

September 18, 2008

Mr. Thomas L. Williamson  
Manager, GGNS COLA Project  
Entergy Nuclear  
1340 Echelon Parkway  
Jackson, MS 39213

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 6 RELATED TO  
THE SRP SECTION 10.04.05 FOR THE GRAND GULF COMBINED LICENSE  
APPLICATION

Dear Mr. Williamson:

By letter dated February 27, 2008, Entergy Operations Incorporated (EOI) submitted for approval a combined license application pursuant to 10 CFR Part 52. The U. S. Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter. To support the review schedule, you are requested to respond within 30 days of the date of this letter. If changes are needed to the safety analysis report, the staff requests that the RAI response include the proposed wording changes.

If you have any questions or comments concerning this matter, I can be reached at 301-415-3104 or by e-mail at [michael.eudy@nrc.gov](mailto:michael.eudy@nrc.gov).

Sincerely,

**/RA/**

Michael Eudy, Project Manager  
ESBWR/ABWR Projects Branch 2  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 052-0024  
eRAI Tracking No. 1137

Enclosure:  
Request for Additional Information

September 18, 2008

Mr. Thomas L. Williamson  
Manager, GGNS COLA Project  
Entergy Nuclear  
1340 Echelon Parkway  
Jackson, MS 39213

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 6 RELATED TO  
THE SRP SECTION 10.04.05 FOR THE GRAND GULF COMBINED LICENSE  
APPLICATION

Dear Mr. Williamson:

By letter dated February 27, 2008, Entergy Operations Incorporated (EOI) submitted for approval a combined license application pursuant to 10 CFR Part 52. The U. S. Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter. To support the review schedule, you are requested to respond within 30 days of the date of this letter. If changes are needed to the safety analysis report, the staff requests that the RAI response include the proposed wording changes.

If you have any questions or comments concerning this matter, I can be reached at 301-415-3104 or by e-mail at [michael.eduy@nrc.gov](mailto:michael.eduy@nrc.gov).

Sincerely,  
**/RA/**  
Michael Eudy, Project Manager  
ESBWR/ABWR Projects Branch 2  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 052-0024  
eRAI Tracking No. 1137  
Enclosure:  
Request for Additional Information  
cc:

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NRO-002

OFFICE	SBPB/TR	SBPB/BC	NGE2/PM	OGC	NGE2/L-PM
NAME	DReddy	SLee	MEudy	SBrock	MTonacci
DATE	8/26/08	9/5/08	9/9/08	9/10/08	9/18/08

\*Approval captured electronically in the electronic RAI system.

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Grand Gulf, Unit 3 COLA  
Entergy Operations, Inc.  
Docket No. 52-024  
SRP Section: 10.04.05 - Circulating Water System  
Application Section: FSAR Section 10.4.5

QUESTIONS

10.04.05-1

In Grand Gulf Nuclear Station (GGNS) FSAR Section 10.4.5.2.1, "General Description," the applicant addressed the final configuration of its circulating water system (CWS) and stated that the CWS design includes condenser water box vents to help fill the water boxes during startup and remove air and other gases from these boxes during normal operation. However, the applicant did not mention CWS pump discharge air release valves and cooling tower vacuum relief valves at strategic points in the CWS. General Design Criteria (GDC) 4, "Environmental and Dynamic Effects Design Bases," requires that design features be provided to accommodate the effects of discharging water, and prevent pressure transients such as water hammer and subsequent CWS piping or component failure from occurring on pump start-ups from initial system depressurization. Therefore, the staff requests that the applicant provide additional information to ensure that the CWS is provided with adequate air and vacuum relief valves to prevent the pressure transients and subsequent CWS piping or component failure from occurring on pump startup from initial system depressurization.

10.04.05-2

In Grand Gulf Nuclear Station (GGNS) FSAR Section 10.4.5.2.2, "Component Description," the applicant provided information regarding industry codes and standards that are applicable to the GGNS circulating water system (CWS) design. The applicant stated that the codes and standards applicable to GGNS CWS are in accordance with DCD Section 3.2, with the exception of large bore piping (i.e., piping with a nominal diameter of 700 mm (27.6 in) and larger). The applicant further stated that the large bore CWS piping is constructed using AWWA (American Water Works Association) standard and that the system is designed and constructed in accordance with American Society of Mechanical Engineers (ASME) Quality Group D specification. However, Table 3.2-3 of the ESBWR DCD specifies standard ASME B31.1 for quality group D piping, not the AWWA standard nor the Group D specification. In addition, in accordance with SRP Section 10.4.5, Item III.1, design provisions are to be incorporated that minimize the effect of hydraulic transients upon the functional capability and integrity of the system components. Therefore, the staff requests that the applicant justify the above deviation from the DCD; as well as, provide information regarding compliance with the applicable guidance. Additionally, the staff requests the applicant explain and ensure that failure of this large bore piping will not affect the intended functions of the safety-related equipment and/or systems.

10.04.05-3

In Grand Gulf Nuclear Station (GGNS) FSAR Section 10.4.5.8, "Normal Power Heat Sink," the applicant described the GGNS site-specific normal power heat sink which consists of two cooling towers, one natural draft (NDCT) and the other mechanical draft (MDCT) tower. The applicant stated that the NDCT would be located at a distance equal to its height 168 m (550 ft) away from Seismic Category 1 and 2 structures, and therefore there is no potential for the cooling tower to fall or damage

safety-related structures or components. Regarding the MDCT, it has multiple fans with associated motors, couplings and gearboxes. These fans rotate at relatively slow speed and the fan blades are made of relatively low-density material. The applicant stated that a failure of a fan could result in the generation of missiles; however, the applicant concluded that due to the location of the MDCT and the materials used in the construction of the MDCT any damage would be confined to the MDCT itself.

The staff reviewed the information provided by the applicant in FSAR Section 10.4.5.8 and could not find further details on the location of the MDCT. Also, the staff could not find any design features to prevent or control the flooding effects in case of a cooling tower failure (i.e., missile generation) on the nearby safety-related areas and/or the safety-related SSCs as they relate to the requirements of GDC 4 criteria. Also, no information is provided in the COLA with respect to Section 10.4.5.6, "Flood Protection," of the ESBWR DCD, Revision 4. In accordance with SRP Section 10.4.5, "Circulating Water System," Item II.1, design provisions need to be provided to accommodate the effects of discharging water that may result from a failure of a component or piping in the CWS. Therefore, the staff requests that the applicant provide additional information regarding its cooling tower failure analysis or the provisions that are incorporated in the GGNS CWS design to prevent unacceptable flooding of areas containing safety-related equipment or to mitigate the consequences of flooding.