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GNRO-2003/00058

October 24, 2003

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

SUBJECT: Supplement to Amendment Request
"Proposed Changes to Primary Containment and Drywell Isolation Instrumentation Requirements," (TAC No. MB8958)
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

REFERENCE: Letter GNRO-2003/00025 from G. A. Williams to USNRC, "License Amendment Request – Proposed Changes to Primary Containment and Drywell Isolation Instrumentation Requirements" dated May 8, 2003

Dear Sir or Madam:

By letter dated May 8, 2003 (referenced above), Entergy Operations, Inc. (Entergy) proposed changes to Grand Gulf Nuclear Station, Unit 1 (GGNS) Technical Specifications (TS) Section 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation." One of the proposed changes was to relax the operability requirement for the Reactor Core Isolation Cooling (RCIC) steam supply line low pressure isolation instrumentation (Function 3.c of TS Table 3.3.6.1-1). Currently, the TS requires this isolation instrumentation to be OPERABLE in MODES 1, 2, and 3. Entergy had proposed to revise TS Table 3.3.6.1-1 such that the instrument function would only be required when the RCIC system was required to be operable (i.e., in MODE 1 and in MODES 2 and 3 with reactor steam dome pressure greater than 150 psig). The change would allow the RCIC steam supply containment isolation valves to be open at low reactor pressure in order to prepare the RCIC system for standby service more efficiently during reactor startups.

On July 28, August 28, and October 1, 2003, Entergy and members of your staff held calls to discuss the proposed change. As a result of the calls, one question was determined to need formal response. Entergy's response is contained in Attachment 1. In addition, the NRC staff expressed concern over the scope of the change. The proposed change to the Techncial Specifications would relax requirements for the instrument function during a plant shutdown as well as during startup. After discussion and review, Entergy agreed to revise the proposed amendment such that the relaxation would only apply during reactor startup with reactor pressure less than 150 psig. This change is reflected in the new replacement pages provided in Attachment 2. Changes to the TS Bases associated with these changes are also provided for

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your information and will be implemented in accordance with TS 5.5.11, Technical Specification Bases Control Program.

Entergy also identified a need to revise the associated TS Bases regarding the description of the functions that RCIC steam supply line low pressure instrument provides. The current Bases states that the function is not assumed in any accident or transient analysis in the FSAR. This appears to be consistent with NUREG-0737, Clarification of TMI Action Plan Requirements, which only requires automatic isolation of non-essential systems (clarification Item III.E.4.2). Although RCIC is classified as an essential system at GGNS, the automatic isolation on low steam supply pressure does provide a containment isolation function in the event of a Design Basis Accident – Loss of Coolant Accident (DBA-LOCA) because the RCIC turbine is a potential leakage path. Since this leakage path is not assumed in the current DBA-LOCA analysis, the isolation is implicitly credited. This is less of a concern during the RCIC system warmup evolution because the turbine is isolated by other system valves until RCIC is ready to be placed in standby service. The TS Bases changes do not affect the original conclusions that the TS changes are justified based on the short period of instrument unavailability, the lower probability of an overpressurization event, and the other barriers and isolation capabilities available. The changes to the Bases are included in Attachment 2 for your information. These changes will be implemented in accordance with TS 5.5.11, Technical Specification Bases Control Program.

Attachment 2 includes the following replacement pages for the referenced letter (GNRO-2003/00025):

Attachment 1, Analysis of Proposed Technical Specification Change, pages 1 and 2 of 10
Attachment 2, Proposed Technical Specification Changes (mark-up), page 2 of 3
Attachment 3, Changes to the Technical Specification Bases Pages, page 1 of 4

The original no significant hazards consideration included in the referenced letter is not affected by any information contained in this supplemental letter. There are no new commitments contained in this letter.

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 October 24, 2003.

Sincerely,

JSF/RWB/amt
Attachments:
1. Response to Request for Additional Information
2. Replacement Pages for Letter GNRO-2003/00025

cc : (See Next Page)

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Mr. L. J. Smith (Wise Carter)
Mr. N. S. Reynolds
Mr. H. L. Thomas

**Attachment 1**

**To**

**GNRO-2003/00058**

**Response to Request for Additional Information**

**Supplemental Information Related to Proposed Changes to the RCIC Steam Line Low Pressure Isolation Instrumentation**

**Question:**

Confirm whether credit for the Reactor Core Isolation Cooling (RCIC) system is taken in the Control Rod Drop Accident (CRDA) analysis in Chapter 15 of the FSAR.

**Response:**

The accident analyses in Chapter 15 of the Updated Final Safety Analysis Report (UFSAR) account for the current cycle fuel load which consists of a mixed-core of General Electric (GE) and Framatome fuel types (see UFSAR Section 15.0.3). The role of RCIC in the applicable Grand Gulf Nuclear Station design basis and current cycle accident analyses is described below.

The Control Rod Drop Accident (CRDA) credits RCIC in conjunction with High Pressure Core Spray (HPCS) to provide long term core cooling. The CRDA is classified as a limiting fault and RCIC is credited in this analysis to meet single failure criteria. The event is initiated by a high worth control rod dropping from a fully inserted or an intermediate position in the core. This results in the removal of large negative reactivity from the core and a localized power excursion. The system that minimizes the impact of the CRDA is the Rod Pattern Controller (RPC) of the Rod Control and Information System (RC&IS). The system that mitigates the consequences of this event is the Reactor Protection System (high flux scram), which occurs within a short time span (about 5 seconds after accident initiation). Due to decay heat considerations, core cooling is required for long term mitigation. However, acceptability of the outcome of the CRDA is evaluated against short term consequences only, which do not depend on core cooling (RCIC).

The RCIC system is designed to assure that sufficient reactor water inventory is maintained in the reactor vessel to permit adequate core cooling should the reactor vessel be isolated and feedwater supply is unavailable. Under these conditions, the RCIC system and High Pressure Core Spray (HPCS) system perform similar functions. Several transients and accidents described in FSAR Chapter 15 (e.g., Loss of Feedwater Flow) credit HPCS or RCIC for long term water level control. For these transients, RCIC is the preferred source of makeup coolant because of its relatively small capacity which allows easier control of RPV water level. However, RCIC is not an Engineered Safety Feature (ESF) system and, except for the CRDA event described above, RCIC is not explicitly credited in the Loss of Feedwater event or any other Chapter 15 event. RCIC is also explicitly credited in the Station Blackout (SBO) analysis described in FSAR Appendix 8A to maintain vessel level and core cooling over the four hour SBO coping duration.

**Attachment 2**

**To**

**GNRO-2003/00058**

**Replacement Pages for GNRO-2003/00025**

**This page replaces page 1 of 10 of Attachment 1 to GNRO-2003/00025**

## 1.0 DESCRIPTION

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

Entergy requests changes to Section 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation" of the Technical Specifications (TS), Appendix A of the Operating License. One change would incorporate TSTF-306, Revision 2, which adds a note allowing intermittent opening of penetration flow paths, under administrative control, that are isolated to comply with TS ACTIONS. The second would change the operability requirement for the Reactor Core Isolation Cooling (RCIC) steam supply line low pressure isolation instrumentation to coincide with RCIC system operability requirements during reactor startup.

TSTF-306 provides consistency between the TS requirements for isolation valves and TS requirements for the instrumentation that supports the isolation valve function. It also provides additional flexibility in the performance of maintenance activities. The proposed change to the RCIC isolation instrumentation will improve plant startups following refueling outages by removing an unnecessary startup delay and allowing the RCIC system to be restored to service sooner. Entergy requests approval of the proposed amendment by February 2, 2004 in order to prepare for startup following a refueling outage. .

## 2.0 PROPOSED CHANGE

The proposed changes affect Primary Containment and Drywell Isolation Instrumentation requirements established by Technical Specification (TS) 3.3.6.1. The first proposed change is to add an ACTION Note to Limiting Condition for Operation (LCO) 3.3.6.1 allowing intermittent opening, under administrative control, of penetration flow paths that are isolated to comply with ACTIONS. The proposed changes are consistent with TSTF-306, Revision 2 as applicable to BWR6 plants.

The new Note states:

1. Penetration flow paths may be unisolated intermittently under administrative control.

Minor administrative changes are also proposed to reflect the existence of multiple ACTION Notes. The existing Note will be labeled as Note 2 and the "NOTE" heading will be changed to "NOTES". These changes are administrative only and do not change the intent of the current requirements or allowances.

Entergy is also proposing to change the applicability for Function 3.c of TS Table 3.3.6.1-1, RCIC Steam Supply Line Pressure – Low. The isolation function is currently required to be operable in plant MODES 1 (Run), 2 (Startup), and 3 (Hot Shutdown). Entergy proposes to add a footnote to the applicable plant operating mode requirements to not require the isolation function during reactor startup when the reactor pressure is less than 150 psig.

**This page replaces page 2 of 10 of Attachment 1 to GNRO-2002/00025**

Thus, Table 3.3.6.1-1 will be revised to reference a new footnote (d) in the Applicable MODES column for Item 3.c, RCIC Steam Supply Line Pressure – Low. The new footnote will read: "Not Required to be OPERABLE in MODE 2 or 3 with reactor steam dome pressure less than 150 psig during reactor startup."

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS |
|---|---|
| 3. Reactor Core Isolation Cooling (RCIC) System Isolation | |
| c. RCIC Steam Supply Line Pressure – Low | 1, 2[(d)], 3[(d)] |
| (d) Not Required to be OPERABLE in MODE 2 or 3 with reactor steam dome pressure less than 150 psig during reactor startup. | |

Additional administrative changes are proposed to revise the designation of existing footnotes (d), (e), and (f) to footnotes (e), (f), and (g) respectively to account for the new footnote added for Function 3.c. These changes are administrative only and do not change the intent of the existing footnotes.

In summary, Entergy is proposing to adopt TSTF-306, Revision 2 and revise the operability requirements for the RCIC steam supply line low pressure isolation instrumentation to be consistent with the operability requirements for the RCIC system.

Changes to the TS Bases associated with the proposed TS changes are provided in Attachment 3 for your information. These changes will be implemented in accordance with TS 5.5.11, Technical Specification Bases Control Program.

## 3.0 BACKGROUND

### 3.1 TSTF-306 Adoption

The improved Standard Technical Specifications (STS) were implemented for Grand Gulf Nuclear Station (GGNS) by Amendment 120 using NUREG 1434, "Standard Technical Specifications, General Electric Plants, BWR/6." The industry and the NRC staff have been working to improve the STS NUREGs, and as a result, generic changes have been developed.

As part of this improvement effort, TSTF-306 was created to add an ACTIONS Note to LCO 3.3.6.1 to allow opening of primary containment penetration flow paths that were isolated to comply with ACTIONS associated with inoperable instrument channels or functions. This allowance is already provided in LCO 3.6.1.3 for Primary Containment Isolation Valves (PCIVs) and in LCO 3.6.5.3 for Drywell Isolation Valves that have been isolated to comply with ACTIONS. Since the isolation instrumentation serves as a support system for the isolation valves, the ACTIONS for inoperable instrumentation need not be more restrictive than that for

**This page replaces page 2 of 3 of Attachment 2 to GNRO-2003/00025**



Table 3.3.6.1-1 (page 3 of 5)
Primary Containment and Drywell Isolation Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS PER TRIP SYSTEM | CONDITIONS REFERENCED FROM REQUIRED ACTION C.1 | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 3. Reactor Core Isolation Cooling (RCIC) System Isolation | | | | | |
| a. RCIC Steam Line Flow – High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.6<br>SR 3.3.6.1.7 | ≤ 64 inches water |
| b. RCIC Steam Line Flow Time Delay | 1,2,3 | 1 | F | SR 3.3.6.1.2<br>SR 3.3.6.1.4<br>SR 3.3.6.1.7 | ≥ 3 seconds and ≤ 7 seconds |
| c. RCIC Steam Supply Line Pressure – Low | ~~1,2,3~~ 1,2(d), 3(d) | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.6<br>SR 3.3.6.1.7 | ≥ 53 psig |
| d. RCIC Turbine Exhaust Diaphragm Pressure – High | 1,2,3 | 2 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.6<br>SR 3.3.6.1.7 | ≤ 20 psig |
| e. RCIC Equipment Room Ambient Temperature – High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.7 | ≤ 191°F |
| f. Main Steam Line Tunnel Ambient Temperature – High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.7 | ≤ 191°F |
| g. Main Steam Line Tunnel Temperature Timer | 1,2,3 | 1 | F | SR 3.3.6.1.2<br>SR 3.3.6.1.4<br>SR 3.3.6.1.7 | ≤ 30 minutes |
| h. RHR Equipment Room Ambient Temperature – High | 1,2,3 | 1 per room | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.7 | ≤ 171°F |
| i. RCIC/RHR Steam Line Flow - High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.6<br>SR 3.3.6.1.7 | ≤ 43 inches water |

(continued)

(d) Not required to be OPERABLE in MODE 2 or 3 with reactor steam dome pressure less than 150 psig during reactor startup.

**This page replaces page 1 of 4 of Attachment 3 to GNRO-2003/00025**



BASES

APPLICABLE SAFETY ANALYSIS LCO, and APPLICABILITY

3.b. RCIC Steam Line Flow High Time Delay (continued)

Two channels for RCIC Steam Line Flow Time Delay Functions are available and are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

3.c. RCIC Steam Supply Line Pressure—Low

Low RCIC steam supply line pressure indicates that the pressure of the steam may be too low to continue operation of the RCIC turbine. ~~This isolation is for equipment protection and is not assumed in any transient or accident analysis in the UFSAR. However, it~~ also provides a diverse signal to indicate a possible system break. These instruments are included in the Technical Specifications (TS) because of the potential for risk due to possible failure of the instruments preventing RCIC initiations.

INSERT A

INSERT B

The RCIC Steam Supply Line Pressure—Low signals are initiated from two transmitters that are connected to the system steam line. Two channels of RCIC Steam Supply Line Pressure—Low Functions are available and are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

INSERT C.

The Allowable Value is selected to be high enough to prevent damage to the system turbine.

INSERT D

This Function isolates the Group 4 and 9 valves.

3.d. RCIC Turbine Exhaust Diaphragm Pressure—High

High turbine exhaust diaphragm pressure indicates that the pressure may be too high to continue operation of the associated system's turbine. That is, one of two exhaust diaphragms has ruptured and pressure is reaching turbine casing pressure limits. This isolation is for equipment protection and is not assumed in any transient or accident analysis in the UFSAR. These instruments are included in the TS because of the potential for risk due to possible failure of the instruments preventing RCIC initiations (Ref. 3).

(continued)

INSERT A

In addition to protecting the RCIC equipment from the low pressure steam conditions, this isolation ensures the system is isolated following a DBA LOCA thereby minimizing containment leakage through the RCIC system. The isolation

INSERT B

because the accident analysis implicitly assumes that the penetration is closed during a DBA LOCA and

INSERT C

This function is not required to be OPERABLE during reactor startup when reactor steam dome pressure is less than 150 psig (footnote d). This allows the steam supply isolation valves to be open in order to prepare the RCIC turbine for standby service. This is acceptable because the likelihood of a steam line break or DBA is low during the short period when reactor power and reactor pressure are low. In addition, the manual isolation capability (Function 3.k) and other diverse system leak detection functions are maintained.

INSERT D

low enough to ensure that the RCIC system operates as long as possible following an accident and