



Public Service Electric and Gas Company P.O. Box E Hancocks Bridge, New Jersey 08038

Salem Generating Station

March 16, 1988


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

Dear Sir:

SALEM GENERATING STATION
LICENSE NO. DPR-75
DOCKET NO. 50-311
UNIT NO. 2
SPECIAL REPORT 88-2

This Special Report addresses the circumstances surrounding the Channel B Reactor Trip breaker functional surveillance failure which occurred on February 17, 1988. This report is being submitted in accordance with the reporting requirements of Technical Specification 6.9.2.

Sincerely yours,


J. M. Zupko, Jr.
General Manager-
Salem Operations

MJP:pc

Distribution

The Energy People
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PLANT IDENTIFICATION:

Salem Generating Station - Unit 2
Public Service Electric & Gas Company
Hancock's Bridge, New Jersey 08038

IDENTIFICATION OF OCCURRENCE:

Reactor Trip Breaker exceeded time requirement for opening during surveillance testing

Event Date(s): 02/17/88

Report Date: 03/16/88

This report was initiated by Incident Report No. 88-054

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 Reactor Power 100% Unit Load 1140 MWe

DESCRIPTION OF OCCURRENCE:

On February 17, 1988 the Reactor Trip Breaker (RTB) channel "B" Technical Specification Table 4.3-1 Functional Surveillance failed. The breaker indicated opening time exceeded the 10 cycle requirement. It indicated that the breaker opened in 83 cycles.

As required, Technical Specification Table 3.3-1 Action 1 was entered at 1121 hours upon the indicated failure of the breaker. The breaker was replaced with a calibrated spare and at 1247 hours, with successful completion of a functional test, the Action Statement was exited.

Technical Specification Table 3.3-1 Action 1 states:

"With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1 provided the other channel is OPERABLE."

As required by the Technical Specifications, the Nuclear Regulatory Commission was notified at 1157 hours on February 17, 1988.

APPARENT CAUSE OF OCCURRENCE:

The apparent root cause of this event has been attributed to an equipment problem.

RTB Channel "B" was being tested as per its Technical Specification functional testing requirements. The Sequence of Events (SOE) computer indicated that the RTB opened in 83 cycles instead of the required 10 cycles. Subsequently the RTB was declared inoperable. Investigation of this concern did not reveal a specific problem. Subsequent retesting of the RTB showed it functioning as required. Also, the UVTA and breaker forces were similar to the as left data from the previous breaker maintenance.

APPARENT CAUSE OF OCCURRENCE:

It was noted that the SOE printout showed the breaker had opened at the precise time the trip signal was removed. This indicates the computer interrupt, which is normally generated by the trip breaker input to the SOE, malfunctioned. If the computer interrupt did malfunction, it would result in the computer waiting for the next interrupt to occur before polling the SOE inputs for state changes. The next interrupt was then generated by the removal of the trip signal 83 cycles after the trip signal was generated. It is suspected that at this time the computer polled the inputs and found the breaker tripped then time stamped that trip at 83 cycles instead of when the trip actually occurred. This could not be confirmed since additional testing of the replacement trip breaker in this position and of the P-250 computer showed proper timing on the SOE printout.

ANALYSIS OF OCCURRENCE:

The functional surveillance of the reactor trip breakers ensure they will reliably function within the respective time limit to mitigate transients and accidents as taken credit for in the Updated Final Safety Analysis Report (UFSAR).

During the period when the Channel B breaker was not functioning properly, the redundant Channel A breaker was operable and the Channel B bypass breaker was operable. Therefore, this event did not affect the safety of the general public, however, it is reportable to the Nuclear Regulatory Commission in accordance with Technical Specification 6.9.2.

CORRECTIVE ACTION:


Although a specific equipment problem could not be identified the following prudent action was completed prior to declaring the trip breaker suitable for service:

The Undervoltage Trip Attachment (UVTA) was replaced and the breaker maintained in accordance with the breaker maintenance procedure;

The SOE card, suspected of malfunctioning, was checked and reseated;

Cable connections and breaker connections between breaker and the SOE computer were checked for damage and tightness, however, no anomalies were identified; and

The auxiliary relay will be tested during the next scheduled breaker surveillance. This relay is electrically located between the breaker open contacts and the SOE computer.


General Manager -
Salem Operations