

PRIORITY ATTENTION REQUIRED MORNING REPORT - REGION IV OCTOBER 4, 1994

Licensee/Facility:

Notification:

Arizona Public Service Co.  
Palo Verde 2  
Wintersburg, Arizona

MR Number: 4-94-0116  
Date: 10/04/94  
RI E-mail to WCFO

Dockets: 50-529  
PWR/CE80

Subject: DEGRADED 125 VOLT DC SAFETY-RELATED BATTERIES

Reportable Event Number: N/A

Discussion:

On September 23, 1994, with Unit 2 shut down for a midcycle outage, the licensee determined that the capacity of the Unit 2 Battery Banks A and C 125 volt safety-related DC batteries were 90.9 and 90.3 percent, respectively. The licensee had recently installed AT&T Model L-1SH round cell batteries in all the units. AT&T guaranteed these batteries would have a minimum of 100 percent capacity at the end of 40 years. The licensee installed the AT&T batteries in Unit 2 in May 1993. Each battery bank has a total of 60 cells. The battery capacity was determined by a constant rate discharge of 530 amps for 2 hours. A battery terminal voltage of 105 volts after 2 hours corresponds to a capacity of 100 percent.

The Technical Specifications limit for the battery capacity is greater than 90 percent. Therefore, the licensee considered Battery Banks A and

C to be operable but degraded. On September 28, after reverifying the test equipment, the licensee concluded that the results were valid and that the batteries were actually degrading.

In October 1993, the licensee determined that the capacities of the four Unit 1 safety-related battery banks ranged from 105 to 108 percent. In January 1994, the licensee determined that the capacities of Unit 2 safety-related Battery Banks B and D were 100 percent. In April 1994, the licensee determined that the capacities of the four Unit 3 safety-related battery banks ranged from 105 to 113 percent.

On September 30, an AT&T representative arrived on-site to investigate the problem with the Unit 2 batteries. The AT&T representative did not note any visible signs of degradation. The licensee conducted a review of the purchase orders for the Unit 2 batteries and noted that a significant number of the Unit 2 cells were reworked by the factory. Based on this information, the licensee suspects a manufacturing related problem for the Unit 2 batteries.

On October 1, the licensee conducted another capacity test of the Unit 2 Battery Bank B and D batteries, which indicated capacities of 89 and 88 percent, respectively. Since this was less than the 90 percent capacity required by Technical Specifications, the licensee declared the Battery Banks B and D inoperable. The licensee stated that the batteries had

additional margin between the capacity test and the actual design base  
s  
load for each battery bank. This margin ranged from approximately 23  
to  
69 percent.

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On October 1, the licensee also tested the spare cells in the Units 1  
and  
3 safety-related battery banks. All the capacities were greater than  
105 percent, which the licensee believes indicates that the problem is  
limited to the Unit 2 batteries.

The licensee has shipped three cells from Unit 2 Battery Bank D to AT&  
T  
for a root cause of failure analysis. The licensee also sent procureme  
nt  
engineers to the AT&T facility in Pennsylvania to begin commercial  
dedication of new cells. The licensee also has eight spare cells that  
could be installed immediately. The electrical engineering group was  
continuing to review the test data to determine how many cells needed  
to  
be replaced in all the Unit 2 battery banks to ensure that the batteri  
es  
would remain operable until the Unit's next outage in January 1995.

Regional Action:

NRC inspectors observed the battery conditions in all units and review  
ed  
previous battery testing data. The inspectors agreed with the AT&T  
representative and licensee personnel that there was no obvious physic  
al

degradation of the Unit 2 safety-related batteries. The inspectors noted that the physical condition of the safety-related batteries in all three units appeared the same.

A conference call was held on September 30 between the licensee, Region IV, and NRR. The project and resident inspectors continue to monitor the licensee's evaluations and efforts to restore the degraded batteries.

Units 1 and 3 are currently in Mode 1 operating at 98 and 100 percent power, respectively. Unit 2 is in Mode 5.

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