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10CFR2.201

May 28, 1993

Docket Nos. 50-277
50-278

License Nos. DPR-44
DPR-56

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Peach Bottom Atomic Power Station, Units 2 and 3
Response to Electrical Distribution System Functional Inspection
Report Nos. 50-277/93-80 and 50-278/93-80

Dear Sir:

Your letter dated April 30, 1993 transmitted the above referenced Inspection Report. Enclosed is our response to the Notice of Violation.

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

Enclosure

cc: T. T. Martin, Administrator, Region I, USNRC
USNRC Senior Resident Inspector, PBAPS

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Peach Bottom Atomic Power Station, Units 2 and 3
Response to Notice of Violation
Electrical Distribution System Functional Inspection

Restatement of Violation

10 CFR 50, Appendix B, criterion states, in part, that "A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program shall include, as appropriate, proof tests prior to installation, preoperational tests, and operational tests during nuclear power plant or fuel reprocessing plant operation, of structures, systems, and components."

Contrary to the above, on February 12, 1993, Peach Bottom Atomic Power Station (PBAPS) did not have test programs for the molded case circuit breakers and Topaz inverters to periodically demonstrate that 1) the breakers would trip within the design current band, and 2) the inverters would trip when the input voltage exceeded the design limit of 100 Vdc and 147 Vdc. Most of the molded case circuit breakers and the Topaz inverters had not been tested since starting commercial operation about twenty years ago.

This is a Severity Level IV Violation (Supplement I).

Response to Violation

Philadelphia Electric Company contests the violation.

Basis for Contesting Violation

120v Molded Case Circuit (MCC) Breaker Example:

Our position is that a periodic testing program for the 120v MCCs is not required in order to comply with Criterion XI. As quoted above, Criterion XI states, "The test program shall include, as appropriate, proof tests prior to installation, preoperational tests and operational tests. . ." We have concluded that factory testing, exclusively, is the appropriate test program for the 120v MCC breakers. This conclusion is based on the fact that the failure mechanism of these breakers is not time dependent and, therefore, periodic testing is not warranted. This has been validated by testing performed in our own labs on breakers which were part of the original PBAPS installation. As expected, these tests confirmed that no metallurgical degradation had occurred in the bimetallic strip of the breaker. No separation, hardening or other changes in the grease could be detected. Therefore, the ability for the breakers to trip remains constant after installation.

The need to periodically test 120v MCC breakers has not been established by the breaker manufacturer, the nuclear industry or the Nuclear Regulatory Commission (NRC). We have evaluated previously the breaker manufacturer's maintenance and inspection recommendations and have established a yearly infrared thermography program to predict possible faulty breakers. No periodic testing however, has been identified by the manufacturer. These breakers are used extensively in industrial applications. Industry experience has not shown a significant failure rate of 120v MCC breakers. This is based on discussions with the breaker manufacturer and numerous users of the breakers, and a review of Nuclear Plant Reliability Data System (NPRDS) information. The lack of failures of the 120v MCC breakers suggests that periodic testing is not necessary.

Further, a uniform position on 120v MCC breaker testing has not been established by the NRC. This is evident by the inconsistent enforcement actions applied to various licensees regarding this issue, especially among the five NRC regions. A NRC position on breaker testing was proposed in a draft generic letter. This position was challenged by the industry in a Nuclear Management and Resource Council (NUMARC) letter to the NRC dated August 30, 1991. The NUMARC letter states, in part, "Based upon our review of the proposed generic letter we do not believe that a generic safety concern has been identified. Furthermore, we do not believe the proposed testing requirements comply with the cited requirements of the backfit rule and the substantive issues that it addresses."

In addition to the lack of an established position on 120v MCC breaker testing, we have further concluded that testing may actually have adverse safety consequences. In order to test the breakers, they must first be removed from service and then reinstalled following testing. This activity increases the unavailability of safety related equipment and increases the probability of personnel error.

For these reasons, we have concluded that periodic testing is not warranted, and that the factory testing alone is sufficient to comply with Criterion XI.

Topaz Inverter Example:

We have reviewed the testing associated with the Topaz inverters, and have concluded that the existing testing complies with Criterion XI. Both the battery service test and the battery performance test are conducted at voltages which envelope the post accident voltages. For both of these tests, the Topaz inverters are aligned such that they receive power from the batteries and, in turn, power the downstream instruments. During both tests, the battery is discharged below the minimum post accident voltage. After this, the battery charger is placed in the equalize mode where the voltage then is equal to or exceeds the maximum post accident value. One of these tests is performed once per operating cycle.

The voltage setpoints referred to in the Notice of Violation are not relied upon for voltage regulation. As discussed in the Inspection Report, these setpoints have been set out of the way, thus widening the range of acceptable voltage for the inverter. Consequently, the only concern with the setpoints regarding operability of the inverter is if the setpoints were to drift inward toward the centerline of the voltage range. Assurance that this drift has not occurred is verified by either the battery service test or the battery performance test. If either of the setpoints had drifted beyond the post accident voltage limits, then the inverter would trip. This would be annunciated in the Control Room. In addition to the battery testing, the inverters are tested as part of system functional tests. The instruments supplied by the inverters are also checked once per shift.

In summary, since the voltage setpoints are a feature of the inverter which are not relied upon, testing or calibration of these setpoints is not required to comply with Criterion XI. Periodic testing is required, however, to ensure that these setpoints have not drifted to within the post accident voltage limits. This testing is being performed during either the battery service test or the battery performance test.

Additional Actions to be Taken

120v Molded Case Circuit Breaker Example:

We will continue to monitor industry experience related to 120v MCC breaker reliability. We will implement actions, as appropriate, as enhancements to our existing programs. These actions may include a breaker testing program, a breaker replacement program or plant modification to install fuses or fusible breakers.

Topaz Inverter Example:

Although no corrective actions are required to comply with Criterion XI, we are planning additional actions which will enhance the existing testing programs. As indicated in the Inspection Report, we are evaluating a preventative maintenance procedure which will include periodic cleaning of the air intake filter and periodic testing of the voltage trip setpoints.