

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

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DOCKET NUMBER 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

EVENT DATE 69 70 71 72 73 74 75 76 77 78 79 80

REPORT DATE 75 76 77 78 79 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES 10

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Prior to receipt of IE Information Notice 83-41, (OCNA068314), "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. 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

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CAUSE CODE 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

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PRIME COMP. SUPPLIER 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

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CAUSE DESCRIPTION AND CORRECTIVE ACTIONS 27

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The fire suppression system for Fire Zone 2109-U was installed per the requirements of the 1978 Fire Protection Safety Evaluation Report. The original drainage assessment portion of the design changes was based on engineering judgment instead of detailed hydraulic calculation. A recent preliminary hydraulic calculation indicated that flooding could occur. Upon notification that a problem could exist, AP&L decided to isolate the 2109-U suppression system and to rely on manual operation of the system until a more refined calculation could

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NRC USE ONLY 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180

NAME OF PREPARER: Patrick Rogers

PHONE: (501) 964-3100

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PDR ADOCK 05000360
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LICENSEE EVENT REPORT

EXHIBIT A

LER No. 50-368/83-035/99X-1Occurrence Date: 08/03/83

Event Description and Probable Consequences (Continued)

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. 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. Based upon the outcome of these calculations, AP&L felt 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. This report is being submitted for information since these findings are related to Information Notice 83-41. Subsequent to the above, a review of the calculations identified some inaccuracies. The inaccuracies were corrected and additional conservatism was introduced. The results of revised calculations indicated that in the original configuration, 2D01 would have flooded between 9.0 and 9.5 minutes and 2D02 would have flooded at approximately 15 minutes. Even with the reduced flooding times, it is felt that sufficient time was available for operator action to deactivate the suppression system or otherwise moderate room flooding prior to redundant DC Bus 2D02 flooding. Due to modifications made at the time of the previous report, the revised calculations indicated that 2D02 would not be flooded until approximately 26 minutes.

Cause Description and Corrective Actions (Continued)

be made. This interim action was taken since most system actuations are associated with activities other than fire (i.e., spurious actuations). A more refined calculation indicated that sufficient time for operator intervention existed; however, it was decided to make a modification to increase the margin of safety and relieve the necessity for operator response for purposes other than fire alarm investigation. A waterproof curbing has been installed to protect one of the redundant DC electrical busses from flooding based on calculations which show that the 2109-U zone water 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. Subsequent to our initial report, inspections of Corridor 2109 revealed that gaps between the bottom of various fire doors and the floor had changed. A fire watch was posted immediately upon discovery. It was decided not to correct the door gap problems because of the flooding issue. Though sufficient time was available to moderate the flooding, the sprinkler system for Corridor 2109 was isolated until the flooding issue can be better resolved. Based on the revised calculations, a design change has been completed which installed waterproof curbing to protect both 2D01 and 2D02. This curbing is of sufficient height to preclude flooding of 2D01 or 2D02. The evaluations discussed above are continuing.



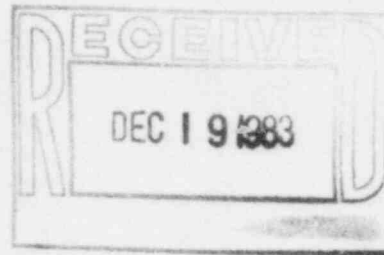
ARKANSAS POWER & LIGHT COMPANY

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December 9, 1983

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Mr. J. E. Gagliardo, Director
Division of Resident Reactor Projects
and Engineering Programs
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
Licensee Event Report
No. 83-035/99X-1

Gentlemen:

The subject Licensee Event Report 83-035/99X-0 is submitted for information since these findings are related to Information Notice 83-41. This is a revision to a previous submittal dated September 2, 1983.

Very truly yours,

John R. Marshall
John R. Marshall
Manager, Licensing

JRM:RJS:s1

Attachment

cc: Mr. Richard C. DeYoung
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. Norman M. Haller, Director
Office of Management & Program Analysis
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555