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Director
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January 28, 1997

U.S. Nuclear Regulatory Commission
Mail Station P1-37
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station
Docket No. 50-416
License No. NPF-29
Required 120 Day Response To NRC Generic Letter
96-06

GNRO-97/00011

Gentlemen:

In response to Generic Letter (GL) 96-06 Grand Gulf Nuclear Station (GGNS) committed, in letter GNRO-96/00122, dated October 29, 1996, to determining if containment air cooler cooling water systems are susceptible to either waterhammer or two-phase flow conditions during postulated accident conditions; and if piping systems that penetrate the containment are susceptible to thermal expansion of fluid so that overpressurization of piping could occur. If any systems were found to be susceptible to any of these conditions, GGNS would assess the operability of affected systems and take corrective action as appropriate in accordance with the requirements stated in 10 CFR Part 50 Appendix B and as required by the plant Technical Specifications.

GGNS also committed to submit a written summary report stating actions taken in response to the requested actions, conclusions that were reached relative to susceptibility of waterhammer and two-phase flow in the containment air cooler cooling water system and overpressurization of piping that penetrates containment, the basis for continued operability of affected systems and components as applicable, and corrective actions that were implemented or are planned to be implemented on or before January 28, 1997. If systems were found to be susceptible to the conditions described in GL 96-06, GGNS would identify the affected systems and describe the specific circumstances involved.

Attachment 1 contains the results of an engineering evaluation of containment air cooler cooling water systems for susceptibility to waterhammer or two phase flow. The evaluation concluded that the waterhammer and two phase flow scenarios described in the GL are not a

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concern for GGNS because no credit is taken for coolers during accident mitigation. The evaluation also concluded that postulated cooling water system operation during accident mitigation would not compromise the safety related containment/drywell isolation function of the system.

Attachment 2 contains the results of an engineering evaluation of containment/drywell penetrations that could be susceptible to overpressurization due to thermal expansion of fluid. The evaluation identified twelve containment and six drywell penetrations potentially susceptible to thermal overpressurization. The evaluation concluded that the penetrations remain operable because the penetration integrity is expected to be maintained during the scenarios described in the GL.

Since all affected containment/drywell penetrations retain their ability to perform their safety function and thus containment integrity is maintained, this nonconforming condition is not considered reportable under the criteria of 10CFR 50.72. As with other nonconforming conditions, appropriate corrective action to restore the condition to within the required quality requirements will be taken in accordance with the safety significance of the issue. Prior to restart from RFO9 (now scheduled for Spring 1998) appropriate corrective action will be implemented for each of the eighteen penetrations to restore the nonconforming condition to within allowed limits.

Please feel free to contact Wayne Russell at (601) 437-2717 should you have any questions or require additional information.

Yours truly,



WKH/WAR/amm

attachment: Attachments 1 & 2
Affirmation

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ATTACHMENT 1

Evaluation Summary for Susceptibility of Occurrence for Containment Air Cooler Cooling Water System Waterhammer or Two-Phase Flow Conditions During Postulated Accident Conditions:

GENERIC LETTER QUESTION #1: Are containment air cooler cooling water systems susceptible to either waterhammer or two-phase flow conditions during postulated accident conditions?

This question is not applicable to GGNS since the Drywell Coolers/Chilled Water and Containment Coolers/Plant Chill Water Systems are non-safety related except for their penetrations and associated isolation valves. Penetration integrity is addressed in the response to Generic Letter Question #2 and is provided as Attachment 2. Loss of heat transfer from the cooling coils would not significantly degrade the performance of the plant since no previous credit is taken for coolers during accident mitigation. The maximum expected containment temperature is less than 185°F and no procedural guidance exists directing the operation of the Containment Coolers during the potential waterhammer and two phase flow scenarios as described in GL 96-06, thus the conditions as described in GL 96-06 cannot not exist in the containment. However the GGNS Emergency Operating Procedures provide guidance that allow operation of the Drywell Coolers during the potential waterhammer and two phase flow scenarios as described in GL 96-06. An evaluation of a postulated loss of the safety related drywell isolation function was performed.

Should the system be returned to operation, per procedural guidance, following an isolation after a LOCA and a waterhammer occur, system failure could result in loss of chilled water inventory resulting from piping failure. This postulated loss of chilled water inventory would cause the chilled water pumps to trip and annunciate on a control room panel. Existing procedures are in place to provide guidance to close the isolation valves, upon receipt of the annunciator, maintaining containment/drywell integrity. Failure of the system due to a waterhammer event is not expected to compromise the safety related containment/drywell isolation function of the system.

Similarly, should the system be returned to operation following a LOCA and two-phase flow though the cooler occur, the degradation or complete loss of the heat removal capability of the system would not compromise the response of the plant to the postulated accident. In addition, should the two-phase flow initiate a waterhammer in the cooling coil or system piping, its breach if any, would be handled in accordance with existing procedures as described in the preceding paragraph and thus not compromise the isolation function. Therefore no action in response to the waterhammer

and two-phase flow conditions described in GL 96-06 is required.

ATTACHMENT 2

Evaluation Summary for Susceptibility of Containment Penetration Piping Overpressurization Due to Thermal Expansion of Fluid During Postulated Accident Conditions:

GENERIC LETTER QUESTION #2: Are any piping systems that penetrate the containment susceptible to thermal expansion of fluid so that overpressurization of the piping could occur?

The following conservative criteria was developed and used to screen all GGNS containment penetrations in order to identify any penetration potentially susceptible to overpressurization.

1. The penetration must be full of liquid at the time of the accident. Pipes containing air, gas, steam or electrical cables will be excluded.
2. The liquid contained in the penetration piping must be at a lower temperature than the surrounding environment during operational or accident situations. Piping that contains water at or near RPV or RWCU temperatures would actually have initial temperatures higher than those expected during an accident.
3. The penetration must be isolated during an event, i.e. plant heatup or accident, that could cause a significant heat transfer to the fluid between the isolation valves. The valve arrangement used for penetration isolation must restrict flow out both directions. If the inboard isolation valve is a check valve or certain type and orientation of solenoid valve, (with a mechanism of pressure relief on the connecting piping) the penetration may possibly be excluded. This would also include piping open to the suppression pool, RPV, or containment air space.

In order to be excluded, the extended piping system available for fluid expansion inside containment must not constitute a closed system, so that the fluid volume can expand and prevent damage to the containment isolation portion of the piping penetration.

Additionally, another closed valve further down the line inside containment must not prevent expansion of the fluid volume in the penetration, thereby isolating a penetration with an expected available leak path i.e. check valve.

4. The susceptible penetration will not have any pressure relief valves (with sufficient capacity and setpoint) or other method of overpressure protection

(such as check valve in parallel with main inboard valve) between the isolation valves.

5. The resulting overpressurization must place the penetration piping system outside of the maximum allowable stress for the faulted condition.

A penetration will also be considered susceptible if it meets any one of the following two criteria:

The penetration will be considered susceptible if a loss of power event coupled with an accident would cause isolation, heatup and overpressurization, outside design requirements, of a normally open, low temperature, fluid filled penetration.

A penetration will be considered susceptible if trapped pressure can prevent safety-related isolation valves from opening when required to mitigate an accident, i.e. pressure locking. Ref. Generic Letter 95-07.

The screening identified eighteen penetrations, twelve containment and six drywell, potentially susceptible to overpressurization during a design basis accident. All systems associated with the identified penetrations are classified as non-safety thus no credit is assumed in the accident analysis for the functions of any of the associated systems with the exception of the isolation function which is classified as safety related. The bounding accident for the identified penetrations is a Small Break LOCA in the Drywell. This event results in the largest temperature increase in the environment surrounding each penetration. The potentially susceptible penetrations are identified in the following table.

Penetrations Potentially Susceptible to Overpressurization

Pent #	Loc	Description	Pipe Class	Pressure Class
330	DW	Component Cooling Water Return	8-HBB-37	150#@500F
331	DW	Drywell Chilled Water Return	4-HBB-42	150#@500F
333	DW	CRWST to RPV	4-HBB-111	150#@500F
348	DW	Drywell Equipment Drain	4-HBB-95	150#@500F
349	DW	Drywell Floor Drain	4-HBB-96	150#@500F
364	DW	Chemical Waste Sump Pump Discharge	1.5-HCB-20	150#@500F
36	CTMT	Drywell Chilled Water Return	4-HBB-40	150#@500F
39	CTMT	Plant Chilled Water Return	4-HBB-43	150#@500F
43	CTMT	RWCU to Main Condenser	6-EBB-1	600#@850F
47	CTMT	Post Accident Sample Line	3/4-DCB-50	900#@1000F
49	CTMT	RWCU Backwash Transfer Pump	4-HBB-152	150#@500F
50	CTMT	CTMT Equipment Drain	6-HBB-102	150#@500F
51	CTMT	CTMT Floor Drain	6-HBB-101	150#@500F
54	CTMT	RWST to Upper CTMT Pool	12-HBB-4	150#@500F
58	CTMT	Upper Pool to Fuel Pool Drain Tank	8-HBB-6	150#@500F
81	CTMT	Post Accident Sample Line	3/4-DCB-51	900#@1000F
84	CTMT	Chemical Waste Sump Pump Discharge	3-HCB-19	150#@500F
86	CTMT	Demineralized Water Supply	2-HBB-155	150#@500F

Additional evaluations of these penetrations have been performed based on heat transfer and Finite Element Analysis methodology, to satisfy operability requirements per guidance found in GL 91-18. None of the identified penetrations are expected to fail during the bounding accident thus no challenge to containment/drywell integrity is expected.

OPERABILITY DETERMINATION:

All eighteen identified penetrations have been evaluated to maintain the ability to perform their safety related containment/drywell isolation function. This evaluation is in accordance with the guidance found in GL 91-18 and ASME III, Subsection NA, Appendix F and therefore continued operation is justified. Prior to restart from RFO9 (now scheduled for Spring 1998) appropriate corrective action will be implemented for each of the eighteen penetrations to restore the nonconforming condition to within allowed limits.

REPORTABILITY DETERMINATION:

In performing the review requested by GL 96-06, GGNS noted several containment/drywell penetrations that were potentially susceptible to overpressurization. While engineering evaluations demonstrated that the postulated overpressurization of these penetrations would not jeopardize the ability of the penetration to perform

their safety functions (i.e. isolation); it was determined that in some instances ASME III Class 2 code limits could be exceeded. GGNS considers this to be a nonconforming condition as described in GL 91-18 and thus addressed the issue accordingly.

In accordance with GL 91-18, the nonconforming condition was documented within the corrective action program and a prompt determination of operability determined and documented for each affected penetration. Following assurance that containment integrity would be maintained (i.e. no safety concern exists), the nonconforming condition was evaluated for potential reportability requirements. In this instance the reportability determination was contingent on the interpretation of the phrase "outside the design basis of the plant". GGNS believes guidance provided for making this interpretation directs one to focus on preservation of defense in-depth particularly as it relates to fission product barriers.

In this case since all affected containment/drywell penetrations retain their ability to perform their safety function and thus containment integrity is maintained, this nonconforming condition is not considered reportable under the criteria of 10CFR 50.72. As with other nonconforming conditions, appropriate corrective action to restore the condition to within the required quality requirements will be taken in accordance with the safety significance of the issue.

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

LICENSE NO. NPF-29

DOCKET NO. 50-416

IN THE MATTER OF
MISSISSIPPI POWER & LIGHT COMPANY
and
SYSTEM ENERGY RESOURCES, INC.
and
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION
and
ENTERGY OPERATIONS, INC.

AFFIRMATION

I, W. K. Hughey, being duly sworn, state that I am Director, Nuclear Safety and Regulatory Affairs GGNS of Entergy Operations, Inc.; that on behalf of Entergy Operations, Inc., System Energy Resources, Inc., and South Mississippi Electric Power Association I am authorized by Entergy Operations, Inc. to sign and file with the Nuclear Regulatory Commission, this response to Generic Letter No. 96-06; that I signed this response as Director, Nuclear Safety and Regulatory Affairs GGNS of Entergy Operations, Inc.; and that the statements made and the matters set forth therein are true and correct to the best of my knowledge, information and belief.

W. K. Hughey
W. K. Hughey

STATE OF MISSISSIPPI
COUNTY OF CLAIBORNE

SUBSCRIBED AND SWORN TO before me, a Notary Public, in and for the County and State above named, this 28th day of JANUARY, 1997.

(SEAL)

Richard R. Moore III
Notary Public

My commission expires:

MISSISSIPPI STATEWIDE NOTARY PUBLIC
MY COMMISSION EXPIRES JUNE 5, 1998
BONDED THRU STEGALL NOTARY SERVICE