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

November 20, 2009

Vice President, Operations
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 - REQUEST FOR ADDITIONAL INFORMATION REGARDING AMENDMENT APPLICATION FOR THE TECHNICAL SPECIFICATION ON BATTERY CAPACITY (TAC NO. ME0985)

Dear Sir or Madam:

In a letter dated March 29, 2009, Agencywide Documents Access and Management System (ADAMS) Accession No. ML090980300, as supplemented by letter dated September 21, 2009, ADAMS Accession No. ML093010534, Entergy Nuclear Operations, Inc. (Entergy), submitted a license amendment request to revise the acceptance criteria for battery capacity in the Technical Specifications for Indian Point Nuclear Generating Unit No 2 (IP2).

The Nuclear Regulatory Commission staff is reviewing the submittal and has determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). The Entergy staff indicated that a response to the RAI would be provided within 45 days of the date of this letter.

Please contact me at (301) 415-2901 if you have any questions on this issue.

Sincerely,

John P. Boska

John P. Boska, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosure:
RAI

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REQUEST FOR ADDITIONAL INFORMATION

REGARDING AMENDMENT APPLICATION

FOR THE TECHNICAL SPECIFICATION ON BATTERY CAPACITY

ENTERGY NUCLEAR OPERATIONS, INC.

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

DOCKET NO. 50-247

In a letter dated March 29, 2009, Agencywide Documents Access and Management System (ADAMS) Accession No. ML090980300, as supplemented by letter dated September 21, 2009, ADAMS Accession No. ML093010534, Entergy Nuclear Operations, Inc. (Entergy), submitted a license amendment request to revise the acceptance criteria for battery capacity in the Technical Specifications for Indian Point Nuclear Generating Unit No 2 (IP2). The Nuclear Regulatory Commission (NRC) staff is reviewing the submittal and has the following questions:

1. In response to the staff's July 23, 2009, request for additional information, the licensee provided calculation FEX-00062-01, "Minimum Operating Electrolyte Temperature for 125 V DC Batteries 21, 22, 23, and 24." On page 4 of 5 of this calculation, the licensee acknowledged that it was Con Edison's (the previous licensee) design philosophy to use a 25% aging factor, 5% design margin, and a 5% temperature correction factor. The licensee also stated that the 85% capacity parameter would provide an additional 5% margin that is not accounted for in their sizing and voltage profile calculations. The following questions pertain to calculation FEX-00062-01.

    a. The licensee's previous battery sizing calculation (Cell Sizing Worksheet dated August 23, 2005) applies an aging factor of 1.110 while your revised battery sizing calculation (Cell Sizing Worksheet dated March 6, 2008) applies an aging factor of 1.176 (i.e., 17.6%), discuss the apparent discrepancy between the design philosophy and the revised assumptions. Explain how these parameters are consistent with industry recommendations (i.e., those provided in the Institute for Electrical and Electronics Engineers (IEEE) Standard (Std.) 450-2002, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," and IEEE Std. 485-1997, "IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications"). Furthermore, provide the Cell Sizing Worksheet that was used for procuring the existing batteries (i.e., the worksheet that includes the original aging factor, design margin, and temperature correction factor values) and the install date (i.e., the age) for the existing batteries.

    b. The NRC staff does not understand the discussion on the additional 5% margin that is not accounted for in the sizing and voltage profile calculations. Describe the basis of the 5% margin in greater detail and show exactly how this margin is being credited (e.g., the difference between the existing 80% criteria and the

proposed 85% limit or the difference between the 90% replacement criterion and the proposed 85% limit).

c. The licensee's analysis indicated that when a battery reaches 90% capacity they would replace that battery at the next refueling outage which occurs every 2 years. In delaying the battery replacement until the next refueling outage, the licensee is assuming that the battery capacity will not reach 85% capacity by the time they replace the battery. Describe the technical basis for this assumption.

d. A design margin factor of 1.00 was used on Cell sizing worksheet (Attachment KCMP22 of calculation FEX-00204-01, "Station Battery 22 System Calculation") and on the battery data sheet (Attachment HCMP22 of calculation FEX-00204-01). However, a design margin factor 1.05 was used in this calculation to determine the minimum temperature of 59 degrees Fahrenheit (F). Using a design margin factor of 1.00 in lieu of 1.05 would result in a different temperature correction factor (T) and a different minimum electrolyte temperature. Explain why a design margin factor of 1.05 was used in lieu of 1.00.

2. In proposing to revise Surveillance Requirement (SR) 3.8.6.6 to require verification that battery capacity is greater than or equal to 85% of the manufacturer's rating as opposed to greater than or equal 80%, describe the impact of this change on the expected life of Indian Point Unit 2 batteries (e.g., conclusions drawn from the battery life versus performance curve for GN23 batteries). Also provide the results (i.e., capacity value only) of the previous three performances of SR 3.8.6.6 for each safety-related battery at Indian Point Unit 2 (i.e., batteries 21, 22, 23, and 24).

3. The following questions pertain to calculation FEX-00204-01, which the licensee provided in response to the staff's July 23, 2009, request for additional information.

a. During its review of this calculation, the NRC staff noticed that the available (i.e., excess) capacity of Battery 22 decreased from 57.1% to 12.9% (page 33 of 34). The staff's understanding is that the licensee primarily revised this calculation to address the change in minimum design temperature (i.e., 60 degrees F to 59 degrees F). The staff is concerned with the significant change in capacity margin as a result of a one degree change in temperature. Provide a detailed discussion on why the available capacity significantly decreased.

b. Section 3.1.12 of this calculation states, in part, that in order to compensate for intercell connection resistance above the manufacturer's expected values, additional cable length is added. Provide the technical justification for using intercell connection resistance higher than the manufacturer's battery design value.

c. Section 3.2.3 of this calculation states, in part, that the maximum float voltage (135.5 volts (V) direct current) will be used when performing short circuit calculation. The battery data on Attachment HCMP22 also reflects a float voltage of 135.5 V. However, based on the battery catalog sheet (Attachment W Page 4 of 5), the acceptable battery float voltage range is 2.17 to 2.26 V per cell which results in maximum of 131.08 V (i.e., 2.26 V x 58 battery cells). Provide a

detailed technical justification for exceeding the battery manufacturer's recommended battery float voltage value.

d. Section 6.3.6 of this calculation states, in part, that the emergency diesel generator (EDG) is assumed to fail to start with the field flash energized until the start sequence is terminated by detection of the EDG failure to start. The generator field flash is conservatively modeled to be energized for the first minute of the event. The staff is concerned that this assumption is not conservative since the EDG may try to energize and fail to start again with the field flash energized at the end of duty cycle. Provide a detailed technical justification for not also modeling the energization of the generator field flash at the last minute of the event.

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/RA/

John P. Boska, Senior Project Manager
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Docket No. 50-247
Enclosure:
RAI
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ADAMS ACCESSION NO.: ML093230042 *Via email **See memo dated 11/5/09

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