

September 12, 2008

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 03 RELATED TO  
SRP SECTION 12.03-12.04 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 301-415-2890 or by e-mail at [Andrea.Johnson@nrc.gov](mailto:Andrea.Johnson@nrc.gov).

Sincerely,

**/RA/**

Andrea M. Johnson, Project Manager  
ESBWR/ABWR Projects Branch 1  
Division of New Reactor Licensing  
Office of New Reactors

Docket No. 052-0024  
eRAI Tracking No. 1157

Enclosure:  
Request for Additional Information

September 12, 2008

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 03 RELATED TO  
SRP SECTION 12.03-12.04 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 301-415-2890 or by e-mail at [Andrea.Johnson@nrc.gov](mailto:Andrea.Johnson@nrc.gov).

Sincerely,  
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Andrea M. Johnson, Project Manager  
ESBWR/ABWR Projects Branch 1  
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Request for Additional Information

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DATE	8/28/08	9/5/08	9/10/08	9/12/08

\*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: 12.03-12.04 - Radiation Protection Design Features  
Application Section: 12 Appendix CC Doses to Construction Workers Historical Information

QUESTIONS

**12.03-12.04-1**

FSAR Appendix 12CC provides an updated analysis of annual construction worker dose. A review of this analysis identifies potential underestimation of construction worker dose from direct radiation from the Nitrogen-16 source from the main turbine building and direct radiation from the Unit 1 independent spent fuel storage installation (ISFSI). The gamma doses measured at the protected area fence during recent years (2005-2007) have increased above the levels found in previous years (2000-2002). These doses are used for the construction worker dose calculation. In addition, the calculation of direct radiation dose to the construction workers from the Unit 1 ISFSI appears not to have considered doses associated with the gamma ray component of the radiation emanating from the individual spent fuel dry casks stored at the ISFSI. Also, the dose calculations appear to have used an incorrect method to estimate the direct dose at 100 meters from the ISFSI confines.

Accordingly:

Provide an updated annual and maximum hourly direct dose analysis in Appendix 12CC. Provide sufficient information for the staff to evaluate the bases and assumptions used in the analysis and for conducting an independent confirmation of compliance with NRC regulations. Sufficient information includes, but is not limited to, maps identifying the locations of, and distances between, the ISFSI (and other radiation sources) and construction worker sites, radiation source strengths, and any calculational measurements and isodose curves used in the analysis.

Since this information is related to Section 4.5 of the Environmental Report, this RAI is related to Environmental RAI 4.

**12.03-12.04-2**

FSAR Appendix 12CC provides an updated analysis of annual construction worker dose from Unit 1 airborne releases.

- a. The analysis does not identify the limiting value used for the deposition factor (D/Q value) that is necessary to calculate ground-shine dose. Provide the limiting D/Q value used in the analysis to calculate the ground shine dose provided in Table 12CC-202.
- b. FSAR Appendix 12CC use of airborne release quantities from the years 2001 to 2003 for the airborne dose calculation appears to be non-conservative. A confirmatory dose analysis using the range of potential airborne release quantities from the recent Unit 1 annual radioactive effluent release report indicates a potential construction worker dose between 5 to 15 times higher than the airborne dose given by the applicant for the years 2001 to 2003. Provide your reasoning for this apparent increase in airborne release quantities. Update the airborne release quantity data used to represent a more representative value and

demonstrate that this value shows adequate conservatism, given that the airborne doses from Unit 1 appear to be increasing.

**12.03-12.04-3**

FSAR, Appendix 12CC, Subsection 12CC.3.3.2 provides an analysis of the direct radiation dose from the Unit 1 independent spent fuel storage installation (ISFSI). A review of the direct radiation dose rates from the Grand Gulf Unit 1 ISFSI indicates potential radiation levels in excess of the 10 CFR 20.1301(a)(2) limit of 0.02 mSv/hr (2 mrem/hr) at the north end of the ISFSI. This section states that the Unit 1 ISFSI will be located on the north side of the Unit 1 site inside the protected area fence. The gamma dose rates and the distance from the ISFSI to the Unit 3 construction area are discussed. The distance from the ISFSI to the closest Unit 3 construction area has been estimated based on Figure 2.4.1-201. A review of the information in Subsection 12CC.3.3.2 and an examination of Figure 2.4.1-201 indicates that it is not clear where the ISFSI is located and where the dose rate exceeds 2 mrem/hr.

Accordingly,

- a) Provide a site drawing showing the location of the ISFSI with respect to the Unit 3 construction site.
- b) Provide a figure showing the potential combined gamma and neutron dose rate at the ISFSI fence line and the location of the Unit 1 protected area fence with respect to the Unit 3 construction site. Additionally, indicate any areas outside the Unit 1 protected area fence where the dose rate might exceed 2 mrem/hr. Describe any controls to insure that doses to construction workers will not exceed 2 mrem in any one hour in these areas.