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Georgia Power

the southern electric system

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0839m
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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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PLANT VOGTLE - UNITS 1, 2
NRC DOCKETS 50-424, 50-425
OPERATING LICENSE NPF-68, CONSTRUCTION PERMIT CPPR-109
ANTICIPATED TRANSIENTS WITHOUT SCRAM MODIFICATIONS

Gentlemen:

By letter dated November 18, 1987, Georgia Power Company submitted information concerning the ATWS Mitigating Systems Actuation Circuitry (AMSAC) system being installed at Plant Vogtle Units 1 and 2. In that letter it was stated that qualification information for the AMSAC output isolation devices in response to Appendix A of the AMSAC SER would be submitted at a later date. In accordance with that commitment, the qualification information provided by Westinghouse is enclosed.

This submission completes the plant-specific information requirements of the AMSAC SER for Plant Vogtle. Please contact this office if you have any questions.

Sincerely,

L. T. Gucwa

JH/lm

Enclosure: AMSAC Isolation Devices

c(w): Georgia Power Company
Mr. P. D. Rice
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U. S. Nuclear Regulatory Commission
Dr. J. N. Grace, Regional Administrator
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Mr. J. F. Rogge, Senior Resident Inspector-Operations, Vogtle

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ENCLOSURE

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AMSAC ISOLATION DEVICES

Electrical independence of AMSAC from the existing Reactor Protection System (RPS) is provided through several means for VEGP.

The feedwater flow inputs to AMSAC will be derived from existing non-IE signals within the process control cabinets. These signals are provided from non-IE flow transmitters which are routed directly to the control cabinets. This arrangement does not require the use of existing or new isolators to provide electrical independence of these instrument channels from the existing RPS.

For measuring turbine load at the first stage, GPC has elected to use existing turbine impulse chamber pressure transmitters, transmitter power supplies, and isolators associated with the 7300 process protection system. Class IE powered isolation devices are provided to electrically isolate the protection circuits in the process protection cabinets from control circuits outside the cabinets. These isolation devices have been tested to demonstrate that they are acceptable for their application as described in WCAP-8892A, "Westinghouse 7300 Series Process Control System Noise Tests". The purpose of the tests was to determine whether or not protection circuitry could be perturbed to the extent that protective action would be prevented by the pick-up or presence of credible interference in control wiring in close proximity to protective wiring. The system was subjected to tests that included magnetic noise, output cable voltage faults (maximum credible voltages: 550 VAC, 250 VDC), cross talk, and random noise. The acceptance criteria for these tests were that the postulated fault should not prevent required protective action and that spurious protective action caused by the postulated fault should be acceptable.

Under all tested conditions the protection circuitry operated as intended. The tests showed conclusively that electrical interference imposed onto the isolator output wiring (control wiring) is not a consideration as to the proper operation of the perturbed channel or any adjacent channels. The recordings verify that the interferences imposed onto the control wirings were not induced into the protection wiring. The magnitude of the electrical interferences introduced into the system and the stringent test procedures far exceeded any conditions

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ENCLOSURE (Continued)

AMSAC ISOLATION DEVICES

that would be present in actual plant operations. Since interferences which could be produced by AMSAC are bounded by the test conditions, it can be concluded that AMSAC would not interfere with operation of the reactor protection system.

Relays are provided at the output of AMSAC for isolating the non-class 1E AMSAC circuits from the Class 1E final actuator circuits. The AMSAC outputs are provided from separate relay panels within the AMSAC cabinet. Separation of the Train A and B circuits within the AMSAC cabinet is achieved through a combination of metal barriers, conduit, and distance.

These relays have been tested with the maximum credible fault (MCF) of 590 VAC applied to the relay coil. Three tests were conducted. In the first test, a strip chart recorder was connected across a normally closed contact to determine the duration of the relay actuation (if any) during application of the fault to the relay coil and to measure the resulting induced voltage on the contact, while a digital voltmeter (DVM) was connected across a normally open contact. In the second and third tests, the strip chart recorder was connected across a normally closed contact while the DVM was connected across a second normally closed contact. During all tests, the contacts operated as expected. Test durations and induced voltages were as follows:

<u>Relay #</u>	<u>Time for coil to burn open (seconds)</u>	<u>DVM Reading (volts)</u>	<u>Recorder Reading (volts)</u>
1	19.45	not observed	0.731
2	19.92	0.618	0.774
3	20.40	1.40	1.032

The relays clearly demonstrated their isolation capability by limiting any propagation of the faulted conditions from the non-1E coil to the 1E contacts to a negligible value. The induced contact voltage (maximum of 1.4 volts) is determined to be well below industry standard pickup and dropout voltages for components typically utilized in the plant circuits.

Additionally, the SER requires that the isolation devices comply with the seismic qualifications and the environmental qualifications (10CFR50.49) which were the basis for plant licensing. The isolators provided in the 7300 process protection system have been seismically qualified. The qualification of the AMSAC output isolation device has been performed in

ENCLOSURE (Continued)

AMSAC ISOLATION DEVICES

accordance with the current Westinghouse seismic qualification program. This program has developed and implemented the requirements of IEEE-344-1975, "IEEE Standard for Seismic Qualification of Class 1E Electrical Equipment for Nuclear Power Generating Stations" for Westinghouse supplied instrumentation and control systems. The qualification of the AMSAC output relays has been performed for a mild environment through the design/purchase specification and the maintenance/surveillance program as described in FSAR Section 3.11.B. The methodology for qualification is contained in WCAP 8587 Rev. 6-A, "Methodology for Qualifying Westinghouse WRD Supplied NSSS Safety Related Electrical Equipment."

It is required that measures be taken to protect the safety systems from electrical interference (i.e., Electrostatic Coupling, EMI, Crosstalk, etc.) that may be generated within AMSAC circuitry. These measures for VEGP are precautions in grounding of the AMSAC cabinet and internal circuits. Also, the circuitry is in a free standing cabinet which would contain any generated noise.

The Class 1E loads operated by the isolation relay contacts are powered from a Class 1E source. The plant specific details of the wiring configuration can be found on the GPC elementary drawing if needed.