

Georgia Power Company
Post Office Box 4545
Atlanta, Georgia 30302
Telephone 404 522-6060



Vogtle Project

Southern Company Services, Inc.
Post Office Box 2625
Birmingham, Alabama 35202
Telephone 205 870-6011

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United States Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

File: X7BG03-M31
Log: GN-200

Reference: Vogtle Electric Generating Plant - Units 1 & 2
50-424; 50-425 Solid State Protection System
Undetectable Failure

Attention: Mr. J. P. O'Reilly

Gentlemen:

Georgia Power has evaluated the above referenced failure and concluded a reportable deficiency does exist. Our evaluation for a substantial safety hazard concluded no report was necessary because delivery of the equipment to Georgia Power had not occurred. Enclosed is our evaluation for a reportable deficiency. Please advise if there are any questions concerning the evaluation.

This response contains no proprietary information and may be placed in the NRC Public Document Room upon receipt.

Yours truly,

D. O. Foster
Vice President and General Manager

CWH/DOF/tlp

xc: U. S. Nuclear Regulatory Commission
Attn: Victor J. Stello, Jr., Director
Office of Inspection and Enforcement
Washington, D.C. 20555

R. J. Kelly
R. E. Conway
G. F. Head
J. T. Beckham, Jr.
J. H. Boykin
D. E. Dutton
R. H. Pinson
D. L. McCrary
R. A. Thomas

J. A. Bailey
O. Batum
H. H. Gregory, III
E. D. Groover
L. T. Gucwa
M. Malcom
C. R. Miles, Jr.
M. Manry
P. D. Rice

R. W. Staffa
J. L. Vota
W. F. Sanders

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EVALUATION FOR A SIGNIFICANT DEFICIENCY
EVALUATION FOR A SUBSTANTIAL SAFETY HAZARD

Undetectable Failure - Solid State Protection System

Initial Report:

On August 27, 1982, Mr. C. W. Hayes, Georgia Power Company Project Quality Assurance Manager, reported to Mr. John Rogge of the USNRC, Region II, a potential deficiency concerning an undetectable failure in the solid state protection system furnished by Westinghouse.

Background Information:

On August 3, 1982, the WRD Safety Review Committee concluded that the potential for undetectable loss of any safeguards actuation function constituted an Unreviewed Safety Question under 10 CFR 50.59 and a Potential Significant Deficiency under 10 CFR 50.55(e). Westinghouse notified Mr. DeYoung, Director of the Inspection and Enforcement Division, by letter dated August 6, 1982 (see attachment).

The SSPS takes binary inputs from the process and nuclear instrument systems. The SSPS combines these signals which represent the conditions of the plant in the required logic combination and generates a trip signal to the reactor trip circuit breakers when the necessary combination of signals occurs. The SSPS also provides annunciator, status light, input signals, trip functions, and the status of the various blocking, permissive, and actuation functions. In addition, the system includes means for semi-automatic testing of the logic circuits.

During review of a schematic diagram of the SSPS, Westinghouse discovered a potential undetectable failure which could exist in on-line testing circuits for relays in the system. The scenario is initiated by failure of a pushbutton test switch to return to its normal position upon

completion of testing. Subsequently, when safeguard system actuation is required, normal voltage may be applied to a relay via a normally shunted test proving lamp. If the lamp coil burns before the relay is energized, then safeguard actuation will not occur.

Analysis of Safety Implications:

The failure of the test pushbutton to return to its normal position and the subsequent burnout of the test proving lamp can possibly prevent the actuation of safeguards equipment. If it is assumed that all nondetectable failures have occurred, then both trains of the safeguards actuation system experience similar, if not identical, failures. The possible improper operation of the safeguards actuation system represents a significant deficiency in the system design which could impact the safe operation of the plant.

Conclusion:

This concern represents a deficiency found in design and construction which, were it to have remained uncorrected, could have affected adversely the safety of operation of the nuclear power plant at any time throughout the expected lifetime of the plant. This also represents a significant deficiency in the design and construction of these components such that test procedures had to be redesigned to check for this failure.

In reviewing this item for reportability as a significant deficiency it was also concluded that there had not been a breakdown in the quality assurance program at Westinghouse.

This item was also reviewed for reportability under Part 10 CFR 21. Since the safeguard cabinets are not scheduled for shipment until March 1983 Georgia Power Company has not taken "delivery" of the cabinets and a Part 10 CFR 21 does not exist.

Corrective Action:

Westinghouse has provided a procedural corrective action which definitely ascertains whether the test pushbuttons have returned to their normal position after testing is complete. (See attachment.) The SSPS Master Relay and Output Relay Test procedure has been modified to include a final series of steps which specifically checks for proper positioning of the test pushbutton, and therefore proper shunting of the proving lamps. The Vogtle Project has reviewed this procedural modification and concluded that the Westinghouse corrective action adequately addresses the issue without the need for hardware modifications.