



**Entergy Nuclear Northeast**  
 Entergy Nuclear Operations, Inc.  
 Indian Point Energy Center  
 P.O. Box 308  
 Buchanan, NY 10511  
 Tel 914 736 8001  
 Fax 914 736 8012

**Robert J. Barrett**  
 Vice President, Operations  
 Indian Point 3

December 20, 2001

IPN-01-091

U.S. Nuclear Regulatory Commission  
 ATTN: Document Control Desk  
 Mail Stop O-P1-17  
 Washington, DC 20555-0001

SUBJECT: Indian Point Nuclear Generating Unit No. 3  
 Docket No. 50-286  
**Reply to NRC Request for Additional Information Regarding  
 Proposed Change to Technical Specifications Surveillance  
 Requirement Regarding New 31 Station Battery Cell Voltage**

REFERENCE: 1. Entergy letter IPN-01-075, "Proposed Change to Technical  
 Specifications Surveillance Requirement Regarding New  
 31 Station Battery Cell Voltage," M. Kansler to U.S. NRC  
 Document Control Desk, dated October 23, 2001.

Dear Sir:

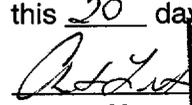
This letter transmits Entergy's responses to the NRC Request for Additional Information (RAI) related to clarification of the design characteristics associated with the proposed, new 125VDC 31 Station Battery. This new battery will be installed as part of an on-line battery replacement effort in early 2002. The original submittal for this Technical Specification change was submitted as Reference 1. These RAI questions were discussed in a telephone conference call between NRR Project and IP3 engineering staff personnel on November 27, 2001. Attachment 1 includes Entergy's response to these RAI design clarification questions posed by NRC.

Entergy is making no new commitments in this letter. If you have additional questions, please contact Mr. John Donnelly at 914-736-8310.

Very truly yours,

  
 Robert J. Barrett  
 Vice President, Operations  
 Indian Point 3 Nuclear Power Plant

STATE OF NEW YORK  
 COUNTY OF WESTCHESTER  
 Subscribed and sworn to before me  
 this 20 day of DECEMBER 2001.

  
 Christina Leitmann  
 Notary Public, State of New York  
 Registration #01LE5012946  
 Qualified in Putnam County  
 My Commission Expires Jan. 6, 2003

A001  
 Rec'd  
 01/31/02

Attachment

cc: Regional Administrator  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Resident Inspector's Office  
U.S. Nuclear Regulatory Commission  
Indian Point Nuclear Generating Unit No. 3  
P. O. Box 337  
Buchanan, NY 10511-0337

Mr. William M. Flynn  
New York State Energy Research and Development Authority  
Corporate Plaza West  
286 Washington Avenue Extension  
Albany, NY 12203-6399

Mr. Paul Eddy  
New York State Department of Public Service  
3 Empire Plaza  
Albany, NY 12223

Mr. Pat Milano, Project Manager  
Project Directorate I-1  
Division of Reactor Projects I/II  
U.S. Nuclear Regulatory Commission  
Mail Stop O-8C2  
Washington, DC 20555-0001

**ATTACHMENT I TO IPN-01-091**

**SUPPLEMENT TO PROPOSED CHANGE TO  
TECHNICAL SPECIFICATIONS SURVEILLANCE REQUIREMENT  
REGARDING NEW 31 STATION BATTERY CELL VOLTAGE**

ENTERGY NUCLEAR OPERATIONS, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3  
DOCKET NO. 50-286  
DPR-64

**RESPONSE TO RAI REGARDING NEW STATION BATTERY  
TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENT CHANGE**

**Question 1:**

Your submittal states that an additional cell will be added to 31 Battery in order to provide an acceptable design margin for future load addition to this battery. The submittal also states that the new battery cells have slightly lower capacity per cell as compared to the existing cells. Please provide additional explanation regarding how the proposed new configuration meets the design-loading requirement.

**Answer:**

The existing (Exide) station batteries have been sized in accordance with IEEE-485, "Recommended Practices for Sizing Lead Acid Batteries for Stationary Applications," revision dated 1983, to meet IP3 design basis duty cycle requirements as documented in the present design basis sizing calculations. IEEE-485 was used for the sizing calculations that are referenced in IP3 ECCF-845, discussed in Reference 1 to this response letter. IEEE-485 is the methodology of record for sizing the batteries, both new and old. The existing batteries have been proven to meet their required Technical Specification (TS) surveillance requirements (SR) to date. The ability of the existing batteries to meet these requirements is not in question.

The replacement (C&D) battery cells selected for the 31 and 32 station batteries are LCY-39 2400 Amp-Hour cells each having 19 positive plates. Although this new capacity is lower than the original 2660 Amp-Hour design capacity of the existing Exide battery cells that possess 16 positive plates per cell, the new C&D configuration provides for a greater overall capability. Each replacement station battery is sized, as per IEEE-485, (present revision dated 1997) taking into account the most limiting case voltage drop in the system, a temperature correction factor based on 60 degrees - F (with a 1.11 multiplier), and an 80% aging factor (with a multiplier of 1.25). The multiplier for the design margin was considered 1.0. This value is based upon factors such as the load growth on the battery being closely monitored, the battery undergoing proper maintenance, and the battery capacity being verified by discharge tests on a routine basis. The results of this sizing analysis yields a required number of positive plates necessary to meet the DC design basis needs. Based on the ratio of the number of positive plates selected versus the number of positive plates required, a built-in design margin was thus established.

When this approach to the design margin was applied to the replacement 31-station battery, considering the use of 58 cells, the ratio of positive plates selected to positive plates required resulted in a percentage of built-in design margin of 1.04. In an effort to improve this design margin, it was subsequently determined that the battery racks in the 31-station battery room could support the addition of a 59<sup>th</sup> battery cell. The addition of this 59<sup>th</sup> cell resulted in a lower required end of the discharge voltage per cell, permitting utilization of more amps per positive plate from the LCY-39 cell and thereby utilizing more of the available capacity of the battery. As a result of this additional cell and the associated lowering of the end of discharge voltage per

cell, the ratio of selected number of positive plates to the required number of positive plates was increased from 1.04 to 1.20. This equates to a built-in 20% DC design margin, based upon the total quantity of positive plates in the 59-cell new battery. Thus, the replacement batteries have a 20% design margin due to the number of positive plates selected over the required amount needed to meet the needs of the duty cycle as described.

In comparison, the original design margin for the existing (Exide) batteries is 1.16. This indicates that the new (C&D) 59-cell configuration of the 31 station battery will meet the design loading requirement, and provides for an increase in overall design margin.

**Question 2:**

Please provide information regarding the sizing of the new batteries, including assumptions used such as aging factor and temperature factor.

**Answer:**

See answer to Question 1 for necessary replacement battery sizing details and assumptions.

**Question 3:**

The current 3.8.4 Technical Specification (TS) Bases (background section) states "The batteries are sized to produce required capacity at 80% of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100% design demand." Please verify the accuracy of this statement for the new battery configuration.

**Answer:**

The subject TS bases statement remains accurate for the replacement station batteries. Each replacement station battery is sized to meet 100% of its design demand (100% of its design duty cycle requirement) based upon 80% of its nameplate rating as accounted for in the application of the 1.25 multiplier for aging. Both the existing Exide and replacement C&D station batteries independently satisfy this necessary design requirement.