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GNRO-2013/00025

July 29, 2013

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

SUBJECT: Response to Request for Additional Information Regarding Standby Service Water System License Amendment Request
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

REFERENCES:

1. Request to Revise the Standby Service Water Passive Failure Methodology, dated September 14, 2012 (ML12258A386, GNRO-2012/00102)
2. Supplement to Request to Revise the Standby Service Water Passive Failure Methodology, dated December 17, 2012 (ML12353A602, GNRO-2012/00153)
3. Electronic Request for Additional Information Regarding Standby Service Water System License Amendment Request, dated March 18, 2013 (ML13077A399, GNRI-2013/00065)

Dear Sir or Madam:

Entergy Operations, Inc. is providing, in the attachment, the response to the Reference 3, request for additional information.

This letter contains no new commitments. If you have any questions, please contact Mr. Thomas Thornton at (601) 437-6176.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 29th day of July, 2013.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin J. Mulligan", with a long horizontal flourish extending to the right.

KJM/slw

Attachment: Response to Request for Additional Information

cc: (see next page)

cc: U.S. Nuclear Regulatory Commission
ATTN: Mr. Arthur T. Howell (w/2)
Regional Administrator, Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

U.S. Nuclear Regulatory Commission
ATTN: Mr. Alan Wang, NRR/DORL (w/2)
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NRC Senior Resident Inspector
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Port Gibson, MS 39150

Attachment to GNRO-2013/00025

Response to Request for Additional Information

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
STANDBY SERVICE WATER SYSTEM LICENSE AMENDMENT REQUEST
GRAND GULF NUCLEAR STATION, UNIT NO. 1
50-416

The format for the Request for Additional Information (RAI) responses below is as follows. The RAI is listed in its entirety as received from the U.S. Nuclear Regulatory Commission (NRC). This is followed by the Grand Gulf Nuclear Station (GGNS) RAI response to the individual question.

1. The proposed License Amendment Request (LAR) states that the GGNS Updated Final Safety Analysis Report (UFSAR) was modified under the Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.59 process to remove the requirements for passive failures of pipes, heat exchangers tubing, and pipe fittings. Describe the design basis for the standby service water (SSW) system prior to this UFSAR modification, with respect to postulated passive failures following a loss-of-coolant accident (LOCA), as well as postulated passive failures as initiating events. Describe the impact these postulated passive failures have on the performance of the SSW system.

Grand Gulf response:

From Final Safety Analysis Report (FSAR) Table 9.2-1,

STANDBY SERVICE WATER SYSTEM PASSIVE FAILURE ANALYSIS

Single Passive Failure

Failure of the SSW pressure boundary for any single loop due to pipe rupture, heat exchanger tubing rupture, or pipe fitting, (elbow, tee, reducer, etc.) rupture.

Consequences

The SSW system has been designed with sufficient redundancy (separate, redundant SSW loops) to withstand any single failure of these components.

The above two columns are from revision 0 of the Grand Gulf FSAR.

The single passive failure being referenced is not credited as an initiating event. The SSW system has been designed with sufficient redundancy (two independent SSW loops) to withstand any single failure of these components. As such, a single passive failure involving

rupture of the items mentioned above would not affect the performance of the SSW system relative to achieving its specified safety function.

Additionally, multiple sources of makeup water are available to mitigate the effects of SSW inventory loss and are utilized when necessary. Refer to the response to question #4.

2. Section II.3 of the LAR states:

In summary, to postulate passive breaks in the Standby Water System during the recirculation phase of plant cooldown, the following methodology should be employed: for seismically designed portions of the service water leakage cracks ($\frac{1}{2}$ pipe diameter x $\frac{1}{2}$ pipe wall thickness) should be postulated to occur at any point on the pipe. This crack size is taken to envelope and bound other passive failures to be taken into consideration.

Section II.5 of the LAR states that "Grand Gulf would consider a single passive failure of the SSW system would be a pump seal or valve leakage after 24 hours during a LOP/LOCA." This statement appears to conflict with the previous statement from Section II.3.

Clarify the intent of this LAR with respect to passive failures postulated following a LOCA.

Grand Gulf response:

The recirculation phase of the cool down occurs 30 minutes after a LOCA. This is residual heat removal (RHR) recirculating reactor vessel inventory from the suppression pool to the heat exchanger and back to the vessel. The SSW system would be cooling RHR during this time period. If a break is considered credible during this time period and up to 24 hours post-LOCA, the $\frac{1}{2}$ pipe diameter x $\frac{1}{2}$ pipe wall thickness criteria would be the assumed break size. Beyond 24 hours post-LOCA, pump seal or valve leakage would be considered as credible.

3. Does the LAR make any changes to the postulated breaks used to evaluate the protection of the plant from piping failures outside of containment, in accordance with the guidance of Standard Review Plan (SRP) 3.6.1 and 3.6.2?

Grand Gulf response:

Yes, the LAR would remove the consideration of ruptures of piping, heat exchanger tubing, and pipe fittings (elbows, tees, reducers, etc.) from consideration of piping failures outside of containment following a LOCA. There are no changes to Grand Gulf's initiating events required to be postulated in NUREG-0800 sections 3.6.1 and 3.6.2.

4. Provide additional information on the response to a postulated break in the SSW system, including a discussion of the "ONEP" referenced in Section I of the LAR. What actions can be taken to replenish the SSW basin or align an alternate source of water in the event of a break in the SSW system?

Grand Gulf Response:

From Off-Normal Emergency Procedure (ONEP) 05-1-02-III-12, the following sources of water may be used as makeup to SSW basin: plant service water, fire water, construction well water, circulating water basin, and storm drain basins (last resort). A fire truck may be used or a portable pump.

5. What is the maximum leakage rate resulting from pump seal or valve leakage in the SSW system following a LOCA? Evaluate the impact of this leakage on the SSW system performance and any potential impact the leakage might have on nearby components important to safety.

Grand Gulf Response:

Calculation MC-Q1P41-03016 assesses leakage from various components in the SSW system. These include valves that interface with the non-safety related water makeup tank, plant service water to SSW valve interfaces (specifically check valves), and non-safety related radiation monitor pump seals. The total allowable leakage through these components is 23 gallons per minute (gpm). After assessing the leakages from these components, the total SSW system allowable leakage rate is 25 gpm.

Any passive leakage from the pump seals or valves in the SSW system at or beyond 24 hours post-LOCA would be of low pressure, low velocity, and low quantity. SSW is a moderate energy system. There is no potential impact on nearby components important to safety.