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F. L. CLAYTON, JR.
Senior Vice President

Alabama Power
the southern electric system

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Docket No. 50-348
50-364

Mr. James P. O'Reilly, Director
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, N. W.
Suite 3100
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

As requested in IE Bulletin No. 80-05 concerning vacuum conditions in chemical and volume control system holdup tanks at Farley Nuclear Plant, Alabama Power Company submits the enclosed response.

Yours very truly,

F L Clayton

F. L. Clayton, Jr.

RWS:de

Enclosure

cc: Mr. R. A. Thomas
Mr. G. F. Trowbridge
Office of I & E Division of Construction Inspection
Washington, D. C.
Mr. M. D. Hunt,
I & E Region II
Office of I & E Division of Reactor Operations Inspection
Washington, D. C.

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Enclosure

Requirement

Review the design of all systems that contain low pressure or holdup tanks that can be valved to contain primary system water. Assure that adequate measures have been taken to protect against vacuum conditions that could result in tank damage with the potential for release of radioactive material or detrimental effects with regard to overall safety of plant operations. Provide a listing of those systems reviewed. Describe any measures that already exist for those systems to protect against vacuum conditions, and either: (1) explain why those measures are adequate in light of the referenced events, or (2) identify corrective actions taken or planned to provide acceptable protection, and provide a schedule for any planned corrective actions.

Response

Volume Control Tank

The volume control tank (VCT) receives letdown from the reactor coolant system and provides suction for charging back into the reactor coolant system. The VCT normally has a gas/liquid volume of 2:1. Design pressure is 75 psig internal and 12 psig external and normal operating pressure is 20-30 psig. A minimum of 18 psig is maintained in the VCT for reactor coolant pump seal operation by a hydrogen supply regulator valve. Normally, gas is continuously vented to the waste gas system at a rate of 0.7 scfm. Should the pressure in the VCT, and thus in the gas venting line, drop to 12 psig, the vent line will automatically isolate preventing further pressure decrease, and an alarm will sound on the Main Control Board which will initiate immediate operator action. Any release or leak from the VCT is monitored by a ventilation radiation monitor. Since the VCT and letdown constitute a closed system, oxygen will not enter the VCT and, therefore, an explosive mixture cannot occur.

Recycle Holdup Tanks

Each recycle holdup tank has a capacity of 28,000 gal., and is designed for atmospheric pressure. Each tank is equipped with a diaphragm for containing radioactive gases and hydrogen and preventing oxygen entrainment. The area above each diaphragm is vented directly to the radwaste ventilation system which discharges to atmosphere via the plant vent. Since the tanks are always vented, negative pressure cannot develop. Since a diaphragm separates the process liquid from the atmosphere, an explosive mixture should not occur. There has been one case in which a potentially explosive mixture of oxygen and hydrogen was discovered under

the diaphragm. Design modifications and revised procedures have been implemented for Unit 1 to provide for more effective venting of the area under the diaphragm. A program is also being formulated to sample tank atmosphere periodically to ensure that hydrogen buildup does not occur. Similar design changes and procedures will be implemented for Unit 2 prior to fuel load.

Liquid Waste Processing Tanks

The waste holdup tank, floor drain tank, and waste monitor tanks are all vented to the waste monitor tank room which discharges to the radwaste ventilation system. Since these tanks are vented to atmosphere, collapse is not possible and any hydrogen remaining in the process liquid cannot accumulate.

Refueling Water Storage Tank

The refueling water storage tank provides borated water for the emergency core cooling system and for refueling operations. The refueling water storage tank is vented to atmosphere so collapse is not possible and any hydrogen introduced into the tank cannot accumulate.

Concentrated Waste Storage Tank

The concentrated waste storage tank provides a storage volume for concentrated waste before transferring to the solidification facility. This tank is provided with a siphon breaker to prevent collapse. Since hydrogen is removed in the evaporation process before the evaporator bottoms reach the tank, an explosive mixture cannot occur in the tank.