NRC FORM 366
(7-77)

U.S. NUCLEAR REGULATORY COMMISSIO

LICENSEE EVENT REPORT

EXHIBIT

CONTROL BLOCK: |__|__|__|__|__|__|1 (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

|0|1| |A|R|A|N|0|2|2 LICENSEE CODE |0|0|-|0|0|0|0|0|-|0|0|3 LICENSE NUMBER |4|1|1|1|1|4 LICENSE TYPE |_|_|5 CAT

|0|1| REPORT SOURCE |L|6 |0|5|0|0|0|3|6|8|7 DOCKET NUMBER |0|8|0|3|8|3|8 EVENT DATE |0|9|0|2|8|3|9 REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES 10

|0|2| Prior to receipt of IE Information Notice 83-41, (OCNA068314), "Actuation of Fire Suppression System Causing
|0|3| Inoperability of Safety-Related Equipment," AP&L had initiated a study of possible damage to safety-related
|0|4| equipment resulting from suppression system operation. As a result of that study, we have identified one
|0|5| suppression system to date where safety-related equipment may be subjected to flooding if the suppression
|0|6| system were operated for prolonged periods without operator intervention. Fire zone 2109-U, which is the
|0|7| corridor outside the cable spreading room on elevation 372 feet of the ANO-2 Auxiliary Building, has a sup-
|0|8| pression system which is a deluge-actuated, directional water spray system actuated by both smoke and line-type

|0|9| SYSTEM CODE |A|B|11 CAUSE CODE |B|12 CAUSE SUBCODE |A|13 COMPONENT CODE |Z|Z|Z|Z|Z|Z|14 COMP SUBCODE |Z|15 VALVE SUBCODE |Z|16

17 LER/RO REPORT NUMBER: EVENT YEAR |8|3| |---| SEQUENTIAL REPORT NO. |0|3|5| |/| OCCURRENCE CODE |9|9| REPORT TYPE |X| |---| REVISION NO |0|

ACTION TAKEN |X|18 FUTURE ACTION |X|19 EFFECT ON PLANT |Z|20 SHUTDOWN METHOD |Z|21 HOURS |0|0|0|0|22 ATTACHMENT SUBMITTED |Y|23 NPRD-4 FORM SUB |N|24 PRIME COMP. SUPPLIER |Z|25 COMPONENT MANUFACTURER |Z|9|9|9|26

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS 27

|1|0| The fire suppression system for fire zone 2109-U was installed per the requirements of the 1978 Fire Protection
|1|1| Safety Evaluation Report. The original drainage assessment portion of the design changes was based on engi-
|1|2| neering judgment instead of detailed hydraulic calculation. A recent preliminary hydraulic calculation indi-
|1|3| cated that flooding could occur. Upon notification that a problem could exist, AP&L decided to isolate the
|1|4| 2109-U suppression system and to rely on manual operation of the system until a more refined calculation could

|1|5| FACILITY STATUS |E|28 % POWER |0|9|0|29 OTHER STATUS NA |30 METHOD OF DISCOVERY |A|31 DISCOVERY DESCRIPTION Engineering Calculation |32

|1|6| ACTIVITY RELEASED |Z|33 CONTENT OF RELEASE |Z|34 AMOUNT OF ACTIVITY NA |35 LOCATION OF RELEASE NA |36

PERSONNEL EXPOSURES
|1|7| NUMBER |0|0|0|37 TYPE |Z|38 DESCRIPTION NA |39

PERSONNEL INJURIES
|1|8| NUMBER |0|0|0|40 DESCRIPTION NA |41

LOSS OF OR DAMAGE TO FACILITY
|1|9| TYPE |Z|42 DESCRIPTION NA |43

PUBLICITY
|2|0| ISSUED |N|44 DESCRIPTION NA |45 NRC USE ONLY |_|_|_|_|_|_|_|_|_|_|_|_|

NAME OF PREPARER: Patrick Rogers PHONE: (501) 964-3100

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U.S. NUCLEAR REGULATORY COMMISSIO

LICENSEE EVENT REPORT

EXHIBIT

LER No. 50-368/83-035/99X-0

Occurrence 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.

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.

ARKANSAS POWER & LIGHT COMPANY
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September 2, 1983

2CAN098302

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

Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Licensee Event Report
No. 83-035/99X-0

Gentlemen:

The subject Licensee Event Report 83-035/99X-0 is submitted for information since these findings are related to Information Notice 83-41.

Very truly yours,

John R. Marshall
Manager, Licensing

JRM:RJS:sl

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

1/1 IE-22