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Consolidated Edison Company of New York, Inc.
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November 16, 2000

Re: Indian Point Unit No. 2
Docket No. 50-247
NL-00-137

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

SUBJECT: 10 CFR Part 21 Written Notification

On October 31, 2000, Con Edison submitted, by facsimile, the initial notification of a condition at Indian Point Unit No. 2 which we determined to be reportable under the requirements of 10 CFR Part 21. The reported condition involves a Model 2GN23 1800 Amp-hour battery produced by YUASA Inc. These batteries are used in the 125V DC System, and provide a primary source of 125V DC power to safeguards equipment and logic circuitry at Indian Point 2. These batteries are also used as reserve sources of DC control power for the operation of the 480V switchgear. The requirements of 10 CFR 21.21(d)(4) identify specific information to be included in this written notification. That information is provided in the attachment to this letter.

No new regulatory commitments are being made by Con Edison in this correspondence.

Should you have any questions regarding this matter, please contact Mr. John McCann, Manager, Nuclear Safety and Licensing.

Sincerely,

Attachment

IE19

C: Mr. Hubert J. Miller
Regional Administrator - Region I
US Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. Patrick D. Milano, Senior Project Manager
Project Directorate I-1
Division of Licensing Project Management
US Nuclear Regulatory Commission
Mail Stop 0-8-C2
Washington, DC 20555

Senior Resident Inspector
US Nuclear Regulatory Commission
PO Box 38
Buchanan, NY 10511

ATTACHMENT

Indian Point Unit No. 2 125V DC Battery 22

The following information is provided as required by 10 CFR 21.21(d)(4).

(I) Name and address of individual informing the Commission.

James S. Baumstark, Vice President - Nuclear Engineering
Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Broadway and Bleakley Ave.
Buchanan, NY 10511

(ii) Identification of the basic component which contains a defect.

Component: 22 Battery

(22 Battery provides a primary source of power to one of four 125V DC power buses required for safeguards equipment and logic circuitry during a loss of offsite electrical power event)

Model: YUASA 2GN23 1800 Amp-hour Battery

(iii) Identification of the firm supplying the basic component which contains a defect.

YUASA Inc.
2366 Bernville Rd.
Reading, PA 19605

(iv) Nature of the defect and the safety hazard which could be created by such a defects.

22 Battery is a Model 2GN23 1800 Amp-hour battery produced by YUASA Inc. The battery is comprised of 26 jars each containing two cells. The 2GN23 cell is a lead-calcium wet acid cell. These stationary batteries are large, deep discharge cells which are designed so that the entire plate material interacts with the electrolyte. A chemical interaction produces current and voltage. If either the material, plate, or electrolyte are unsatisfactory, the output capacity could be reduced.

Upon completion of maintenance activities on 22 Battery in May 2000, a number of new replacement cells were discovered to have low specific gravity readings between 1.200 and 1.205, as well as electrolyte levels below their halfway marks. The electrolyte levels were increased to the midpoint positions by the addition of water. After addition, the specific gravity decreased further. YUASA representatives believed that the specific gravity condition was associated with stratification of the acid. YUASA recommended

agitating the cells with an air pump to increase the mixing of the electrolyte solution. Following this corrective action, the specific gravity returned within the normal band. On June 8, 2000 upon receiving satisfactory test readings, 22 Battery was returned to service.

On June 9, 2000 during the performance of a battery load test (PT-R76B), 22 Battery failed its two-hour minimum voltage characteristic (110.2VDC). This characteristic is calculated based upon the characteristics of the battery and its load profile. It also failed to satisfy its required amp-hour capacity (greater than 90%). Following initial troubleshooting activities, similar load capacity failures occurred on June 18 and July 18, 2000. During all three discharge load tests, no one common group of cells were indicative of a problem in the discharge testing.

Investigation

Initial investigations focused upon how the batteries were being charged and tested. It was determined that the battery charging rates were within the manufacturer's specified rate of 2.33 volts per cell. Upon review of load test data, charging reports, schedule, and IEEE 450 Standard for Battery Maintenance and Testing with the manufacturer, it was postulated that hydrogen gas was trapped between the plates of the battery. Hydrogen gas is created during the battery equalization process as sulfuric acid is released from the lead. The gas may be preventing the chemical reaction of the lead and sulfuric acid from taking place. Per IEEE 450, this gas barrier usually takes approximately 72 hours to dissipate. During the June 6, 2000 test, this 72 hour delay between equalizing the battery and beginning of the test had not been satisfied.

A second load test was scheduled for June 18, 2000. The specific gravity and voltage readings were taken. The results indicated low specific gravity readings. The manufacturer was consulted and subsequently provided guidance on how to air agitate the cells. Upon the completion of this work, the specific gravity was measured, and low readings were again indicated. Upon reviewing the specific problems associated with this test failure with the manufacturer, it was decided that the load test would be performed after 72 hours from completion of the equalizing charge.

The June 18, 2000 test failed its capacity at 83%. Following this failure, a comprehensive review of available industry operating experience reports, and discussions with battery experts from various independent organizations was initiated. Based upon our review, it was decided that four cells would be returned to YUASA for testing. Those four cells were replaced by spare cells. In addition, it was decided that an independent expert, Battery Technology Center Inc. would be called upon to recharge the remaining battery cells.

Battery Technology Center Inc. representatives brought a number of chargers to charge each cell to 2.5VPC per YUASA recommendation. This value was within the manufacturer's acceptable range of equalizing voltages. A number of cell voltages and polarization indexes were taken of the entire bank before charging. Following

completion of the charging, another specific gravity measurement was taken. All of the cells except for eight had failed with specific gravity readings below 1.195. YUASA then performed an electrolyte addition. This is considered unusual for normal maintenance and is only performed at the beginning of a battery's life.

Despite satisfactory specific gravity readings, the load test performed on July 18, 2000 had again failed at 89% capacity. The results of further testing indicated that there was a problem with the entire battery bank. An operability determination (00-013) was written which documented the acceptability of the battery for six-months. Within this time period, the battery would be required to be replaced or retested.

Various load tests and destructive examinations of the battery cells were performed over the next several weeks. On August 17, 2000 a destructive tear down of two cells was witnessed by YUASA, Battery Technology Center, and Con Edison representatives. A visual examination of the plates and separators did not indicate any discrepancies. However, microscopic analysis of samples obtained from two different positive plates revealed cracks within the positive active material, small pores and small particle size. This would result in higher internal cell resistance when charging and discharging a battery. These cracks are believed to be the cause of the load test failures and appear to have been produced during the manufacturing operation.

(v) The date on which the information of such defect was obtained.

A report prepared by Battery Technology Center, Inc. dated September 8, 2000 was provided to Con Edison, describing the results of the battery plate material analysis.

(vi) In the case of a basic component which contains a defect, the number and location of all such components in use at the facility subject to the regulations in this part.

Similar batteries are used for 21, 23, and 24 Battery. Each of these batteries have completed an acceptable load test during May-June 2000 at a capacity of 100%.

(vii) The corrective action which has been taken.

The failed battery cells were subsequently replaced with new cells.

(viii) Any advice related to the defect that has been given to purchasers or licensees.

On September 15, 2000, a copy of the Battery Technology Center, Inc. report dated September 8, 2000 was provided to YUASA.