

August 21, 1990

Docket No. 50-416

Mr. William T. Cottle  
Vice President, Operations - Grand Gulf  
Entergy Operations, Inc.  
Post Office Box 756  
Port Gibson, Mississippi 39150

Dear Mr. Cottle:

SUBJECT: GRAND GULF NUCLEAR STATION, UNIT 1 (GRAND GULF - 1) - REQUEST FOR  
ADDITIONAL INFORMATION REGARDING SETTLEMENT OF CATEGORY I STRUCTURES  
(TAC NO. 75802)

The NRC staff has performed a preliminary review of the settlement data related to Grand Gulf - 1 Category I structures given in the updated Final Safety Analysis Report (FSAR), Figure 2.5-75. In addition the staff met with the licensee at the site to discuss settlement monitoring and toured the facility to observe conditions of the structures. (Meeting Summary dated August 16, 1990.)

The staff finds that the additional information identified in the enclosure is needed to complete its review. Provide the enclosed requested additional information by November 30, 1990.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 95-511.

Sincerely,

**Original signed by:**

Lester L. Kintner, Senior Project Manager  
Project Directorate IV-1  
Division of Reactor Projects - III  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

cc with enclosure:  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

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Vice President, Operations - Grand Gulf  
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Post Office Box 756  
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RE: Mr. Cottle:

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Sincerely,

A handwritten signature in cursive script that reads "L L Kintner".

Lester L. Kintner, Senior Project Manager  
Project Directorate IV-1  
Division of Reactor Projects - III  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Enclosure:  
As stated

cc w/enclosure:  
See next page

Mr. W. T. Cottle  
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Grand Gulf Nuclear Station

cc:

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Jackson, Mississippi 39286-1995

Enclosure

REQUEST FOR ADDITIONAL INFORMATION  
REGARDING SETTLEMENT OF CATEGORY I STRUCTURES  
GRAND GULF NUCLEAR STATION

- 1.a) Provide a comparison of measured total and differential settlements with i) predicted and ii) allowable settlements for all seismic Category I structures, along with explanations for differences, if any, between the predicted and measured settlements for each seismic Category I structure.
- b) Explain the consequences, if any, of the measured settlements that may exceed the allowable settlements for each seismic Category I structure.
- c) In addition to evaluating the differential settlement between adjacent structures, determine the tilting of each structure. For example, according to Fig. 2.5.4-75, in the updated FSAR, there appears to be a difference in settlement of about 0.6 inches between the Auxiliary Building markers P-9 and P-15 which are on either side of the Containment.

Discuss the safety significance of this differential settlement of the Auxiliary Building, as recorded by markers P-9 and P-15.

- d) Provide sample calculations showing the determination of allowable differential settlement of pipe penetrations in the buildings.
  - e) At two penetrations (Nos. 27, and DP-44A), the measured differential settlements have reached 80 percent of the allowable differential settlements, whereas, at eight other penetrations (shown in a table provided to the staff at the site on April 17, 1990), the ratios of actual to allowable differential settlements range from only 4% to 56%. All ten penetrations were installed in the same year, 1980. Perform an engineering review of the causes and effects of the relatively larger differential settlements at the two penetrations mentioned above.
- 2.a) Document the reasons for the destruction of settlement markers and for the unavailability of settlement data for extended periods of time in the case of some seismic Category I structures as noted from FSAR Fig. 2.5.4-75.
    - b) Describe the surveying procedures used to reestablish the destroyed settlement markers, paying special attention to:
      - i) the quality assurance aspects of accurately transferring the settlement data from the destroyed markers to the new markers, and
      - ii) the proper maintenance and assurance of the accuracy of permanent benchmarks used in settlement monitoring.

- c) Provide a report describing the proposed improvements in surveying procedures that were identified in the August 16, 1990 Summary of the Meetings on April 16-17, 1990.
3. Discuss the results of groundwater monitoring at the site and provide an evaluation of the effects of fluctuation in groundwater levels, if any, on the stability and settlement of structures.
4. Provide draft amendments to the relevant updated FSAR Sections incorporating your responses to the questions above.