April 23, 2003

Mr. William A. Eaton
Vice President, Operations GGNS
Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150

SUBJECT: GRAND GULF NUCLEAR STATION, UNIT 1 - RE: RELIEF FROM THE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) BOILER AND PRESSURE VESSEL CODE (CODE) CONCERNING THE USE OF ALTERNATE TESTING FREQUENCY FOR PERFORMING INSERVICE TESTING (IST) (TAC NO. MB6900)

Dear Mr. Eaton:

By letter dated December 10, 2002, Entergy Operations Inc. (the licensee) requested relief from ASME Code requirements for IST of certain check valves. The licensee proposes to test check valves on a frequency schedule commensurate with the refueling outage frequency currently allowed by ASME/American National Standards Institute OMa-1988, Part 10, but during the operating cycle.

The U. S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's request and, based on the information provided, has concluded that the alternative proposed by the licensee will provide an acceptable level of quality and safety. Therefore, the proposed alternative is authorized pursuant to Title 10 of the *Code of Federal Regulations* Section 50.55a(a)(3)(i) for the second ten-year ISI interval at Grand Gulf Nuclear Station, Unit 1.

The NRC staff's safety evaluation is enclosed.

Sincerely,

/RA/

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

Docket No. 50-416

Enclosure: Safety Evaluation

cc w/encl: See next page

April 23, 2003

Mr. William A. Eaton
Vice President, Operations GGNS
Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150

SUBJECT: GRAND GULF NUCLEAR STATION, UNIT 1 - RE: RELIEF FROM THE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) BOILER AND PRESSURE VESSEL CODE (CODE) CONCERNING THE USE OF ALTERNATE TESTING FREQUENCY FOR PERFORMING INSERVICE TESTING (IST) (TAC NO. MB6900)

Dear Mr. Eaton:

By letter dated December 10, 2002, Entergy Operations Inc. (the licensee) requested relief from ASME Code requirements for IST of certain check valves. The licensee proposes to test check valves on a frequency schedule commensurate with the refueling outage frequency currently allowed by ASME/American National Standards Institute OMa-1988, Part 10, but during the operating cycle.

The U. S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's request and, based on the information provided, has concluded that the alternative proposed by the licensee will provide an acceptable level of quality and safety. Therefore, the proposed alternative is authorized pursuant to Title 10 of the *Code of Federal Regulations* Section 50.55a(a)(3)(i) for the second ten-year ISI interval at Grand Gulf Nuclear Station, Unit 1.

The NRC staff's safety evaluation is enclosed.

Sincerely,
/RA/
Robert A. Gramm, Chief, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosure: Safety Evaluation

cc w/encl: See next page

DISTRIBUTION:
PUBLIC
PDIV-1 Reading
RidsNrrDlpmLpdiv (HBerkow)
RidsNrrDlpmLpdiv1 (RGramm)
RidsNrrPMDJaffe
RidsNrrLADJohnson
RidsOgcRp
GHill (2)
RidsAcrsAcnwMailCenter
~~RLorson~~ (Rgn 4/EDO) BMcDermott
RidsRgn4MailCenter (AHowell)

ADAMS Accession No. ML031150207 * No Significant Change from SE Input NRR-028

OFFICE	PDIV-1/PM	PDIV-1/LA	EMEB/SC*	OGC	PDIV-1/SC
NAME	DJaffe	DJohnson	DTerao	RHoefling	RGramm
DATE	4/14/03	4/07/03	3/12/2003	4/22/03	4/23/03

OFFICIAL RECORD COPY

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

USE OF ALTERNATE TESTING FREQUENCY FOR INSERVICE TESTING

REQUEST FOR RELIEF GGNS-VRR-001, REV. 0

ENTERGY OPERATIONS, INC.

GRAND GULF NUCLEAR STATION, UNIT 1

DOCKET NO. 50-416

1.0 INTRODUCTION

By letter dated December 10, 2002, Entergy Operations Inc. (Entergy or the licensee), pursuant to 10 CFR 50.55a(a)(3)(i), submitted Relief Request GGNS-VRR-001, Revision 0, and requested relief from American Society of Mechanical Engineers (ASME)/American National Standards Institute (ANSI), *Code for Operation and Maintenance of Nuclear Power Plants*, (OM Code) requirements and instead use an alternate testing frequency for performing inservice testing (IST) of certain check valves for the second 10-year IST interval program for pumps and valves. Entergy proposes to test check valves on a frequency schedule commensurate with the refueling outage frequency currently allowed by ASME/ANSI OM Code, OMa-1988, Part 10 (Reference 5.1), but during the operating cycle.

In Relief Request GGNS-VRR-001, the licensee has proposed to test certain check valves in the High Pressure Core Spray (HPCS) System and Reactor Core Isolation Cooling (RCIC) System once per operating cycle on a time period equivalent to the refueling outage frequency.

2.0 BACKGROUND

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a requires that IST of certain ASME Boiler and Pressure Vessel Code (Code) Class 1, 2, and 3 pumps and valves be performed in accordance with the ASME OM Code and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the U. S. Nuclear Regulatory Commission (NRC or the Commission) pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. The applicable Code for Grand Gulf Nuclear Station, Unit 1 (GGNS) is the 1989 Edition of the ASME Code, Section XI which references the ASME/ANSI OM Code, Parts 6 and 10 for IST of pumps and valves, respectively. 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 Part 50.55a, the Commission is authorized to approve alternatives and to grant relief from ASME Code

requirements upon making the necessary findings. NRC guidance contained in Generic Letter (GL) 89-04 (Reference 5.2) provides alternatives to the Code requirements which are acceptable to the NRC staff. Further guidance is given in Supplement 1 of Reference 5.2 and NUREG-1482 (Reference 5.3).

By letter dated November 26, 1997, the licensee submitted its Second 10-year Interval IST Program for pumps and valves. The GGNS second 10-year IST interval began on December 1, 1997, and ends on November 30, 2007. The program for check valves was developed in accordance with the requirements of the 1989 ASME Code, Section XI which references ASME/ANSI OM Code, Parts 6 and 10, for IST of pumps and valves, respectively. When referencing ASME/ANSI OM Code Part 10, 10 CFR 50.55a(b)(2)(vii) requires that the 1988 Addenda to the ASME/ANSI OM Code, OM-1987 Edition, be used.

3.0 EVALUATION OF RELIEF REQUEST

Use of Alternate Testing Frequency for Inservice Testing of certain values on RCIC and HPCS Systems

3.1 The Items for which Relief is Requested:

The following list identifies the components affected by this relief request.

System	Component Identification	Size (inch)	Code Class	Code Category	Component Function
HPCS	E22F002	18	2	C	HPCS pump suction check valve from Condensate Storage Tank (CST)
RCIC	E51F030	6	2	C	RCIC pump suction check valve
RCIC	E51F047	2	2	C	Stop check valve to Dirty Radiological Waste (DRW) from RCIC drain pot
RCIC	E51F079	2.5	2	C	RCIC vacuum breaker check valve
RCIC	E51F081	2.5	2	C	RCIC vacuum breaker check valve

3.2 Code Requirements:

ASME/ANSI OMa 1988, Part 10, paragraph 4.3.2.1 requires that the Category “C” check valves be exercised every 3 months except as provided by certain Code provisions.

ASME/ANSI OMa-1988, Part 10, paragraph 4.3.2.2 addresses exercising requirements for valves. 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."

ASME/ANSI OMa-1988, Part 10, paragraph 4.3.2.4 addresses methods that may be used to perform inservice testing activities for valves. Paragraph 4.3.2.4(c) states, "As an alternative to the testing..., disassembly at every refueling outage to verify operability of check valves may be used."

3.3 Licensee’s Proposed Alternative (as stated):

Pursuant to 10 CFR 50.55a(a)(3)(i), Entergy proposes an alternative testing frequency for performing inservice testing of the valves identified above. The valves will be tested on a frequency of at least once during each operating cycle in lieu of once during each refueling outage as currently allowed by ASME/ANSI OM-10 (Reference 2 [Reference 5.1]), paragraphs 4.3.2.2(e) and 4.3.2.4(c), and GL 89-04 (Reference 3 [Reference 5.2]), Position 2.

3.4 Licensee’s Basis for Relief (as stated):

Background

The components listed above are check valves with no external means for exercising and no external position indication mechanism. Disassembly of the E22 and E51 valves is the most feasible method to verify OPERABILITY. Although ASME/ANSI OM-10 (Reference 2 [Reference 5.1]), paragraphs 4.3.2.2(e) and 4.3.2.4(c) and GL 89-04 (Reference 3 [Reference 5.2]), Position 2 identify disassembly and testing to be performed during refueling outages, these activities can be conducted during system outages while the plant is on-line.

[The regulations in] 10 CFR 50.65(a)(4) requires licensees to assess and manage the increase in risk that may result from proposed maintenance activities. Entergy complies with the requirements of §50.65(a)(4) at Grand Gulf Nuclear Station (GGNS) 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 GGNS probabilistic risk assessment (PRA). In addition, this program provides methods for assessing risk of maintenance activities for components not directly in the GGNS PRA model. With the use of risk evaluation for various aspects of plant operations, Entergy 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.

Basis

As more system outages are performed on-line, it is evident that selected refueling outage inservice testing activities (e.g., valve exercising and disassembly) could be performed during these system outages without sacrificing the level of quality or safety. Incorporation of valve disassembly into the system work window for other planned maintenance will not result in any additional net risk increase for the inservice test activity. Entergy proposes the alternative inservice testing frequency for the associated check valves based on the following:

1. Inservice testing performed on a refueling outage frequency is currently acceptable in accordance with ASME/ANSI OM-10 (Reference 2 [Reference 5.1]) and GL 89-04 (Reference 3 [Reference 5.2]). By specifying testing activities on a frequency commensurate with each refueling outage, [ASME/ANSI] OM-lO (Reference 2 [Reference 5.1]) 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, an acceptable testing frequency can be maintained separately without being tied directly to a refueling outage. 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 [ASME/ANSI] OM-10 (Reference 2 [Reference 5.1]) and GL 89-04 (Reference 3 [Reference 5.2]).

2. As discussed above, Entergy complies with the requirements of §50.65(a)(4) at GGNS via the application of a program governing maintenance scheduling. Disassembly and testing of the identified E22 and E51 valves would be performed during a scheduled system outage window.

   Disassembly and testing will involve a system breach. However, the valves are isolated and the associated section of piping is drained during the disassembly. Therefore, the system breach does not increase the risk due to internal flooding or internal system LOCA [Loss of Coolant Accident].

   The risk resulting from these activities would be bounded within the risk experienced due to the system outage; therefore, disassembly and testing of these valves during scheduled system outages while on-line, would have no additional impact on core damage frequency.

   Entergy believes using risk assessment to plan and schedule system/train outages for maintenance work and incorporating check valve disassembly into the planned work windows during normal operation provide an acceptable level of quality and safety.

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

In approving similar relief requests for Arkansas Nuclear One, Unit 1 (Reference 5 [Reference 5.4]), the NRC staff stated, "Verifying closure of each valve once per refueling [operating] cycle using non-intrusive techniques provides reasonable assurance of the valves' operational readiness, considering the Code allows deferrals to once per refueling outage."

3.5 Evaluation:

Referring to the table of the affected components in Section 3.1 above,

a) E22F002 is located in the HPCS pump suction line from the CST. It has an open safety function to provide water from the CST to the HPCS pump during injection, and a close safety function to isolate the CST from the Suppression Pool. E22F002 has no containment isolation function. The open and closed functions of E22F002 are currently verified by valve disassembly during each refueling outage in accordance with Reference 5.1, paragraph 4.3.2.4(c).

b) E51F030 is located in the RCIC pump suction line from the Suppression Pool. It has an open safety function to provide suction to the RCIC pump from the Suppression Pool and a close safety function to prevent draining the CST into the Suppression Pool via reverse flow during a transfer of the suction source. E51F030 has no containment isolation function.

The open and closed functions of E51F030 are verified by valve disassembly during each refueling outage in accordance with Reference 5.1, paragraph 4.3.2.4(c).

c) E51F047 is located off the RCIC turbine exhaust line drain pot. It has an open safety function to maintain drainage in the RCIC turbine exhaust piping and to prevent a hydraulic transient on the turbine exhaust piping. The valve has neither a close safety function nor containment isolation function. The open and closed functions of E51F047 are verified by valve disassembly during each refueling outage in accordance with Reference 5.1, paragraph 4.3.2.4(c).

d) E51F079 and E51F081 are located in the RCIC turbine exhaust line serving as vacuum breakers. These valves have an open safety function to relieve a vacuum in order to prevent siphoning Suppression Pool water into the turbine exhaust line. Such action would result in turbine exhaust line transients. They also have a close safety function to prevent the RCIC turbine from exhausting directly into the containment air space. Neither E51F079 nor E51F081 has a containment isolation function. The open function of E51F079 and E51F081 is verified by valve disassembly during each refueling outage in accordance with Reference 5.1, paragraph 4.3.2.4(c) using a sampling program as allowed by Position 2 of Reference 5.2. Because Entergy employs sample disassembly for the full-open stroke exercise, these valves are partially stroked open quarterly as required by Reference 5.2, Position 2. Concurrent with the partial-open stroke test, Entergy performs a full-closed stroke test.

Reference 5.1, paragraph 4.3.2.1 requires that check valves be exercised nominally every 3 months except as provided by certain Code provisions. Paragraph 4.3.2.2 states, "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during

refueling outages." Paragraph 4.3.2.4 states, "As an alternative to the testing..., disassembly [at] every refueling outage to verify operability of check valves may be used."

Reference 5.2, Position 2 provides an alternative to full-stroking a check valve or to verifying closure capability through the use of sample disassembly and inspection requirements that are performed at a refueling outage frequency. Disassembly and inspection would be performed during a scheduled system outage window when the valves are isolated and the associated section of piping is drained and not pressurized. Therefore, the increase in risk associated with the system breach is insignificant with respect to internal flooding and inter-system LOCA events.

There are no changes to the type or method of testing for the subject valves. The licensee's proposed alternative maintains the time period between tests to a frequency equivalent to the refueling outage frequency. Therefore, there is no change in the number of tests performed on the check valves over the life of the component.

The licensee will perform an on-line risk evaluation in accordance with internal GGNS programs based on the GGNS PRA model prior to removing the HPCS and RCIC systems from service for maintenance and testing. This approach is consistent with the guidance provided in Reference 5.3.

On the basis of its review of the licensees' submittal and the above discussion, the NRC staff finds that the licensee's alternative provides an acceptable level of quality and safety.

4.0 CONCLUSIONS

The NRC staff concludes that the proposed alternative provides an acceptable level of quality and safety. Therefore, the licensee's proposed relief is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the second ten-year IST interval at GGNS, Unit 1.

5.0 REFERENCES

5.1 American Society of Mechanical Engineers, "ASME Code for Operation and Maintenance of Nuclear Power Plants," Part 10, 1987 Edition with 1988 Addenda

5.2 U.S. Nuclear Regulatory Commission, "Guidance on Developing Acceptable Inservice Testing Programs," Generic Letter 89-04, through Supplement 1, April 4, 1995

5.3 U.S. Nuclear Regulatory Commission, "Guidelines for Inservice Testing at Nuclear Power Plants," NUREG-1482, April 1995.

5.4 Letter from the NRC to Entergy Operations, Inc., "Arkansas Nuclear One, Unit 1 - Inservice Testing Program Third Ten-Year Interval for Pumps and Valves (TAC No. MA0275)," dated October 9, 1998

Principal Contributor: S. Unikewicz

Date: April 23, 2003

Grand Gulf Nuclear Station

cc:

Executive Vice President
& Chief Operating Officer
Entergy Operations, Inc.
P.O. Box 31995
Jackson, MS 39286-1995

Wise, Carter, Child & Caraway
P.O. Box 651
Jackson, MS 39205

Winston & Strawn
1400 L Street, N.W. - 12th Floor
Washington, DC 20005-3502

Chief
Energy and Transportation Branch
Environmental Compliance and
Enforcement Division
Mississippi Department of Environmental
Quality
P.O. Box 10385
Jackson, MS 39289-0385

President
Claiborne County
Board of Supervisors
P.O. Box 339
Port Gibson, MS 39150

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

Senior Resident Inspector
U. S. Nuclear Regulatory Commission
P.O. Box 399
Port Gibson, MS 39150

General Manager, GGNS
Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150

Attorney General
Department of Justice
State of Louisiana
P.O. Box 94005
Baton Rouge, LA 70804-9005

State Health Officer
State Board of Health
P. O. Box 1700
Jackson, MS 39205

Office of the Governor
State of Mississippi
Jackson, MS 39201

Attorney General
Asst. Attorney General
State of Mississippi
P.O. Box 22947
Jackson, MS 39225

Vice President, Operations Support
Entergy Operations, Inc.
P.O. Box 31995
Jackson, MS 39286-1995

Director
Nuclear Safety Assurance
Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150