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JOSEPH W. GALLAGHER
VICE PRESIDENT
NUCLEAR SERVICES

July 29, 1988

Docket No. 50-277

Mr. William T. Russell, Administrator
Region 1
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555
King of Prussia, PA 19406

Subject: Peach Bottom Atomic Power Station Unit 2
125V Station Batteries - 10 CFR Part 21 Report

Dear Mr. Russel:

In accordance with Paragraph (3) of 10 CFR 21.21(b), the following information concerns the recent discovery of copper contamination in the 125 volt station batteries on Peach Bottom Unit 2.

1. Name of individuals informing the Commission:

Notification to the NRC was made on July 27, 1988 via a phone conversation between W. M. Alden, Director-Licensing and J. C. Linville, USNRC.

2. Identification of basic component which contains a defect:

Exide Corporation GN-23 batteries

3. Identification of firm supplying the basic component:

Exide Corporation
320 Constance Drive
Warminster, PA 18974

4. Nature of defect and the safety hazard which could be created:

During inspection of the 125V batteries of Peach Bottom Unit 2, copper contamination was discovered on the negative plates of several cells. This phenomenon was manifested as a red discoloration on the negative plates. No similar condition has been identified in the Unit 3 125V batteries.

Exide advises that the copper is coming from the insert in the positive post. This occurs very infrequently when the electrolyte of the cell

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penetrates through the lead section which is cast around the insert. Most frequently this is a result of extremely small holes resulting from gases in the metal during the casting and freezing process. In most cases, the hole is not a direct, but tortuous, path and the penetration takes a long time to occur.

When the electrolyte penetrates to the insert, an electrolytic cell is established between the copper and negative portions of the cell, which results in the copper being etched. Copper goes into solution and electroplates onto the negative, causing the discoloration.

This copper contamination could result in lowering of cell voltage or negative plate voltage with a reduction in battery capacity.

There are two independent 125/250V, 3-wire dc status battery systems per unit. The safety objective of the station battery systems is to supply all normal and emergency loads for 125V and 250V dc power. Each of the two independent station battery systems per unit are of adequate size to provide control and switching power to safeguard systems and apparatus, dc auxiliaries, and motor-operated valves until ac power sources are restored. The station battery systems are designed so that no single component failure prevents power from being provided to a sufficient number of vital loads for safe shutdown. The two batteries for each unit are redundant. Loads are diversified between these systems so that each system serves loads which are identical and redundant, which are different but redundant to plant safety, or which back up ac equipment.

Each system is comprised of two 125-v batteries, each with its own charger. DC loads are carried by the battery chargers which are powered from 480V AC emergency busses. If the chargers are lost, DC load carrying is transferred to the batteries.

Power required for the larger loads, such as dc motor-driven pumps and valves, is supplied at 250V from the two 125V sources of each system connected in series, and distributed through 250V dc motor control centers.

The station battery systems supply emergency power for RCIC, HPCI, and the core spray system, the low pressure coolant injection made of RHR and emergency diesel generators for an adequate time to safeguard the plant while normal sources of power are being restored. The 125 VDC portion of these systems provides instrumentation, control, and logic power for these systems.

Copper contamination represents a potential common mode failure which could render the batteries incapable of delivering sufficient capacity to power the emergency control and power loads.

5. Date on which the information of such defect was obtained:

The results of the inspections were identified on December 14, 1987. The evaluation to determine reportability was completed on July 21, 1988.

6. The number and location of the basic component that contains a defect:

The four batteries inspected on Peach Bottom Unit 2 are identified as 2AD01, 2BD01, 2CD01, and 2DD01. These batteries each contain 58 cells. The inspection results are as follows:

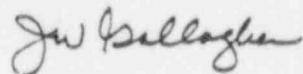
- o Battery 2AD01 - Cells 7, 11, 23, 28, 31, 32, 38, 47, 48, and 50 had red discoloration on the negative plates. The cell voltage and specific gravity on these cells were acceptable. However, cells 31, 38, and 47 which had a red spider-like webb on the top of each cell exhibited a reduction in cell voltage and specific gravity in comparison to the other cells.
 - o Battery 2BD01 - Cells 3, 4, 13, 24, and 29 had red discoloration on the negative plates. All cell voltages and specific gravities were within acceptable ranges.
 - o Battery 2CD01 - Cell 45 had red discoloration of the negative plate. The voltage and specific gravity was within the acceptable range.
 - o Battery 2DD01 - No cells were identified with red discoloration.
7. Corrective action that has been, is being, or will be taken: the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action:

The System Engineer has increased his attention to inspection of the battery cells for both Units 2 and 3. All of the cells discovered to have the red discoloration on Unit 2 will be replaced in kind by November 1, 1988. Cells 31, 38, and 47 from Battery 2AD01 will be shipped to Exide upon their replacement for further evaluation. Surveillance Tests ST 8.2 "Station Battery Weekly Check" and ST 8.3 "Station Battery Quarterly Check" will be revised to include a check for signs of red discoloration on the negative plates during testing of cell voltage and specific gravity. These revisions will be complete by August 31, 1988.

8. Notification:

The industry was notified of this condition via an entry in INPO's Nuclear Network on July 19, 1988.

Very truly yours,



cc: Addressee
T. P. Johnson, USNRC Senior Resident Inspector
T. E. Magette, State of Maryland
J. Urban, Delmarva Power
J. T. Boettger, Public Service Electric & Gas
H. C. Schwemm, Atlantic Electric