



ARKANSAS POWER & LIGHT COMPANY
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January 16, 1981

1-011-14

Director of Nuclear Reactor Regulation
ATTN: Mr. Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
ICS Reliability Analysis Information
(File: 1510)

Gentlemen:

Your letter of November 7, 1979 requested Arkansas Power & Light provide its position on recommendations contained in Babcock and Wilcox Report 1564, "Integrated Control System Reliability Analysis". Attached are comments which describe how AP&L plans to implement the recommendations, the schedule for implementation or basis for not implementing the recommendations.

Very truly yours,

David C. Trimble
for David C. Trimble
Manager, Licensing

DCT:LDY:s1

Attachment

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1.a. NNI/ICS power supply reliability.

Response

No corrective action is necessary at ANO-1 since the DC power supplies (redundant plus and minus supplies with diode auctioneering) for the ICS receive power from two (2) sources; i.e., a vital inverter supply and an instrument AC supply from the emergency bus. Additionally, the external ICS AC loads are provided from the above sources via an automatic transfer switch with the inverter source preferred.

1.b. Reliability of input signal from the NI/RPS system to the ICS - specifically, the RC flow signal.

Response

AP&L has not seen any reliability concerns with the RC flow signal including the jack which connects the buffered RPS flow signal with the ICS. Due to signal oscillations, an auctioneered RCS flow input signal to the ICS is considered impractical. Therefore, no modifications are planned at this time.

1.c. ICS/BOP system tuning, particularly feedwater condensate systems and the ICS controls. NOTE: Although this concern is related to tuning, it appears that more basic design and/or operational problems in the feedwater (and related) system may exist. Therefore, include a discussion of the following items:

- (1) Any particular operational (startup, etc.) problems experienced at your plant with respect to the ICS. Reference to previously submitted information is acceptable.
- (2) Basis for operator intervention in place of automatic ICS action (including startup, power generation and shutdown activities).
- (3) Procedures used by the operator to perform the operation described in 1.c.(2) above.
- (4) Additional training provided to the operator.

Response

- (1) The Operating Experience section of the "Integrated Control System Analysis" (BAW-1564) provides the most comprehensive summary of ICS problem experience now available.
- (2) The operators will not intervene with the ICS functioning unless there is reason to believe it is malfunctioning. However, if there have been previous problems, it is quite probable control will be taken based on past experiences. AP&L does not intend to instruct operators not to override ICS controls since this could lead to additional RPS challenges. This area is dependent on operator training and AP&L has increased ICS training as a result of concerns raised on this system.

- (3) There are no specific procedures which instruct the operator when to intervene with automatic ICS controls as long as system conditions allow automatic maneuvering. This concern for operator override of ICS is best handled by increased operator training instead of additional procedures. Procedures relating to ICS operation include O.P. 1105.04, "Integrated Control System", and O.P. 1203.01, "ICS Abnormal Operation".
- (4) Appropriate ICS training is currently included in simulator training, operator license training and requalification training. AP&L has in place a training effectiveness evaluation system which will assess, specifically, the impact of training results on individual job performance and, ultimately, the reliability, efficiency and safety of ANO. Therefore, we feel our existing program will be monitored and updated as needed to assure adequate training in all areas of nuclear plant operation including ICS operation.

- 2.a. Main feedwater pump turbine drive minimum speed control - to prevent loss of main feedwater or indication of main feedwater.

Response

The ANO-1 main feedwater pump turbine drive minimum speed control set-point is verified each time the pump is started up. As a result, no problems have resulted at minimum feedwater flow conditions. Therefore, no modifications are currently being planned.

- 2.b. A means to prevent or mitigate the consequence of a stuck-open main feedwater startup valve.

Response

The isolation valves for main feedwater will be modified during the current ANO-1 refueling outage to receive safety grade power. This will greatly improve the ability to isolate a stuck-open main feedwater startup valve.

- 2.c. A means to prevent or mitigate the consequences of a stuck-open turbine bypass valve.

Response

Operations will recognize a stuck-open turbine bypass valve as a steam line break and react to it as that. The indication will be low steam generator pressure in one loop, a large increase in reactor power and low Tave. Once recognized, operations would mitigate the consequences by manually closing the block valve. This would be possible without excessive cooldown as demonstrated by Rancho Seco during startup testing.