



UNITED STATES  
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Docket No. 50-313

*AS* R. C. DeYoung, Assistant Director for Pressurized Water Reactors, L  
THRU: A. Schwencer, Chief, Pressurized Water Reactors Branch No. 4, L

MEETING WITH ARKANSAS POWER AND LIGHT COMPANY BABCOCK & WILCOX AND  
BECHTEL, CONCERNING REVIEW OF THE OPERATING LICENSE APPLICATION FOR  
ARKANSAS NUCLEAR ONE - UNIT 1

Enclosed is a report of the meeting held on January 23, 1973 with  
Arkansas Power and Light Company. The attendance list is also  
enclosed.

A handwritten signature in cursive script, reading "R. M. Bernero", is positioned above the typed name.

R. M. Bernero, Project Manager  
Pressurized Water Reactors Branch No. 4  
Directorate of Licensing

Enclosures:

1. Meeting Report
2. Attendance List

cc: RSBoyd  
DSkovholt  
DKnuth  
RMaccary  
RTedesco  
HDenton  
PWR Branch Chiefs  
RWKlecker  
MRosen  
RO (3)  
AEC PDR  
Local PDR  
Attendees

8004280 741

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ENCLOSURE 1

ARKANSAS POWER AND LIGHT COMPANY  
ARKANSAS NUCLEAR ONE-UNIT 1  
DOCKET NO. 50-313  
REPORT OF MEETING - JANUARY 23, 1973

Summary

The meeting was held to discuss the outstanding inquiry on in-situ testing of active valves and to present to the applicant the results of the staff's electrical and control safety evaluation.

The applicant was given some guidance on how he might respond to the December 27, 1972, inquiry on active valves. Arkansas Power and Light Company (AP&L) agreed to consider the guidance given and notify the Project Manager as soon as possible of the scope and schedule of their response.

The principal conclusions of the electrical and control safety evaluation were enumerated to AP&L. All of the safety concerns involved were previously known to the applicant. The status of resolution of outstanding items was reviewed.

Valves

The applicant and his contractors first explained the practices that are being followed for the procurement and test of valves. Certain valves are prequalified and all the active valves must meet the Class I code (Arkansas 1 FSAR terminology). The valves are typically mounted and snubbed so that the top works are subjected to no more than 3g acceleration in any direction and the minimum frequency is 20 Hz. The valves themselves are built to ASME code and some operators, such as Limitorque, have U. S. Navy specifications and tests.

The installed tests of valves were summarized using the Decay Heat Removal System (DHRS) as an example. The sequence of tests enumerated was:

1. DHRS Electrical Test ("unloaded" operation)
2. DHRS Hydrostatic Test
3. DHRS Functional Test (flow, pressure drop, etc.)
4. DHRS Engineered Safeguards Test (functional)
5. Integrated Engineered Safeguards Test
6. Technical Specification Surveillance Tests

The AEC staff then commented on the matter. The valve problems that have been found in operating plants are the cause of the AEC's concern. It was emphasized that the concern here is about the operability of valves, not about valve body integrity. The staff concern is with safety related active valves, namely those which must operate (in the words of the FSAR guide):

1. to prevent or mitigate the consequences of accidents and malfunctions originating within the reactor coolant pressure boundary,
2. to permit shutdown of the reactor and maintenance in the safe shutdown condition, and
3. to contain radioactive material.

The generic nature of this question was acknowledged and AP&L was assured that the staff was not trying to burden them alone with its resolution. AP&L was told that the staff expects any practical test program to reflect plant-to-plant prototypeness and not to test every valve.

There was some discussion of in-situ test methods where a relatively small exciter is mounted on the component of interest.

AP&L was asked to provide a systemized tabulation of all Category I systems' active valves, giving related system conditions, predicted seismic response and how conditions have been met or would be met by test. AP&L should consider additional testing to simulate seismic excitation and appropriate plant conditions, at least of active valves in the reactor coolant pressure boundary. The staff indicated to AP&L that it might be acceptable to cover all active valves on a schedule extending past the fuel loading date.

AP&L agreed to confer with their contractors and notify the AEC promptly of the proposed scope and schedule of their response.

#### Electrical and Control Review

The results of the electrical and control safety review were summarized to AP&L by the following list of 18 items:

1. Reactor Protective System (RPS): The Reactor Building pressure sensors are analog; the drawings call for digital units. AP&L should determine which is proper and correct accordingly.

2. Primary Makeup Pumps: The third makeup pump is set up as an installed spare for automatic start if the parallel companion does not start. Based on current emergency loads for the diesel generator, the extra 700 H.P. load that would be imposed if both pumps were to start by mistake is considered excessive and might cause the loss of the diesel generator. AP&L has the choice of incorporating appropriate tests of the time delay relay circuit in the Technical Specifications or modifying the design to have the extra pump on manual start only.
3. Engineered Safeguards Actuation System: A number of omissions and errors have been identified related to the reactor building and penetration room ventilation systems. These were pointed out in preceding drawing review meetings; AP&L must correct these.
4. Air-Operated Valves: The design philosophy for air-operated valves was questioned during the review. AP&L has recently confirmed the design approach that loss of air puts safety related air-operated valves in the safeguards position. AP&L must complete a review of all air-operated valves to confirm that they conform.
5. Valve Torque Switch Interlocks: Because the torque switch is bypassed only during the first portion of valve travel, AP&L should evaluate and consider valve tests with momentary loss of power to demonstrate that valves stopped at mid travel will complete their strokes.
6. Decay Heat Removal System (DHRS) Valve Interlocks: During the design review the AEC staff furnished AP&L the control requirements for the valves isolating the low pressure portions of the DHRS. AP&L must redesign the controls for these valves and furnish the details to the AEC.
7. Core Flooding Tank (CFT) Isolation Valves: AP&L should modify the control system of the CFT isolation valves as indicated during the review meetings.
8. Lubricating Oil for Engineered Safeguards Pumps: If the pumping and cooling of the lubricating oil is essential for these pumps (injection and spray pumps), then the associated instrument and control systems must meet the objectives of IEEE-279.

9. Safety Related Switchgear Room Coolers: Since the coolers for both rooms derive power from the same source, AP&L must analyze to determine the results of the single failure of this power source.
10. Reactor Coolant Pressure Transmitters: These transmitters effect a reactor coolant pressure reactor trip on a 2-out-of-3 basis; two of them are mounted on the same instrument rack in the Reactor Building. Assuming a common mode failure disabling these two transmitters, AP&L should demonstrate the acceptability of this arrangement on the basis that diverse instrumentation provides equal protection, or these pressure sensors should be separated.
11. Diesel Generator Room Door: AP&L should demonstrate the adequacy of the door between the diesel generator rooms to prevent simultaneous flooding of both diesel generator rooms.
12. Battery Room Ventilation: AP&L should show that the ventilation duct connecting the two battery rooms does not violate separation criteria or change the design.
13. Feedwater Control System: The safety significance of the feedwater and emergency feedwater control systems remains to be resolved.
14. Underfloor Cables in Control and Computer Rooms: AP&L should demonstrate the adequacy of these cable installations to withstand all design basis events (fire, flood, etc.).
15. Overhead Cables in Control Room: AP&L should provide a fire barrier between these cables and the Control Room as well as a suitable fire suppression system for these cables.
16. Control Room Package Coolers: AP&L should evaluate the failure mechanisms of these coolers and their effect on adjacent safety related equipment.
17. Use of Diesel Generators for Peaking Service: The use of emergency diesel generators for peaking service shall not be permitted because it compromises the independence of emergency power sources.
18. Offsite Power Connection: The interlock schemes used in the offsite power connections are too vulnerable to single failures. Moreover, the design approach frequently treats the emergency generators as the preferred source of power rather than the offsite power system. AP&L should review the design and revise as necessary.

AP&L and their contractors commented on these items as follows:

1. The analog signal goes to a bistable, the bistable output to the RPS; the B&W drawings will be changed to show the analog transmitter as well as the bistable.
2. AP&L will modify the Technical Specifications to test the time delay relay. They will set the service water valve lineup to the lube oil coolers to suit automatic start requirements.
3. AP&L has completed the design corrections as indicated.
4. AP&L is still checking.
5. This treatment of the torque switch is standard design; AP&L contends it is safe to leave it so. They further contend that these valves will restart in mid stroke; the high torque of interest is only at the end of the stroke.
6. AP&L is still working on this.
7. AP&L is still working on this.
8. AP&L is still working on this.
9. AP&L is still working on this. (They are going to two power supplies.)
10. AP&L will review.
11. AP&L is still working on this.
12. AP&L is changing the duct location.
13. This item is open.
14. AP&L said there are only two safety related cables (DC power cables) under the Computer Room floor; they are separated and in steel conduit. All safety related cables under the Control Room floor are in PVC-coated flexible steel conduit.
15. AP&L wondered if enclosing the trays would do. They expressed concern about meeting seismic criteria with the fire barrier.

16. AP&L will evaluate.
17. AP&L asked if this meant not even one; the answer was yes, not even one.
18. AP&L agreed to perform a design audit for the independence criteria of IEEE-308, especially regarding the generator lockout relay.

ENCLOSURE 2

ATTENDANCE LIST  
ARKANSAS NUCLEAR ONE-UNIT 1  
JANUARY 23, 1973

Arkansas Power and Light Company

W. Cavanaugh  
D. Rueter  
J. Grisham

Babcock & Wilcox

H. A. Baker  
G. F. Gleib  
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G. Katanics  
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J. Haidinger  
B. Leonard  
J. Oszewski  
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USAEC-DL

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R. R. Maccary  
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