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G3NO-2008-00036

December 30, 2008

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

DOCKET: No. 52-024

SUBJECT: Response to NRC Request for Additional Information, Letter No. 28 (GG3 COLA)

REFERENCE: NRC Letter to Entergy Nuclear, *Request for Additional Information Letter No. 28 Related to the SRP Section 1.0 for the Grand Gulf Combined License Application*, dated December 10, 2008 (ADAMS Accession No. ML083450355).

Dear Sir or Madam:

In the referenced letter, the NRC requested additional information on one item to support the review of certain portions of the Grand Gulf Unit 3 Combined License Application (GG3 COLA). The response to the following Request for Additional Information (RAI) in the referenced letter is provided in Attachment 1 to this letter as follows:

1. RAI Question 01-6, Makeup Water System requirements during shutdown/refueling and demineralization subsystem description

Should you have any questions, please contact me or Mr. Tom Williamson of my staff. Mr. Williamson may be reached as follows:

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E-Mail Address: twilli2@entergy.com

This letter contains commitments as identified in Attachment 2.

D088
NRO

I declare under penalty of perjury that the foregoing is true and correct.

Executed on December 30, 2008.

Sincerely,

for W.K. Hughey

WKH/ghd

Attachments: 1. Response to RAI Question No. 01-6
2. Regulatory Commitments

cc (email unless otherwise specified):

NRC

NRC Project Manager – Grand Gulf Unit 3 COLA
NRC Project Manager – North Anna Unit 3 COLA
NRC Director – Division of Construction Projects (Region II)
NRC Regional Administrator - Region IV
NRC Resident Inspectors' Office - GGNS

Ms. B. Abeywickrama
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Mr. B. R. Johnson (GE-Hitachi)
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ATTACHMENT 1

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RESPONSE TO NRC RAI LETTER NO. 28

RAI QUESTION NO. 01-6

RAI QUESTION NO. 01-6

NRC RAI 01-6

RG 1.206 Section C.III.1.8 provides guidance regarding the replacement of conceptual design with design information (see pgs. C.III.1-8 thru 9).

In FSAR Section 9.2.3.2, "System Description," the applicant addressed its makeup water system (MWS) and replaced the conceptual design information (CDI) of the demineralization water subsystem with a site-specific design. The applicant's proposed system design is identical to the MWS described in Section 9.2.3.2, "System Description," of the ESBWR DCD, Revision 5; except that the applicant replaced the CDI of the demineralization subsystem with a site-specific design. Specifically, the GGNS MWS utilizes a vendor-supplied mobile water treatment system to process the clarified water prior to transfer to the demineralized water storage tank. However, the applicant did not provide any description of the site-specific demineralization subsystem and how it processes the clarified water. Therefore, the staff requests that the applicant provide a description of the demineralization portion of the GGNS MWS.

Further, the applicant stated that the makeup water transfer pumps and demineralization subsystem are sized to meet all plant operating conditions except for shutdown/refueling. However, Section 9.2.3.2 of the DCD states that during the shutdown/refueling/startup modes, the increases in plant water consumption may require use of a temporary demineralization subsystem and temporary makeup water transfer pumps to be used as a supplemental water source. No information on such a temporary subsystem is presented in the GGNS COLA. Therefore, the staff requests that the applicant address how the requirements for demineralized water during shutdown/refueling will be provided.

Entergy Response

Demineralization Subsystem

The ESBWR DCD Section 9.2.3 provides conceptual design information regarding the Makeup Water System (MWS). Regulatory Guide 1.206, Section C.III.1.8, specifies that "(t)he NRC staff expects COL applicants who reference a certified design to provide complete designs for the entire facility including appropriate site-specific design information to replace the conceptual design portions of the DCD for the referenced certified design." Guidance for determining the appropriate level of detail in the COLA for each site-specific system is provided in RG 1.206 and the Standard Review Plan (SRP). RG 1.206, Section C.III.9.2, *Water Systems*, states that the COLA should provide a description of each water system outside the scope of the DCD, but does not specify any specific level of detailed design information for the makeup water/demineralizer system. In Part C.I of RG 1.206, for applicants who reference neither a certified design nor an ESP, but who provide a design for a complete facility on a specified site (i.e., a custom design), Section C.I.9.2.3 (which corresponds to the former SRP Section 9.3.2 for Demineralized Water Makeup System) is listed as reserved, i.e., no guidance to review any information for a MWS. The latest revision of the SRP (March 2007) does not specify that a design description for the MWS should be provided in the COLA. SRP Section 9.2.3, *Demineralized Water Makeup System*, was

withdrawn in the March 2007 revision of the SRP because the demineralized water makeup system is not typically credited for performing a safety function.[1] Entergy provided a description of the site-specific MWS in FSAR Section 9.2.3, to replace the CDI in the DCD. The level of detail provided in this description is considered adequate given that the system performs no safety function, and RG 1.206 and the SRP do not require a detailed system description for the MWS.

As stated in the GGNS Unit 3, COLA Rev 0, FSAR Section 9.2.3.2, "System Description," GGNS Unit 3 utilizes a vendor supplied mobile water treatment system. The mobile system is designed to provide high-quality water that meets the requirements specified in ESBWR DCD Tier 2, Table 9.2-8, "Makeup Water System Demineralizer Effluent Nominal Water Quality Requirements." The use of a vendor supplied mobile water treatment system is consistent with the operating philosophy employed on the GGNS Unit 1 MWS. In order to facilitate the staff's review, additional description of the demineralization portion of the GGNS Unit 3 MWS will be added to FSAR Section 9.2.3.2.

Makeup Water System Source During Shutdown/Refueling/Startup

During the shutdown/refueling/startup mode, the increases in plant water consumption may require use of a temporary demineralization subsystem and temporary makeup water transfer pumps to be used as a supplemental water source. FSAR Section 9.2.3.2, "System Description," will be revised to include this information.

Proposed COLA Revision

FSAR Section 9.2.3.2 will be revised as indicated in the attached draft markup.

1 NRC Memorandum from Thomas Martin to Robert Tregoning, *Withdrawal of SRP Section 9.2.3, "Demineralized Water Makeup System,"* dated December 18, 2006.

Markup of Grand Gulf COLA

The following markup represents Entergy's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

9.2.3 MAKEUP WATER SYSTEM

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

9.2.3.2 SYSTEM DESCRIPTION

Replace the introductory text and the Demineralization Subsystem portions of this section with the following.

GGNS CDI

The MWS consists of two subsystems: (1) the demineralization subsystem and (2) the storage and transfer subsystem. The makeup water transfer pumps and the demineralization subsystem are sized to meet the demineralized water needs of all operating conditions except for shutdown/refueling/startup. During the shutdown/refueling/startup modes, the increases in plant water consumption may require use of a temporary demineralization subsystem and temporary makeup water transfer pumps to be used as a supplemental water source.

The MWS major equipment is housed in the Service Water/Water Treatment Building except for the demineralized water storage tank (which is outdoors and adjacent to this building) and the distribution piping to the interface systems.

The MWS equipment and associated piping in contact with demineralized water are fabricated from corrosion resistant materials such as stainless steel to prevent contamination of the makeup water due to corrosion.

Based on local weather conditions, the demineralized water storage tank and MWS piping and instrumentation that are exposed to freezing conditions are provided with freeze protection.

Table 9.2-202 lists the major MWS components.

Demineralization Subsystem

Clarified, filtered river water is supplied to the MWS by the SWS (Section 9.2.10). Prior to transfer to the demineralized water storage tank, the clarified water is processed through a vendor supplied mobile water treatment system.

Production of demineralized water by the mobile water treatment subsystem (MWTS) can be initiated and terminated either automatically (based on the demineralized water storage tank level) or manually. The demineralizer feedwater, from the outlet of the SWS granular filters (see Figure 9.2-203), enters the MWTS and is treated utilizing the latest technology, equipment, and processes. Typical equipment/processes utilized in mobile water treatment systems include the following:

- Media filtration / activated carbon filtration
- Cartridge filters
- Anti-scalant injection
- Ultra-filtration (UF)
- Caustic injection
- Reverse osmosis (RO)
- Electronic deionization (EDI)
- Low sodium mixed bed
- Cation / anion mixed bed polisher

Reject flow from the MWTS is sent to the cooling tower blowdown. The effluent from the MWTS meets the water quality requirements specified in DCD Table 9.2-8.

ATTACHMENT 2

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REGULATORY COMMITMENTS

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	
FSAR Section 9.2.3.2 will be revised to include additional description of the demineralization portion of the GGNS Unit 3 MWS and the MWS water source for requirements during shutdown/refueling.	✓		Future COLA submittal.