each replacement S/RV would be uncoupled from the valve lever arm which lifts the valve stem. The air actuators would then be exercised (without lifting the stems) to verify control signal continuity and air system configuration, following which the actuators would be re-coupled to the S/RV lever arms.

### 3.3 Evaluation

The alternative testing provides for actual stroking of the S/RV disks after performing the Code required setpoint testing, combined with stroking of the S/RV actuators after the S/RVs have been reinstalled. The staff finds that this is an acceptable alternative test method, since it provides for stroke testing of the S/RVs at the same frequency as required by OM-1 and provides for stroke testing of the S/RV actuators in the installed position. The staff also finds that the current testing requirements can result in additional seat leakage or in a stuck-open S/RV during power operation. Uncontrolled steam discharge from the S/RVs would be directed to the primary containment suppression chamber, causing a need to increase cooling to the suppression pool water or a plant shutdown to repair or replace a leaking or stuck-open valve. In addition, the performance of stroke time testing and remote position indication verification on the S/RVs would result in a significant hardship. It is noted that in the OMa-1996 Code, there are no stroke time testing or remote position indication verification requirements for pressure relief devices, such as the plant S/RVs, which the staff has determined is acceptable. Therefore, the staff finds the licensee's proposed alternative testing to be acceptable, because

imposition of the Code requirements would result in hardship without a compensating increase in the level of quality and safety.

The licensee's proposed alternative is authorized for the remainder of the second 10-year IST interval.

#### 4.0 CONCLUSIONS

The staff concludes that, pursuant to 10 CFR 50.55a(a)(3)(ii), the proposed alternative is authorized for the remainder of the second 10-year IST inspection period for RBS, on the basis that compliance with the ASME Code testing requirements would result in hardship without a compensating increase in the level of quality and safety. The licensee's proposed testing provides reasonable assurance that the plant S/RVs will perform their intended safety function.

Principal Contributor: G. Hammer

Date: February 13, 2003