Designated Original

Entergy

Entergy
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6409

George A. Williams
Vice President-Operations
Grand Gulf Nuclear Station

GNRO-2005/00038

June 27, 2005

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

SUBJECT: License Amendment Request
Use of Relief Valves to Isolate Penetration Flow Paths
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests the following Amendment for Grand Gulf Nuclear Station, Unit 1 (GGNS). The GGNS Technical Specifications (TS) require specific actions to be taken for inoperable Primary Containment Isolation Valves (PCIVs). The TS Required Actions include isolating the affected penetration flow path in order to minimize the potential for post-accident containment leakage. The currently approved isolation methods are limited to closed and deactivated automatic valves, closed manual valves, blind flanges, and check valves with flow through the valve secured. These methods are consistent with Standard Technical Specifications, NUREG-1434. This proposed change adds closed relief valves as acceptable isolation devices provided that the relief setpoint is greater than 1.5 times containment design pressure.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that this change involves no significant hazards consideration. The bases for these determinations are included in the attached submittal.

The proposed change does not include any new commitments.

Entergy requests approval of the proposed Amendment by May 31, 2006. Once approved, the Amendment shall be implemented within 60 days. Although this request is neither exigent nor emergency, your prompt review is requested.

A001

If you have any questions or require additional information, please contact Ron Byrd at 601-368-5792.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 27, 2005.

Sincerely,

George A. Williams

GAW/RWB/amt

Attachments:
1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Changes (mark-up)
3. Changes to Technical Specification Bases Pages – For Information Only

cc: Dr. Bruce S. Mallett
Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-4005

U. S. Nuclear Regulatory Commission
ATTN: Mr. Bhalchandra Vaidya, NRR/DLPM
ATTN: ADDRESSEE ONLY
ATTN: U.S. Postal Delivery Address Only
Mail Stop OWFN/7D-1
Washington, DC 20555-0001

Mr. Brian W. Amy, MD, MHA, MPH
Mississippi Department of Health
P. O. Box 1700
Jackson, MS 39215-1700

NRC Senior Resident Inspector
Grand Gulf Nuclear Station
Port Gibson, MS 39150

Mr. D. E. Levanway (Wise Carter)
Mr. L. J. Smith (Wise Carter)
Mr. N. S. Reynolds
Mr. J. N. Compton

Attachment 1

GNRO-2005/00038

Analysis of Proposed Technical Specification Change

1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-29 for Grand Gulf Nuclear Station, Unit 1 (GGNS).

The proposed change will revise the Operating License to amend the Technical Specification Required Actions for inoperable Primary Containment Isolation Valves (PCIVs). The TS Required Actions for inoperable PCIVs include isolating the affected penetration flow path in order to minimize the potential for post-accident containment leakage. The currently approved isolation methods are limited to closed and deactivated automatic valves, closed manual valves, blind flanges, and check valves with flow through the valve secured. This change adds closed relief valves as acceptable isolation devices provided that the relief setpoint is greater than 1.5 times containment design pressure.

2.0 PROPOSED CHANGE

Technical Specification 3.6.1.3 requires each PCIV to be OPERABLE in MODES 1, 2, and 3 and some PCIVs to be OPERABLE during certain other shutdown and refueling conditions. If a PCIV is inoperable in one or more penetration flow paths, then Condition A must be entered and the containment penetration flow paths must be isolated. Condition B requires similar actions for two or more inoperable PCIVs in one or more penetration flow paths. The methods of performing this isolation are stipulated in TS Required Actions A.1 and B.1. The methods include: at least one closed and de-activated automatic isolation valve, closed manual valve, blind flange, or check valve with flow through the valve secured. This change will add another method of isolating these penetration flow paths. The TS Required Actions are revised to include the use of closed relief valves as a method of isolating a penetration flow path provided that the relief setpoint is greater than 1.5 times containment design pressure.

Appropriate Bases changes are also made to reflect the additional isolation method and are provided in Attachment 3 for your information. Entergy will implement the TS Bases changes in accordance with the GGNS Bases Control Program, TS 5.5.11.

3.0 BACKGROUND

The design objective of the containment isolation system is to allow the normal or emergency passage of fluids through the containment boundary while preserving the ability of the boundary to prevent or limit the escape of fission products that may result from postulated accidents. Typically, two barriers are provided for each containment penetration so that no single credible failure or malfunction of an active component can result in a loss of isolation or leakage that exceeds limits assumed in the safety analysis. One of these barriers may be other than a PCIV, such as a closed system. Some containment penetrations may be designed with only one barrier, such as a welded spare penetration.

The PCIVs help ensure that an adequate primary containment boundary is maintained during and after an accident by isolating the potential release paths to the environment. With one or more PCIVs in a penetration flow path inoperable, the TS require the affected penetration flow path to be isolated. The current method of isolation is the use of at least one isolation barrier

that cannot be adversely affected by a single active failure. Isolation barriers that are considered to meet this criterion include a closed and de-activated automatic valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. The TS Bases also state that the device used to isolate the penetration flow path should be the closest available one to the primary containment.

Typically, the device used to isolate the penetration flow path is one of the penetration PCIVs. In some cases, one of the PCIVs for a particular containment penetration may be a relief valve. However, the current TS Actions do not specifically recognize a closed relief valve as an acceptable method of isolating a penetration flow path. Thus, special measures may need to be taken to comply with the TS Required Actions, such as replacing the relief valve with a blind flange. While such actions may provide additional assurance of preserving the containment isolation function, it may also have adverse safety affects such as disabling the overpressure protective safety feature, causing additional safety system unavailability time, and increasing occupational dose. The proposed TS change would allow such closed relief valves to be used to isolate the penetration flow path without any special modification provided the relief setpoint is greater than 1.5 times the containment design pressure.

Similarly, in the situation where a penetration is designed with only one PCIV and it cannot be closed, the next valve in the flow path (i.e., the next closest to the containment) must be closed. If a relief valve is installed on the piping between that valve and the containment, the relief valve could also be considered another penetration flow path. The TS is not clear as to whether closed relief valves that are part of a closed system boundary, designed to maintain system integrity, need to be considered part of a penetration flow path for the purpose of complying with the TS Required Actions. If it were considered to be a penetration flow path, then special measures must likewise be taken to comply with the TS Required Actions, such as replacing the relief valve with a blind flange. The proposed TS change resolves the ambiguity in this situation by conservatively treating the relief valve as an affected penetration flow path and allowing it to be used to meet the TS Required Action without disabling its relief function as long as it was closed and had an acceptable relief setpoint.

4.0 TECHNICAL ANALYSIS

Containment isolation devices consist of either passive devices or active (automatic) devices. Passive devices are those in which mechanical movement need not occur in order for the component to perform its intended safety function. Manual valves, de-activated automatic valves secured in their closed position (including check valves with flow through the valve secured), blind flanges, and closed systems are considered passive devices. Check valves, or other automatic valves designed to close without operator action following an accident, are considered active devices. Relief valves are also considered to be passive isolation devices because no mechanical movement is required to perform the isolation function. Relief valves are designed to be normally closed to preserve the piping boundary integrity yet automatically open on an abnormal process pressure to protect the piping from overpressure conditions.

The relevant failure mode for a relief valve in regards to a containment isolation function is premature or inadvertent opening. The Standard Review Plan (SRP), NUREG-0800, addresses this concern by establishing an acceptable setpoint margin for relief valves to be used as isolation devices. Section 6.2.4, "Containment Isolation System" of the SRP states, "Relief valves may be used as isolation valves provided the relief setpoint is greater than 1.5

times the containment design pressure." This relief setpoint requirement is also consistent with ANSI/ANS 56.2-1984, "Containment Isolation Provisions for Fluid Systems After a LOCA," which states that the set pressure of the relief valve shall be at least 50 percent greater than containment design pressure. These relief setpoint requirements provide sufficient margin to minimize the potential for inadvertent opening due to containment post-accident pressures.

ANSI/ANS 56.2-1984 also provides criteria for closed systems which serve as containment barriers. Section 3.6.7 states that closed systems outside containment must be able to withstand temperature and internal pressure equal to the containment design conditions and also be protected against overpressure from thermal expansion of contained fluid when isolated. The proposed change satisfies these objectives by requiring the relief setpoint to be greater than 1.5 times containment design conditions while preserving overpressure protection of the system piping.

A relief valve that has a relief setpoint greater than 1.5 times the containment design pressure provides ample margin to ensure that an adequate primary containment boundary is maintained during and after an accident. The margin between the design basis LOCA maximum peak containment pressure (Pa) and the relief valve setpoint is actually greater than 50% since it includes the containment design margin. For example, since the GGNS containment design pressure is 15 psig, the relief setpoint for the relief valve must be greater than 22.5 psig (15 psig x 1.5). In this example, the relief setpoint is 7.5 psig above containment design pressure but there is actually a larger margin of 11 psig above Pa (11.5 psig for GGNS). Closed relief valves with relief setpoints of this margin provide an isolation barrier alternative that is less susceptible to a single failure (inadvertent opening) yet still preserves the overpressure protection that the component was intended to provide.

In summary, the proposed TS change is needed to clarify how relief valves in a penetration flow path should be treated when the normal PCIV for the penetration is inoperable and cannot be closed to comply with the TS Required Actions. Allowing a relief valve with an acceptable relief setpoint to be used to isolate a containment penetration flow path preserves both the containment isolation function and the system overpressure protection function. The proposed change also avoids unnecessary safety system unavailability time and unnecessary occupational dose that would be associated with disabling the relief valve.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met.

Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the TS, and do not affect conformance with any General Design Criterion (GDC) differently than described in the Updated Final Safety Analysis Report (UFSAR.)

General Design Criteria 54, 55, 56, and 57 of 10 CFR 50 Appendix A require that piping systems penetrating primary reactor containment be provided with isolation capabilities. The

proposed change does not alter any of the operability or functional design requirements for containment isolation features. The proposed change only affects the measures used to compensate for inoperable Primary Containment Isolation Valves (PCIVs). While these measures are not specifically discussed in the Standard Review Plan (SRP), the SRP does provide specific criteria necessary to meet the relevant requirements of the regulations and provides guidelines for acceptable alternate containment isolation provisions. Section II, "Acceptance Criteria," item g states, "Relief valves may be used as isolation valves provided the relief setpoint is greater than 1.5 times the containment design pressure." The proposed change will allow relief valves that meet this criterion to be used to preserve the containment boundary function in accordance with the intent of the Technical Specification Required Actions.

5.2 No Significant Hazards Consideration

Entergy proposes to amend the Grand Gulf Technical Specifications (TS) concerning the Required Actions to be taken for inoperable Primary Containment Isolation Valves (PCIVs). The current TS Required Actions specify that the affected penetration flow path must be isolated by one or more of the following methods: closed and deactivated automatic valves, closed manual valves, blind flanges, and check valves with flow through the valve secured. The proposed change adds closed relief valves as another acceptable means of isolating the flow path provided that the relief setpoint is greater than 1.5 times containment design pressure.

Entergy Operations, Inc. has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   Primary Containment Isolation Valves (PCIVs) are accident mitigating features designed to limit releases from the containment following an accident. The Technical Specifications (TS) specify actions to be taken to preserve the containment isolation function if a PCIV is inoperable. These actions include isolating the penetration flow path by specific methods. The proposed TS change adds closed relief valves with acceptable relief setpoints as another method to isolate the penetration flowpath. The use of relief valves with relief setpoints greater than 1.5 times the containment design pressure meets the Standard Review Plan options for acceptable isolation devices. This relief setpoint provides sufficient margin to minimize the potential for premature opening due to containment post-accident pressures. The proposed change does not affect any initiators to accidents previously evaluated.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed change does not introduce any new modes of plant operation or adversely affect the design function or operation of safety features. The proposed TS change allows use of existing plant equipment as compensatory measures to maintain the containment isolation design intent when the normal isolation features are inoperable. Since relief valves used for this purpose will not be disabled by blind flanges, the system piping overpressure protection design feature will also be preserved.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response: No.

   The safety margin associated with this change is that associated with preserving the containment integrity. NUREG-0800, the Standard Review Plan, recognizes that relief valves with relief setpoints greater than 1.5 times containment design pressure are acceptable as containment isolation devices. Closed relief valves with relief setpoints of this margin provide an isolation alternative that is less susceptible to a single failure (i.e., inadvertent opening) yet still preserves the overpressure protection that the component was intended to provide.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed amendment(s) present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.3 Environmental Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 PRECEDENCE

The industry previously submitted a generic request to allow use of any ASME/ANSI approved equivalent devices for isolating a penetration flow path. The intent of the proposed change was to provide flexibility in the type of closure mechanism used to meet the TS Required Action. TSTF-196, "Revise isolation devices to include ASME/ANSI equivalent methods," was submitted to the NRC staff for review in March 1997. The NRC rejected that request by letter dated October 1, 1997 (Reference 1). The premise of the decision to reject the proposed TSTF was that, while the NRC staff had previously found some equivalent methods acceptable, such as temporary sealants for certain non-pressure barrier applications, the staff had not reviewed specific ASME/ANSI equivalent methods where containment pressurization could occur.

The NRC staff's basis for rejecting TSTF-196 is not applicable to Entergy's proposed change. Entergy's proposed change is consistent with an ASME/ANSI method that the NRC staff has previously found acceptable as a pressure barrier for containment isolation. The Standard Review Plan, NUREG-0800 recognizes the use of a relief valve as an acceptable containment isolation device.

NUREG-0800 Section 6.2.4 states in part, "Specific criteria necessary to meet the relevant requirements of the regulations...and guidelines for acceptable alternate containment isolation provisions for certain classes of lines are as follows... g. Relief valves may be used as isolation valves provided the relief setpoint is greater than 1.5 times the containment design pressure."

7.0 REFERENCE

1. Letter from Mr. William D. Beckner, USNRC, to Mr. James Davis, Nuclear Energy Institute, dated October 1, 1997.

Attachment 2

GNRO-2005/00038

Proposed Technical Specification Changes (mark-up)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more penetration flow paths with one PCIV inoperable except due to leakage not within limit. , or closed relief valve with relief setpoint greater than 1.5 times containment design pressure.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	4 hours except for main steam line AND 8 hours for main steam line
	AND	
	A.2 --------NOTE--------- Isolation devices in high radiation areas may be verified by use of administrative means. ----------	Once per 31 days for isolation devices outside primary containment, drywell, and steam tunnel
	Verify the affected penetration flow path is isolated.	AND Prior to entering MODE 2 or 3 from MODE 4, if not performed within the previous 92 days, for isolation devices inside primary containment, drywell, or steam tunnel

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more penetration flow paths with two PCIVs inoperable except due to leakage not within limit.	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange, or closed relief valve with relief setpoint greater than 1.5 times containment design pressure.	1 hour
C. One or more penetration flow paths with leakage rate not within limit except for purge valve leakage.	C.1 Restore leakage rate to within limit.	4 hours

(continued)

Attachment 3

GNRO-2005/00038

Changes to Technical Specification Bases Pages
For Information Only

BASES

ACTIONS (continued)

operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

A second Note has been added to provide clarification that, for the purpose of this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable PCIV. Complying with the Required Actions may allow for continued operation, and subsequent inoperable PCIVs are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are modified by Notes 3 and 4. These Notes ensure appropriate remedial actions are taken, if necessary, if the affected system(s) are rendered inoperable by an inoperable PCIV (e.g., an Emergency Core Cooling System subsystem is inoperable due to a failed open test return valve, or when the primary containment leakage limits are exceeded). Pursuant to LCO 3.0.6, these ACTIONS are not required even when the associated LCO is not met. Therefore, Notes 3 and 4 are added to require the proper actions to be taken.

A.1 and A.2

With one or more penetration flow paths with one PCIV inoperable except for inoperability due to leakage not within a limit specified in an SR to this LCO, the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For penetrations isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest one available to the primary containment. The Required Action must be completed within the 4 hour Completion Time (8 hours for main steam lines). The specified time period of 4 hours is reasonable considering the time required to isolate the penetration and the relative importance of supporting primary containment

INSERT 1

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident, and no longer capable of being automatically isolated, will be isolated should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those devices outside primary containment, drywell, and steam tunnel and capable of being mispositioned are in the correct position. The Completion Time for this verification of "once per 31 days for isolation devices outside primary containment, drywell, and steam tunnel," is appropriate because the devices are operated under administrative controls and the probability of their misalignment is low. For devices inside primary containment, drywell, or steam tunnel, the specified time period of "prior to entering MODE 2 or 3 from MODE 4, if not performed within the previous 92 days," is based on engineering judgment and is considered reasonable in view of the inaccessibility of the devices and the existence of other administrative controls ensuring that device misalignment is an unlikely possibility.

Required Action A.2 is modified by a Note that applies to isolation devices located in high radiation areas and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment; once they have been verified to be in the proper position, is low.

B.1

With one or more penetration flow paths with two PCIVs inoperable except due to leakage not within limits, either the inoperable PCIVs must be restored to OPERABLE status or the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1.1.

INSERT 2

(continued)

BASES INSERTS

INSERT 1

Acceptable methods of isolation that are not adversely affected by a single active failure include: a closed and deactivated automatic isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. In addition, closed relief valves with relief setpoints greater than 1.5 times containment design pressure are also acceptable isolation devices.

INSERT 2

Acceptable methods of isolation that are not adversely affected by a single active failure include: a closed and deactivated automatic isolation valve, a closed manual valve, and a blind flange. In addition, closed relief valves with relief setpoints greater than 1.5 times containment design pressure are also acceptable isolation devices.