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

May 3, 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 Title10 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 e-mail 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:
Requests for Additional
Information

cc w/encl: See next page

GRAND GULF NUCLEAR STATION
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION SET 11

RAI B.1.27-1

Background. GALL Report AMP XI.S5, "Masonry Walls," program element "detection of aging effects," states that in general, masonry walls should be inspected every 5 years, with provisions for more frequent inspections in areas where significant loss of material or cracking is observed to ensure there is no loss of intended function between inspections.

Issue. The LRA states that the Masonry Wall Program, with enhancements, is consistent with the GALL Report AMP XI.S5. The LRA states that the "detection of aging effects" program element will be enhanced to clarify that detection of aging effects requires masonry walls to be inspected every 5 years, unless technical justification is provided to extend the inspection to a period not to exceed 10 years. GALL Report AMP XI.S5 does not include a provision to extend the inspection to a period not to exceed 10 years. It is unclear to the staff whether the masonry walls will be inspected at a 5 year frequency, during the period of extended operation, consistent with the recommendations in the GALL Report.

Request.

a. Clarify if masonry walls, within the scope of license renewal, will be inspected every 5 years consistent with recommendations in GALL Report AMP XI.S5.

b. If there are masonry walls that will not be inspected every 5 years, identify their location, environment to which they are exposed, and provide the technical justification and basis for exceeding the recommended 5 year inspection frequency.

RAI B.1.42-1

Background. The GALL Report AMP XI.S6, "Structures Monitoring," "detection of aging effects" program element states that in general all structures are monitored at a frequency not to exceed 5 years (e.g., structures exposed to natural environment, structures inside primary containment, continuous fluid-exposed structures, and structures retaining fluid or pressure). The GALL Report also recommends that some structures of lower safety significance and subjected to benign environmental conditions may be monitored at an interval exceeding five years; however, they should be identified and listed, together with their operating experience. The GALL Report recommends that for plants with non-aggressive groundwater/soil the acceptability of inaccessible areas will be evaluated when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas.

Issue. The LRA states that the Structures Monitoring Program, with enhancements, is consistent with GALL Report AMP XI.S6. The applicant's "detection of aging effects" program element states that inspection frequency is every 5 years for high-risk significant structures and 10 years for low-risk significant structures, with provisions for more frequent inspections to ensure that observed conditions that have the potential for impacting the intended functions are evaluated or corrected in accordance with the corrective action process. It is not clear that the inspection frequency for all structures is in compliance with industry standard inspection frequency (e.g., as noted in ACI 349.3R-96).

ENCLOSURE

The Structures Monitoring Program also states that for high radiation areas, operationally sensitive areas inaccessible due to congestion, portions of structures that are underground/underwater, concealed by the presence of other permanent structures or that cannot be safely inspected without an extraordinary expenditure of plant resources need not be inspected and the reason for not inspecting these structures is to be recorded. The program further notes that inspections will be performed of inaccessible areas in environments where observed conditions in accessible areas exposed to the same environment indicate significant degradation is occurring. It is not clear what conditions in accessible areas will result in inspections of inaccessible areas.

Request.

a. Provide information to confirm that the inspection frequency criteria identified in the Structures Monitoring Program and criteria identified in industry standards (e.g., as noted in ACI 349.3R-96) are aligned, or provide justification for not meeting the industry-recommended inspection frequency.

b. Provide information to confirm that criteria in the Structures Monitoring Program relative to inspection requirements for inaccessible areas and criteria in GALL Report AMP XI.S6 are aligned.

RAI B.1.42-2

Background. GALL Report AMP XI.S6, "Structures Monitoring," "acceptance criteria" notes that ACI 349.3R-96, "Evaluation of Existing Nuclear Safety-Related Concrete Structures," provides an acceptable basis for developing acceptance criteria for concrete structural elements, steel liners, joints, coatings, and waterproofing membranes. The plant-specific structures monitoring programs are to contain sufficient detail on acceptance criteria to conclude that this program attribute is satisfied.

The LRA states that the Structures Monitoring Program, with enhancements, is consistent with GALL Report AMP XI.S6. The LRA "acceptance criteria" program notes that the program will be enhanced to prescribe acceptance criteria considering information provided in industry codes, standards, and guidelines including NEI 93-03, ACI 201.1R-92, ANSI/ASCE 11-99, and ACI 349.3R-96. The Structures Monitoring Program basis document EN-DC-150, "Condition Monitoring of Maintenance Rule Structures," Section 5.15, "Acceptance Criteria," refers to Attachment 9.25, "Pre-Screen/Acceptance Criteria" in which Section 1.1 notes that first-tier acceptance criteria corresponding to Section 5.1 of ACI 349.3R are provided in Attachment 9.4, "Condition Monitoring of Maintenance Rule Structures – Reinforced Concrete Inspection Checklist," of EN-DC-150. Attachment 9.4 provides a check list that identifies by either yes or no that a condition is, or is not present.

Issue. Since a yes-no check list is used to provide Tier One Criteria, the staff is uncertain how acceptance criteria referenced in the basis documents for the Structures Monitoring Program meet criteria provided in the GALL Report AMP XI.S6 "acceptance criteria" program element.

Request. Provide quantitative criteria to demonstrate that acceptance criteria in the Structures Monitoring Program meet the Tier One through Three criteria in GALL Report AMP XI.S6, or provide a technical basis for deviations from criteria identified in ACI 349.3R-96.

RAI B.1.42-3

Background. During a walkdown of the auxiliary building, a crack was observed in the south stairwell exterior concrete wall that was noted (CR-GGN-2002-01540) to run from about 228' elevation to about 166' elevation. The crack width was on the order of 0.01" with some locations along the crack length exhibiting chipping. Plant personnel were uncertain whether the crack extended completely through the exterior concrete wall and noted that exterior monitoring of the concrete surface was done from lower elevations using binoculars.

Issue. Section 3.5, "Evaluation Techniques," of ACI 349.3R-96 states that the scope of the visual examinations of structures should include all exposed surfaces of the structure; joints and joint material, interfacing structures and materials, such as abutting soil; embedments; and attached components, such as base plates and anchor bolts and that these components should be directly viewed (maximum 600 mm focal distance), and photographs or video images taken of all discontinuities, defects, and significant findings, if possible. This section also states that direct viewing can require the installation of temporary ladders, platforms, or scaffolding and use of binoculars, fiberscopes, and other optical aids is recommended if needed to gain better access, augment the inspection, or further examine discontinuities. Such equipment should have suitable resolution capabilities under ambient or enhanced lighting. Table IWA-2211-1, "Visual Examinations," identifies a maximum direct examination distance of 2 feet for VT-1 examinations.

Request. Provide information to verify that sufficient visual resolution capability is being used during visual examinations of structures to detect and quantify forms of degradation that can potentially impact intended functions of the structures.

RAI B.1.42-4

Background. During a walkdown of the auxiliary building (e.g., Elevation 93', Stair 1T02), water leakage was observed, apparently resulting from groundwater infiltration from ineffective/degraded expansion/isolation joints between the Turbine Building and the Auxiliary Building. It was also noted on several surfaces in this area that rust colored stains were present, apparently resulting from high humidity conditions causing rusting of metallic base plates and anchor bolts. In addition, a search of GGNS operating experience identified several non-conformance reports (e.g., MNCR 83-0653, MNCR 97-0151, GGCR1997-0172-00) noting that concerns had been expressed relative to water leaking into the plant through small cracks in the concrete and construction joints.

Issue. Since this has been a continuing problem, it is unclear to the staff how the Structures Monitoring Program, or other plant-specific programs, will address the leakage to ensure that aging effects, especially in inaccessible areas and plant internal steel components exposed to groundwater leakage, will be effectively managed to ensure that there is no loss of intended function.

Request. Provide information on how the in-leakage of groundwater will be addressed under your corrective action program.

RAI B.1.42-5

Background. NRC Information Notice 2004-05, "Spent Fuel Pool Leakage to Onsite Groundwater," notes that leakage of the spent fuel pools has occurred at Salem Unit 1 and other nuclear power plants.

Issue. During the onsite audit of the Structures Monitoring Program, the staff asked the following:

- if historical data on leakage of the spent fuel pool are available
- if leakage is present, is the leakage confined to the leak-chase system
- if leakage is not present, if the leak-chase system is routinely inspected to verify that it is clear

This information was not available during the audit, so the staff is uncertain if leakage of the spent fuel pool is occurring, and if leakage is present, that it is being confined to the leak-chase system.

Request. Provide historical data on spent fuel pool leakage obtained by monitoring the leak-chase system and note whether or not the leakage is confined to the leak-chase system. If the leakage is not confined to the leak-chase system, identify any structures or structural components potentially impacted and any plans to address the leakage. If no leakage has been reported, provide inspection results, or plans for inspection of the leak-chase system, to demonstrate that the leak-chase system is not blocked.

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