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ULNRC- 2177

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT
SAFETY IMPLICATION OF CONTROL SYSTEMS
IN LWR NUCLEAR POWER PLANTS

Reference: Generic Letter 89-19 dated September 20, 1989

Generic Letter 89-19 documented NRC resolution of Unresolved Safety Issue (USI) A-47, "Safety Implications of Control Systems in LWR Nuclear Power Plants". This resolution is based on NUREG 1217, "Evaluation of Safety Implications of Control Systems in LWR Nuclear Power Plants" and NUREG-1218, "Regulatory Analysis for Resolution of USI A-47". NRC has concluded that all PWR plants should provide automatic steam generator (S/G) overfill protection and that plant procedures and technical specifications should include provisions to periodically verify the operability of the overfill protection system.

The S/G overfill protection for Callaway Plant satisfies the requirements of Item 2(a) of Generic Letter 89-19, Enclosure 2. The S/G overfill protection system is based on a 2-out-of-4 safety grade initiating logic, thus making Callaway a Group 1 plant. Upon sensing high level in any S/G, the system isolates Main Feedwater flow to all S/G's by closing the Main Feedwater Isolation Valves (MFIV), the Main Feedwater Control Valves, the Main Feedwater Control Bypass Valves, and by tripping the turbine-driven Main Feedwater Pumps which closes the associated pump discharge valves. This circuitry is depicted on FSAR Figure 7.2-1, Sheets 7, 13, 14 and meets the separation criteria described in FSAR Section 7.1.2.2.1. NRC has previously evaluated the Callaway separation criteria and S/G overfill protection system in support of NUREG-0830, "Safety Evaluation Report Related to the

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Operation of Callaway Plant, Unit No. 1", Sections 7.2.2.7 and 7.3.2.8. NUREG-0830, Supplement 3, Section 7.3.2.8 documents NRC site visits which confirmed the existence of this circuitry.

With the exception of the Main Feed Pump Turbine trip solenoids, as discussed below, the entire S/G overfill protection system is safety-related. Redundant circuitry ensures that a failure of a single active component will not prevent completion of the protection functions (closure of the MFIV's and the Feedwater Control and Bypass Valves). Loss of power will also close the MFIV's and the Feedwater Control and Bypass Valves.

Even though the Main Feedwater Pump Turbine trip signals are generated by the same safety grade system as the remainder of the S/G overfill protection system, the trip solenoids which accomplish the trip function (and the trip solenoid's power source) are non-safety grade and must be energized to trip the turbine. Therefore, a loss of power will not result in a direct Main Feedwater Pump trip. This has little consequence relative to S/G overfill protection because, as discussed above, a safety grade high-high S/G level signal or loss of power will result in closure of the MFIV's and Feedwater Control and Bypass Valves (which are in series, effectively isolating feedwater flow to the steam generators).

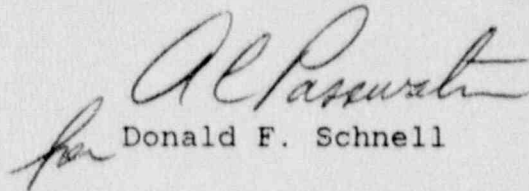
The control portion of the S/G level control system is completely separated, both physically and electrically, from the S/G overfill protection system. The S/G level control system inputs from the level transmitters are isolated via loop power supply cards from the safety grade portion of the system that generates the S/G overfill protection signals. The power source which supplies the level control equipment is different than the power source which supplies the overfill protection system. In addition, the cabinets which house the level control equipment are physically separated from the cabinets which house the overfill protection system. Therefore, a fire in the level control circuitry will not cause a failure of the overfill protection system to perform its intended function.

Callaway Technical Specification Table 3.3-3, Functional Unit 5.b, requires the subject circuitry be operable in Modes 1 and 2 and Table 4.3-2, Functional Unit 5.b. specifies the appropriate surveillance requirements and frequencies. Plant procedures assure these requirements are met.

Based upon the above, Callaway is a plant that already provides a satisfactory design for overflow protection and also has Technical Specifications dealing with the overflow protection system which were previously approved by the Staff. Therefore, no changes or implementation schedule need be provided in response to this generic letter.

If there are any questions with regard to this, please contact me.

Very truly yours,


Donald F. Schnell

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STATE OF MISSOURI)
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Alan C. Passwater, of lawful age, being first duly sworn upon oath says that he is Manager, Licensing and Fuels (Nuclear) for Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By Alan C. Passwater
Alan C. Passwater
Manager, Licensing and Fuels
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SUBSCRIBED and sworn to before me this 10th day
of March, 1990.

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