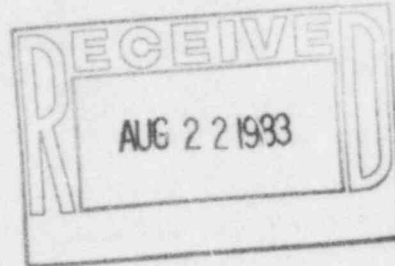




ARKANSAS POWER & LIGHT COMPANY

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August 18, 1983



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Mr. W. C. Seidle, Chief
Reactor Project Branch #2
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

SUBJECT: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Possible Damage to Safety-Related
Equipment Caused by Actuation of
Fire Suppression Systems

Gentlemen:

Prior to receipt of IE Information Notice 83-41 (ØCNAØ68314), "Actuation of Fire Suppression System Causing Inoperability of Safety-Related Equipment," AP&L had initiated a study of possible damage to safety-related equipment resulting from suppression system operation. As a result of that study, we have identified one suppression system to date where safety-related equipment may be subjected to flooding if the suppression system were operated for prolonged periods without operator intervention. The following findings are provided to you as this information is related to IE Information Notice 83-41

Fire zone 2109-U, which is the corridor outside the cable spreading room on elevation 372 feet of the ANO-2 auxiliary building has a suppression system which is a deluge-actuated, directional water spray system actuated by both smoke and line-type heat detectors which alarm in the control room. The equipment located in and around fire zone 2109-U consists of the DC and AC electrical busses, vital instrument busses, distribution panels, selected motor control centers, the station batteries, inverters, and other redundant safety-related equipment. Our recently completed analysis projects that the suppression system, which was installed to protect cable trays in the zone, may damage some of the safety-related electrical equipment installed in and around zone 2109-U because of flooding, if the suppression system is subjected to prolonged operation without operator intervention.

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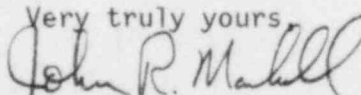
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Our calculations show that after approximately 21.8 minutes of operation, one DC electrical bus (2D01) may fail due to bus shorting resulting from flooding. After approximately 25 minutes of full flow system operation, the second DC bus (2D02) may be lost for the same reason and the plant thereby placed in an unanalyzed condition; namely the loss of both vital DC electrical busses. Based upon the outcome of these calculations, AP&L felt it was prudent to temporarily isolate the suppression system until modifications could be made to minimize the possibility of common-mode failure from water related damage, even though sufficient time was available for operator action to deactivate the suppression system or otherwise moderate room flooding. The system in such an isolated configuration could be operated in a manual mode. The automatic detection capability mentioned previously provides alarms to the control room in case of fire as well.

The action taken to isolate the fire suppression system was found not to be reportable per the Technical Specifications as the suppression system in zone 2109-U is not included in the suppression system specification (Specification 3.7.10.2). The unanalyzed condition resulting from prolonged operation of the system without operator intervention was deemed not reportable, as sufficient time allowance was available for operator response. Procedures currently require that upon receipt of a fire alarm in the control room an immediate response will be provided in the form of: (1) the fire brigade who are dispatched to the alarm origin; or (2) an operator who is dispatched to determine whether or not a fire is present and will advise the control room of the situation so that the fire brigade can be alerted as appropriate. Upon arriving at zone 2109-U, the appropriate individuals would evaluate the fire situation. If suppression system operation could not be terminated, merely opening the doors separating the turbine building from zone 2109-U, (which would occur when personnel were evaluating the alarm) would alleviate flooding. Since most suppression system actuations are associated with activities other than fire, i.e. spurious actuations, it was desirable in the short term to isolate the deluge valve supplying water to the 2109-U suppression system, and to rely on manual operation of the system.

A waterproof curbing has been installed to protect one of the redundant DC electrical busses from flooding. Our calculations show that the 2109-U zone corridor water level attains a maximum depth of 6 inches, at which point the level stabilizes for the duration of system operation. The system has been returned to automatic actuation as suppression spray operation can now continue for an indefinite period of time without flooding the redundant vital DC bus. We are also evaluating the possibility of changing system operation from deluge to pre-action water spray or providing other such changes which would alleviate undue flood damage resulting from inadvertent system actuation.

We intend to continue our evaluation of all areas of the plant where suppression systems have been installed to protect safety-related equipment from fire damage. We will advise you of any additional similar areas we may find.

Very truly yours,

John R. Marshall
Manager, Licensing

JRM: DLL:sl