UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 7, 2012

Mr. Michael Perito
Vice President, Site
Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE GRAND GULF NUCLEAR STATION LICENSE RENEWAL APPLICATION (TAC NO. ME7493)

Dear Mr. Perito:

By letter dated October 28, 2011, Entergy Operations, Inc., submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating license for Grand Gulf Nuclear Station, Unit 1 (GGNS) for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review.

These requests for additional information were discussed with Jeff Seiter, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-1045 or by e-mail at nathaniel.ferrer@nrc.gov.

Sincerely,

Nathaniel Ferrer, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosure:
As stated

cc w/encl: Listserv

GRAND GULF NUCLEAR STATION
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION SET 31

**RAI 4.3-5a**

Background. In the response to request for additional information (RAI) 4.3-5 dated June 21, 2012, the applicant stated that the design specifications of expansion joints identified a conservative number of cycles at a given amount of expansion so that simplified analyses could be performed. The applicant also stated that the typical analysis shows the expansion joint is qualified for many more cycles than was specified with these simplified bounding assumptions and Entergy Nuclear, Inc. (Entergy) completed a review of these analyses to verify the expansion joints are adequate for 60 years. The applicant also explained seismically qualified expansion joints have cycle specifications for seismic events and expansion joints inside primary containment include cycles due safety relief valve (SRV) lifts.

Issue. The staff noted the concerns identified in RAI 4.3-5 were related to license renewal application (LRA) Section 4.3.2.2, which discusses metal fatigue of non-Class 1 non-piping components. The applicant did not provide the number of cycles that the design specifications identified for non-Class 1 expansion joints. The applicant also did not provide the number of cycles for earthquakes and SRV actuations that are assumed in the design of its non-Class 1 expansion joints. Therefore, the staff cannot verify the adequacy of the disposition of the time-limited aging analysis (TLAA) in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 54.21(c)(1)(i).

Request.

a. Identify all the transients and associated number of cycles that were considered as an input to the fatigue analyses of the non-Class 1 expansion joints discussed in LRA Section 4.3.2.2. In addition, identify all the non-Class 1 expansion joints that are inside primary containment.
b. Describe the details of the review that was completed for these expansion joint fatigue analyses in order to verify the components are adequate for 60-years of operation. Justify that this review and evaluation demonstrates that the number of cycles originally analyzed as part of the expansion joint design will not be exceeded after 60-years of operation, in accordance with 10 CFR 54.21(c)(1)(i).
c. Justify the statement, in response to RAI 4.3-5, that the allowable numbers of cycles for the other transients (i.e., transients used in fatigue analyses other than SRV and seismic) are well beyond reasonably postulated numbers of the transients, making it unnecessary to monitor these transients.
d. Justify the statement, in response to RAI 4.3-5, that the typical analysis shows the expansion joint is qualified for many more cycles than was specified with the simplified bounding assumptions as it relates to transients used in the fatigue analyses, except for SRV and seismic transients.

ENCLOSURE

**RAI 4.3-9a**

Background. In the response to RAI 4.3-9 dated June 21, 2012, revised LRA Section A.2.2.3 states that industry-accepted techniques will be used for consideration of the effects on fatigue of the reactor water environment (environmentally assisted fatigue - EAF), including techniques for incorporating the impact of dissolved oxygen concentration into the calculation of fatigue environmental correction factors.

Issue. The staff noted that it is possible these industry-accepted techniques may not or will not be approved for use by the staff. Furthermore, the staff noted that the concern identified in RAI 4.3-9 specifically addressed the use of a time-weight percentage for hydrogen water chemistry/normal water chemistry (HWC/NWC) in the formulation of $F_{en}$ values would underestimate the environmentally-adjusted cumulative usage factors (CUFs). This underestimate in the $CUF_{en}$ may potentially be non-conservative for carbon steel/low alloy steel components. The applicant has not explained how the use of unspecified industry-accepted techniques will resolve this potential non-conservatism.

Request.

a. Revise LRA Section A.2.2.3 to indicate that future calculation of $F_{en}$ values will incorporate available transient cycle occurrence data during operating times in NWC and HWC instead of using a time-weight percentage for NWC and HWC operation.
b. In lieu of revising LRA Section A.2.2.3, justify the appropriateness of relying upon the use of industry-accepted techniques that are not clearly specified and have not been approved by the staff for incorporating the impact of dissolved oxygen concentration into the calculation of fatigue environmental correction factors.

**RAI B.1.34-2a**

Background. LRA Section B.1.34 states that the applicant has not experienced cracking in its ASME Code Class 1 small bore piping. However, no specific information was provided regarding the search and the source of its operating experience. The staff issued RAI B.1.34-2 in a letter dated April18, 2012. The RAI requested that the applicant to identify the specific sources of information reviewed and describe the process or methodology used to find potential instances of cracking in Class 1 small-bore piping.

The applicant provided its response to RAI B.1.34-2 in a letter dated May 18, 2012. In its response, the applicant stated that the specific sources of information reviewed were the paperless condition reporting system (PCRS), the NRC Licensee Event Reports (LER) database submitted from Entergy nuclear facilities and interviews with its plant staff. It further stated that its PCRS search, "included a review of ten years of operating experience contained in the PCRS."

Issue. The staff noted that although the plant has been in operation for approximately 27 years, the applicant's search of its plant-specific operating experience using its database, PCRS, was limited to 10 years. In addition, supplementing the PCRS database review with information obtained from the NRC LER database the information may not be sufficient or complete, since the NRC LER database, which only includes events that meet reporting criteria outlined in 10 CFR 50.72 and 50.73, may not be all inclusive. The staff also determined that interviews of

plant personnel, while potentially providing additional context for previously documented information, does not constitute an established repository of operating experience information.

Request. The staff requests that the applicant provide a technical basis for limiting the review of plant-specific operating experience contained in the PCRS, or other plant databases, to the previous 10 years of operation for the One-Time Inspection - Small-Bore Piping Program.

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Letter to M. Perito from N. Ferrer dated August 7, 2012

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