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

April 17, 2009

Vice President, Operations
Entergy Operations, Inc.
Waterford Steam Electric Station, Unit 3
17265 River Road
Killona, LA 70057-3093

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 - REQUEST FOR ADDITIONAL INFORMATION RE: LICENSE AMENDMENT REQUEST TO MODIFY TECHNICAL SPECIFICATION SECTION 5.6, "FUEL STORAGE," AND ADD NEW TECHNICAL SPECIFICATION 3/4 9.12, "SPENT FUEL POOL (SFP) BORON CONCENTRATION" (TAC NO. MD9685)

Dear Sir or Madam:

By letter dated September 17, 2008, as supplemented by letter dated February 26, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML082660649 and ML090610134, respectively), Entergy Operations, Inc. (the licensee), submitted an application to the U.S. Nuclear Regulatory Commission (NRC) requesting an amendment to modify Technical Specification (TS) 5.6, "Fuel Storage," and add new TS 3/4 9.12, "Spent Fuel Pool (SFP) Boron Concentration," to take credit for soluble boron in Region 1 (cask storage pit) and Region 2 (SFP and refueling canal) fuel storage racks for the storage of both Standard and Next Generation Fuel assemblies.

We have reviewed the application and determined that additional information contained in the enclosure is needed to complete the review. The NRC staff discussed the need for additional information on April 3, 2009, with Mr. R. Murillo, of your staff. Mr. Murillo agreed to provide a response within 30 days of the receipt of this letter.

If you have any questions, please contact me at (301) 415-1480 or by electronic mail at kaly.kalyanam@nrc.gov.

Sincerely,

N. Kalyanam, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
As stated

cc w/encl.: Distribution via Listserv

OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR ADDITIONAL INFORMATION

WATERFORD STEAM ELECTRIC STATION, UNIT 3

LICENSE AMENDMENT REQUEST REGARDING

FUEL STORAGE, SPENT FUEL BORON CONCENTRATION

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Entergy submitted the application to revise the Waterford Steam Electric Station, Unit 3 (Waterford 3) licensing basis to reflect the new SFP criticality analysis. The licensee performed the new analysis to credit soluble boron in the fuel storage racks for both Standard and NGF. The NRC staff has reviewed the application and determined that the following additional information is needed to complete the review:

1. Validation of the code, MCNP4a

   Appendix A of the Holtec Report No. HI-2084014, "Licensing Report for Waterford Unit 3 Spent Fuel Pool Criticality Analysis" (Attachment 3 to your application dated September 17, 2008), discusses the validation of the three-dimensional Monte Carlo Code MCNP4a used in criticality calculations. To allow the NRC staff to evaluate the adequacy of the validation, please provide the following additional information:

   a) In Section 2.1, you state that, "MCNP4a calculations used continuous energy cross-section data predominantly based on ENDF/B-V and ENDF/B-VI." Please explain how both libraries were used. Also, please identify what energy group data was used in the MCNP4a calculations?

   b) Please identify the cross-section library and energy group used in the benchmark calculations.

   c) Please identify any known problems associated with the libraries that may adversely affect the analysis.

   d) Please document and justify the area of applicability for the benchmarks.

   e) Please explain how the measurement uncertainties for the benchmarks were accounted for in the analysis.

2. Validation of the code, CASMO-4

   Please discuss the basis for not needing to apply any methodology uncertainties associated with the use of CASMO-4 to determine the relative reactivity differences for temperature variation, manufacturing tolerances, and depletion uncertainty.

3. Table 7.13 on page 46 of Holtec Report No. HI-2084014

   The numbers do not add up for the 2 percent enrichment case in Table 7.13 (i.e., MCNP calculated value plus the sum of biases and uncertainties do not equal 0.995). Please explain.

4. Soluble boron calculations

   In Attachment 1 to your letter dated February 26, 2009, you provided a revised Table 7.14. Please clarify if the rows "Normal Keff [effective multiplication factor] without Boron" and "Normal Keff with 600 ppm [parts per million] Boron" should indicate the MCNP calculated value. As presented, the values in these rows appear to include the sum of biases and uncertainties and appear inconsistent with the interpolated boron concentration values.

   Please demonstrate the effect of soluble boron on the biases and uncertainties for the borated cases, beyond rack and fuel uncertainties. The staff acknowledges the information on rack and fuel uncertainties provided in the letter dated February 26, 2009.

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Sincerely,
/RA/

N. Kalyanam, Project Manager
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