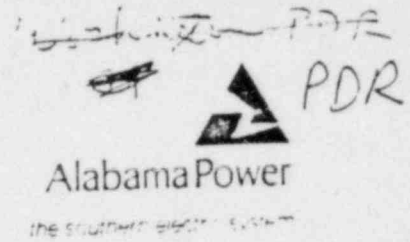


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F. L. CLAYTON, JR.
Senior Vice President



October 11, 1978

Docket No. 50-348

U. S. Nuclear Regulatory Commission
Region II Director
101 Marietta Street, N.W.
Suite 3100
Atlanta, Georgia
ATTN: Mr. James P. O'Reilly

JOSEPH M. FARLEY NUCLEAR PLANT-UNIT NO. 1
QUALIFICATION OF ELECTRICAL TERMINAL BLOCKS

Gentlemen:

As requested in the NRC IE Circular 78-08, a study of environmental qualifications of electrical equipment in the Farley-Unit 1 has been conducted. The study revealed that a full test report was not available for certain terminal blocks inside the containment associated with containment isolation valves, wide-range and narrow-range temperature monitoring, and power-operated relief valves.

The terminal blocks are Type ZWM, Series M-25000, manufactured by States Company, a division of Multi-Amp Corporation. They are twelve, fifteen and sixteen pole front connected terminal blocks with white marker strips. The blocks are mounted inside terminal boxes, one terminal block per terminal box.

The molded base is fabricated from general purpose Durey #791, a brand name of Hooker Chemical and Plastics Corporation for a two-stage asbestos-free phenolic. The barrier strip is fabricated from Allied Chemical Grade FP-1030 polypropylene. Both materials are highly resistant to heat and moisture.

The following is a summary of available information pertaining to the environmental qualification of the terminal blocks:

(a) States Company terminal blocks were used on the motor control center which was tested for environmental conditions simulating the effects of a high energy line break in E. I. Hatch Nuclear Plant. The terminal blocks were tested to a maximum of 250°F, 29 psig, and 100 percent humidity with no detrimental effects.

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(b) Test results compiled by Battelle Memorial Institute indicate that the wood flour-filled phenol formaldehyde retained useful properties beyond the exposure dose of 8.3×10^9 RAD. This material also showed good radiation stability above 500°F .

(c) Polypropylene has been tested by Epstein of Westinghouse and the data compiled by Battelle. It was reported that there is a slight increase in stiffness and some loss of impact strength up to 10^7 RAD. At that dose, the changes in electrical properties are minimal.

(d) The States Company terminal blocks with enclosure were exposed to 1×10^7 RADs (at Georgia Tech) with no significant change to their resistance or dielectric strength.

The above noted tests indicate that the States terminal blocks are very high quality products which should easily withstand the Farley post-accident environments. However, Alabama Power Company has initiated a testing program to further verify the performance of the blocks in the post-accident environment. This program will be completed by the end of the first refueling outage.

The following justification summarizes the detailed investigation of the safety-related equipment associated with these terminal blocks:

(a) Fifty-six terminal blocks are used to connect field wiring to valves which are used for the purpose of containment isolation. The majority of these valves are closed during normal operation and remain closed during post-accident conditions. All containment isolation valves close on loss of power and are not required to reopen following containment isolation signal. The power interruption required to effect a post-accident valve closure will occur even if the terminal block failed.

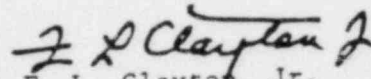
(b) Two terminal blocks serve the pressurizer power-operated relief valves which are normally closed. These valves close on loss of power and are not required to open after an accident.

(c) Twelve terminal blocks are used in the RCS temperature wide-range monitoring and narrow-range trip circuits. The RCS temperature T_c/T_h wide-range monitoring is only required for monitoring emergency plant cooldown rate during later stages of plant life. The RCS temperature T_c/T_h narrow-range instrumentation only provides a trip function for a narrow class of low probability steam line break accidents (0.3 sq. ft. to 0.7 sq. ft. break area). This trip function occurs within the first 100 seconds of the accident.

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This subject was reviewed by the Plant Operations Review Committee and the Nuclear Operations Review Board. Based on the above they determined that the Farley Nuclear Plant can continue operation without affecting the health and safety of the public.

Yours truly,


F. L. Clayton, Jr.

FLCJr:bhj

cc: Mr. R. A. Thomas
Mr. G. F. Trowbridge