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April 5, 1996

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U. S. Nuclear Regulatory Commission
Document Control Desk
Mail Station P1-137
Washington, DC 20555

Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Licensee Event Report 50-313/96-002-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(i)(B), enclosed is the subject report concerning Reactor Protection System surveillance testing.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Dwight C. Mims".

Dwight C. Mims
Director, Nuclear Safety

DCM/tfs

enclosure

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9604100013 960405
PDR ADOCK 05000313
S PDR

Handwritten initials or a signature, possibly "IK22" with a vertical line and the number "11" below it.

cc: Mr. Leonard J. Callan
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Institute of Nuclear Power Operations
700 Galleria Parkway
Atlanta, GA 30339-5957

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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| FACILITY NAME (1) Arkansas Nuclear One - Unit 1 | DOCKET NUMBER (2) 05000313 | PAGE (3) 1 OF 4 |
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TITLE (4) SURVEILLANCE TESTS REQUIRED BY TECHNICAL SPECIFICATIONS WERE INCOMPLETE BECAUSE ALL COMBINATIONS OF REACTOR PROTECTION SYSTEM CHANNEL TRIP RELAY CONTACTS WERE NOT TESTED DUE TO PROCEDURE DEFICIENCIES

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|--------------------|-----|------|---|-------------------|-----------------|------------------|-----|------|-------------------------------|----------------|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 03 | 08 | 96 | 96 | 002 | 00 | 04 | 05 | 96 | FACILITY NAME | DOCKET NUMBER |
| OPERATING MODE (9) | | N | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11) | | | | | | | |
| POWER LEVEL (10) | | 100 | 20.402(b) | | | 20.405(c) | | | 50.73(a)(2)(iv) | 73.71(b) |
| | | | 20.405(a)(1)(i) | | | 50.36(c)(1) | | | 50.73(a)(2)(v) | 73.71(c) |
| | | | 20.405(a)(1)(ii) | | | 50.36(c)(2) | | | 50.73(a)(2)(vii) | OTHER |
| | | | 20.405(a)(1)(iii) | | X | 50.73(a)(2)(i) | | | 50.73(a)(2)(viii)(A) | Specify in |
| | | | 20.405(a)(1)(iv) | | | 50.73(a)(2)(ii) | | | 50.73(a)(2)(viii)(B) | Abstract Below |
| | | | 20.405(a)(1)(v) | | | 50.73(a)(2)(iii) | | | 50.73(a)(2)(x) | and in Text |

LICENSEE CONTACT FOR THIS LER (12)

| | |
|--|--|
| NAME Thomas F. Scott, Nuclear Safety and Licensing Specialist | TELEPHONE NUMBER (Include Area Code) 501-858-4623 |
|--|--|

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs |
|-------|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
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SUPPLEMENTAL REPORT EXPECTED (14)

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|--|---------|-------------------------------|-------|-----|------|
| YES (If yes, complete EXPECTED SUBMISSION DATE) | NO X | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|--|---------|-------------------------------|-------|-----|------|

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

During a review associated with NRC Generic Letter (GL) 96-01, "Testing of Safety-Related Logic Circuits," ANO-1 personnel discovered that Reactor Protection System (RPS) channel trip relay contacts used in breaker output logic circuits had not been tested in all possible combinations during monthly surveillance testing required by Technical Specifications. Proper actuation of the relays was being verified but not actuation of all contacts from those relays. Testing was performed within the limits of Technical Specification 4.0.3 and verified that all previously untested contacts functioned properly. If all the untested contact combinations were to have failed, a reactor trip would have been prevented only if one channel was bypassed and a channel trip relay failed to actuate in another channel. The root cause of this condition was attributed to inadequate surveillance testing procedures. The test method had not changed since procedures were developed in 1974. Appropriate procedures were changed to require testing of all possible contact combinations. A review of RPS and Engineered Safety Features Actuation Systems of both units will be performed as requested by GL 96-01. This condition was determined not to exist in the procedures used for testing the corresponding ANO-2 system.

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| NRC FORM 366A (5-92) | | U.S. NUCLEAR REGULATORY COMMISSION | | APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95 | |
| LICENSEE EVENT REPORT (LER) TEXT CONTINUATION | | | | ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503. | |
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| Arkansas Nuclear One - Unit 1 | | 005000313 | | YEAR | SEQUENTIAL NUMBER |
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

A. Plant Status

At the time this condition was discovered, Arkansas Nuclear One Unit 1 (ANO-1) was operating in steady-state conditions at approximately 100 percent power.

B. Event Description

On March 8, 1996, ANO-1 determined that Reactor Protection System (RPS) [JC] channel trip relay contacts used in breaker output logic circuits had not been tested in all possible combinations during monthly surveillance tests required by Technical Specifications.

Generic Letter (GL) 96-01, "Testing of Safety-Related Logic Circuits," was issued by the Nuclear Regulatory Commission to request a review of the adequacy of surveillance testing methods to ensure that all portions of logic circuits are tested to fulfill Technical Specification requirements. During the review associated with GL 96-01, ANO-1 personnel identified a deficiency in the monthly surveillance testing procedures. The RPS coincidence logic is designed to open the Control Rod Drive (CRD) [AA] trip breakers when any two of the four channel trip relays deenergize. Six combinations are possible: AB, AC, AD, BC, BD, and CD. The RPS monthly surveillance tests were found to be testing only three combinations in each channel. In channel A, combinations AB, AC, and AD were being tested. In channel B, combinations AB, BC, and BD were being tested. In channel C, combinations AC, BC, and CD were being tested. In channel D, combinations AD, BD, and CD were being tested.

ANO-1 entered Technical Specification 4.0.3 at 2018 hours on March 8, 1996. This allowed a delay of the actions required by Technical Specification 3.0.3 for up to 24 hours in order to complete the required testing. RPS trip logic testing began at 2154 hours. Testing on all four RPS channels was satisfactorily completed at 0005 hours on March 9, 1996. The previously untested contacts all functioned correctly.

C. Root Cause

A review of the RPS channel test procedure revisions indicated that the coincidence logic testing methodology had not changed since the original procedure development and review in early 1974. The supervisor's approval of the original draft of the procedures indicated that the procedures had been checked for conflicts with the Technical Specifications and none were found. The ANO-1 Technical Specifications do not contain any discussion of the basis for this test. The root cause of this condition is attributed to inadequate surveillance testing procedures. Since the oversight in procedure development occurred 22 years earlier, a more definitive root cause could not be determined.

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D. Corrective Actions

Immediate actions were taken that verified operability of the RPS as described above.

A review of the test methods used for the corresponding ANO-2 system determined that this condition is not applicable.

The four RPS monthly test procedures were changed to require testing of all possible combinations of trip coincidence logic.

A review of the RPS and Engineered Safeguards Actuation Systems (ESAS) [JE] will be performed as requested by GL 96-01. The review will be completed on the schedule requested by the GL, currently estimated to be March 20, 1998, for ANO-1 and April 11, 1997, for ANO-2.

E. Safety Significance

A review of previous Licensee Event Reports revealed no instance of the ANO-1 RPS failing to trip upon receipt of a trip signal. If all the untested contact combinations were to have failed, a reactor trip would have been prevented only in the case where a channel was bypassed and a channel trip relay failed to actuate in another channel. The RPS monthly tests had been verifying, based upon indicating lamps in each RPS channel, that all relays involved in the coincidence logic deenergized when required. Furthermore, the untested combinations all performed as expected when testing was performed. For these reasons, this condition is judged to have minimal safety significance.

F. Basis for Reportability

Technical Specification Table 4.1-1, item 1, requires that a monthly surveillance test be performed for "Protective Channel Coincidence Logic." Since the ANO-1 surveillance procedures did not verify proper actuation of all contacts associated with channel trip relays, operability of those circuits had not been adequately verified. This condition was determined to be an operation prohibited by Technical Specifications reportable in accordance with 10CFR50.73(a)(2)(i)(B).

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G. Additional Information

Inadequate surveillance testing of contacts in circuits in ESAS components was reported in Licensee Event Reports (LERs) 50-313/94-003-01 (letter 1CAN019501) and 50-368/94-004-00 (letter 2CAN119401). As part of the corrective actions for these conditions, a task force elected not to expand the scope of the review to other systems. Reasons for not reviewing RPS testing included the perception that identified problems were isolated to circuit breaker logic, protective instrumentation design specifications being better defined to support test development, and fewer industry problems related to protective instrumentation testing. There have been no similar events involving the RPS systems of either unit that were reported as LERs.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].