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**Michael A. Krupa**  
Director  
Nuclear Safety & Licensing

CNRO-2003-00006

March 5, 2003

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

**SUBJECT:** Entergy Operations, Inc.  
Request for Use of Non-ASME Code Repair to Standby Service Water  
Piping in Accordance with NRC Generic Letter 90-05 (TAC No.  
MB6970)

Grand Gulf Nuclear Station  
Docket No. 50-416  
License No. NPF-29

**REFERENCE:** Letter CNRO-2002-00059 from Entergy Operations, Inc. to the NRC,  
"Request for Use of Non-ASME Code Repair to Standby Service Water  
Piping in Accordance with NRC Generic Letter 90-05," dated December  
18, 2002

Dear Sir or Madam:

In the referenced letter, Entergy Operations, Inc. (Entergy) proposed via Request for Relief GG-R&R-002 a temporary non-code repair to the Standby Service Water (SSW) supply piping at the Grand Gulf Nuclear Station (GGNS). On February 20, 2003, representatives of Entergy and the NRC staff discussed GG-R&R-002. This discussion centered on clarifications pertaining to inspections performed on SSW piping and on the use of volumetric nondestructive examination methods to be utilized in accordance with NRC Generic Letter 90-05. As a result of this conversation, Entergy is submitting a revision to GG-R&R-002, as contained in Enclosure 1, to address these clarifications. This revised request supercedes in its entirety the previous version. Changes are noted with revision bars in the margins of the pages. This letter also contains commitments documented in Enclosure 2 that supercede those made in the referenced letter.

A047

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

Very truly yours,

A handwritten signature in black ink, appearing to read "Guy Davant for". The signature is fluid and cursive.

MAK/GHD/bal

Enclosures: 1. Request for Relief GG-R&R-002, Rev. 0  
2. List of Regulatory Commitments

cc: Mr. W. A. Eaton (GGNS)  
Mr. D. P. Wiles (ECH)  
Mr. G. A. Williams (ECH)

Mr. T. L Hoeg, NRC Senior Resident Inspector (GGNS)  
Mr. D. H. Jaffe, NRR Project Manager (GGNS)  
Mr. E. W. Merschoff, NRC Region IV Regional Administrator

**ENCLOSURE 1**

**CNRO-2003-00006**

**REQUEST FOR RELIEF  
GG-R&R-002, Rev. 0**

**ENTERGY OPERATIONS, INC.  
GRAND GULF NUCLEAR STATION  
2<sup>nd</sup> TEN YEAR INTERVAL  
REQUEST NO. GG-R&R-002, Revision 0**

**I. COMPONENT/EXAMINATION**

Component/Number: 24"-HBC-79

Description: Standby Service Water (SSW) System "B" supply from SSW pump to Residual Heat Removal (RHR) heat exchangers.

Code Class: 3

References:

1. ASME Section XI, 1992 Edition with portions of the 1993 Addenda as listed in Reference 7
2. ASME Section III, Subsection ND, 1974 Edition, Summer 1974 Addenda
3. ASME Section III, Subsection ND, 1989 Edition
4. Nuclear Regulatory Commission (NRC) Generic Letter 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping," dated June 15, 1990
5. NRC Generic Letter 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and Operability," dated November 7, 1991
6. NRC Generic Letter 91-18, Revision 1, dated October 8, 1997
7. GGNS-M-489.1 Program Section for ASME Section XI, Division 1 Inservice Inspection Program

Unit / Inspection Interval    GGNS second (2<sup>nd</sup>) 10-Year Interval  
Applicability:

**II. REQUIREMENTS**

ASME Section XI, Subarticle IWA-4170 states that repairs and installation of replacement items are performed in accordance with the Owner's Design Specification and the original Construction Code of the component or system. Later editions and addenda of the Construction Code or ASME Section III, either in their entirety or portions thereof, and Code Cases may be used. The original Construction Code for the SSW system is ASME Section III, Subsection ND 1974 Edition, Summer 1974 Addenda.

NRC Generic Letter 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping", (Reference 4) establishes guidance for performing temporary non-code repair. Enclosure 1 to Generic Letter 90-05 provides guidance for temporary non-code repair to code Class 3 moderate energy piping, consisting of "assessing the structural integrity of the flawed piping by a flaw evaluation and assessing the overall degradation of the system by an augmented inspection. In addition, licensee evaluation should consider system interactions such as flooding, spraying water on equipment, and loss of flow. Furthermore, temporary non-code repairs should be evaluated for design loading conditions."

### III. PROPOSED ALTERNATIVE

#### Background

On December 3, 2002, a Condition Report was initiated to document a potential condition that a leak existed on ASME Class 3 piping submerged in the "B" SSW basin. Leakage was causing periodic SSW Fill Tank low level alarms. During subsequent troubleshooting activities on December 5, 2002, a diver entered the "B" basin to inspect the submerged piping and discovered a pinhole flaw in the 24-inch supply piping on the "B" loop. The flaw initiated on the pipe's outside surface and appears to be consistent with microbiological induced corrosion (MIC).

The profile of the pinhole flaw is cone shaped, with a 1/8-inch – 3/16-inch diameter through-wall hole located on the inside diameter (ID) of the piping, and with a 1-inch cone base located on the outside diameter (OD) of the piping. The nominal wall thickness of the piping is 0.375-inch. The piping wall thickness in the area immediately outside the 1-inch cone base diameter and outward was ultrasonically (UT) measured. The results indicated that the nominal wall thickness outside the pinhole cone base diameter was unaffected and remained at nominal thickness of 0.375-inch.

The affected piping was evaluated for structural integrity in accordance with Generic Letter 90-05 guidance. The evaluation has demonstrated acceptable structural integrity. Also, the SSW system was evaluated for impact of a postulated 3/8-inch diameter through-wall flaw for reduced system flow due to flow diversion through the pinhole. It was determined that required design basis flows to safety-related heat exchangers supplied by the subject piping are maintained with margin. Cooling water inventory was unaffected since the leakage was from the SSW piping into the SSW basin.

A Code repair of the through-wall flaw is not practicable on-line. The piping containing the flaw is the supply piping to plant heat exchangers and is submerged in the SSW basin. It is impracticable to repair the flaw with the basin filled, and draining the basin is impracticable during power operation. Therefore, a plant shutdown is required to repair or replace the piping containing the flaw.

Generic Letter 90-05 requires augmented inspection of at least the 5 most susceptible (and accessible) locations for the failure mode (for Class 3, moderate energy piping) within 15 days. The generic letter specifies augmented inspection sample increases, up to 100% of the susceptible (and accessible) locations. The initial inspection activities following discovery involved the submerged accessible Division 1, 2, and 3 SSW piping that supports post-LOCA functions. Excluded were the recirculation lines and the small bore stainless steel sensing lines for flow rate indication located in both basins. Entergy

evaluated identified MIC indications to determine if actual piping wall thickness for these indications met or exceeded minimum wall thickness requirements. Minimum wall thickness was evaluated in accordance with ASME Code Case N-513-1 (with the limitations as specified in 10 CFR 50.55a) at locations where actual wall thickness was less than required. These locations were found to be acceptable.

Subsequent to the initial inspections that were part of the original discovery, Entergy has completed additional inspections that include the recirculation lines and sensing lines. Identified MIC indications were evaluated in accordance with Code Case N-513-1. These locations were acceptable.

### **Proposed Alternative**

Pursuant to 10 CFR 50.55a(g)(6)(i), Entergy Operations, Inc. (Entergy) requests relief from the repair requirements of ASME Section XI IWA-4170 for the period of time the degradation exists. Entergy proposes a temporary non-code repair of the SSW supply piping following the guidance of NRC Generic Letter 90-05, as presented below. Entergy will implement a code repair to remove the degradation at the next scheduled outage with a duration of 30 days or more, but no later than the next refueling outage.

The proposed temporary non-code repair has been evaluated utilizing the "through-wall flaw" methodology. System design basis decay heat removal flow to the heat exchanger is maintained. To prevent additional growth, the pin-hole and surrounding area were mechanically cleaned to remove rust and scale and coated to inhibit corrosion until the flaw can be repaired or piping replaced, not later than the next refueling outage (spring 2004). The coating provides corrosion protection that is designed for underwater application and curing.

Additionally, a soft patch has been installed over the pin-hole and strapped to the outside of the piping utilizing metal strapping. The patch has essentially eliminated inventory loss from the SSW fill tank.

## **IV. BASIS FOR PROPOSED ALTERNATIVE**

NRC Generic Letter 90-05 specifically provides an alternative to performing weld repair or replacement of Class 3 moderate energy piping due to rather frequent instances of small leaks in some Class 3 systems (i.e., service water systems). According to the generic letter, a non-code repair may be utilized until the next outage exceeding 30 days, but not later than the next refueling outage.

Generic Letter 90-05 discusses the normal case of "inside – out" corrosion for pipes in air. In this case, the basin water surrounding the pipe is the source of corrosion driving an "outside – in" process. However, the analytical methodologies for local evaluation of flaws are valid for either case because flaw geometry is similar for either case.

### **Periodic Assessment of the Non-Code Repair**

The guidance contained in Enclosure 1 to Generic Letter 90-05 recommends that the temporary non-code repair of code Class 3 piping be assessed at least every 3 months by a suitable nondestructive examination method. Entergy will comply with the generic letter by performing a volumetric examination of the repair at least once every 3 months. Additionally, Entergy will qualitatively assess SSW leakage using normal operator rounds and System Engineering trending on at least a weekly basis.

### **V. CONCLUSION**

Pursuant to the guidance of Generic Letter 90-05, Entergy is requesting the NRC staff's evaluation of this request for relief in accordance with the provisions 10 CFR 50.55a(g)(6)(i). Entergy believes that to comply with the requirements of ASME Section XI for performing a Code repair of the subject piping is impractical as demonstrated by this request for relief.

**ENCLOSURE 2**

**CNRO-2003-00006**

**LIST OF REGULATORY COMMITMENTS**



### LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
1. Entergy will implement a code repair to remove the degradation at the next scheduled outage with a duration of 30 days or more, but no later than the next refueling outage.	✓		During the first outage exceeding 30 days, but not later than startup of the next refueling outage (spring 2004).
2. Entergy will comply with the generic letter by performing a volumetric examination of the repair at least once every 3 months.		✓	This inspection will be performed until the code repair is implemented.
3. Entergy will qualitatively assess SSW leakage using normal operator rounds and System Engineering trending on at least a weekly basis.		✓	These inspections will be performed until the code repair is implemented.