

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION IV

Report Nos. 50-313/79-10
50-368/79-10

Docket NO. 50-313
50-368

License No. DPR-51
NPF-6

Licensee: Arkansas Power and Light Company
P.O. Box 551
Little Rock, Arkansas 72203

Facility Name: Arkansas Nuclear One (ANO), Units 1 and 2

Inspection at: ANO Site, Russellville, Arkansas

Inspection Conducted : May 14-June 17, 1979

Inspectors:

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W. D. Johnson, Reactor Inspector Date

R. G. Spangler 6/27/79
R. G. Spangler, Reactor Inspector Date

T. F. Westerman for 7/3/79
G. H. Verduzco, Reactor Inspector Date

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E. A. Cupp, Reactor Inspector Date

T. F. Westerman 7/3/79
T. F. Westerman, Chief, Reactor Projects
Section Date

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Approved by

T. F. Westerman
 T. F. Westerman, Chief, Reactor Projects
 Section

7/3/79
 Date

Inspection Summary

Inspection conducted during period of May 14-June 17, 1979
(Report No. 50-313/79-10)

Areas Inspected: Routine, announced inspection of previously identified inspection items, licensee actions in response to IE Bulletins, design changes, system testing, and physical barriers. The inspection involved 266 inspector-hours on-site by five (5) NRC inspectors.

Results: Within the five areas inspected, one item of noncompliance was identified (infraction - physical barrier, paragraph 12).

Inspection conducted during period of May 14-June 17, 1979
(Report No. 50-368/79-10)

Areas Inspected: Routine, announced inspection of previously identified inspection items, licensee actions in response to IE Bulletins, and physical barriers. The inspection involved 79 inspector-hours on-site by three (3) NRC inspectors.

Results: Within the three areas inspected two items of noncompliance were identified (infraction - failure to adhere to procedure, paragraphs 2 and 10; and infraction - physical barrier, paragraph 12).

DETAILS

1. Persons ContactedArkansas Power & Light Company Employees

J. P. O'Hanlon, ANO General Manager
 G. H. Miller, Engineering & Technical Support Manager
 L. Alexander, QC Engineer
 B. A. Baker, Operations Superintendent
 T. N. Cogburn, Nuclear Engineer
 E. C. Ewing, Plant Engineering Superintendent
 P. Jones, Maintenance Superintendent
 B. A. Terwilliger, Operations and Maintenance Manager
 J. Robertson, ANO-1 Operations Supervisor
 S. Petzel, Licensing Engineer
 F. Foster, Plant Administrative Manager
 M. Stroud, Assistant Maintenance Superintendent
 R. Elder, I & C Supervisor
 R. Tucker, Electrical Engineer
 J. McWilliams, Planning & Scheduling Supervisor
 R. Beta, QA Engineer
 J. Vandergrift, Training Supervisor
 T. Green, Training Coordinator
 D. Trimble, Licensing Manager
 F. Boswell, Safety and Fire Prevention Coordinator
 C. Shively, Plant Performance Engineer
 C. Halbert, Mechanical Engineering Supervisor
 J. Ray, QC Inspector
 J. Albers, Planning and Scheduling Coordinator

The inspectors also contacted other plant personnel, including operators, technicians and administrative personnel.

2. Followup on Previously Identified Items

(Closed) Unresolved Item (368/79-09-02) - February, 1979, test data for 2104.05, Supplement 3, could not be located.

The licensee has determined that this data was not retained. OP 1004.12B requires that surveillance test data sheets be maintained in the plant records. Technical Specification 6.10.1.d states that records of surveillance activities required by the technical specifications be retained for at least five years. Thus the failure to retain the above data sheet constitutes an item of noncompliance at the infraction level.

(Closed) Open Item (313/79-07-07) - Discrepancies in operating procedures.

All of the discrepancies listed under this open item have been corrected through procedure changes.

(Closed) Open Item (313/79-07-01) - Fire extinguisher inspection.

The fire extinguisher in question (#24) had been inspected by the Universal Fire Equipment Company as required in March, April and May, 1979.

(Closed) Open Item (313/79-09-03) - Addition of valves installed under DCR 589 to Attachment B and C valve lineup sheets of 1104.29.

The new valves have been added to a new Attachment F of OP 1104.29, Rev. 4, PC4.

(Closed) Open Item (313/79-09-04) - Revision of job order form.

Revision 2 of OP 1004.14 included as new job order form which provides for specification of all pre-maintenance and post-maintenance requirements and for verification that these requirements are met.

(Closed) Open Item (313/79-09-09) Emergency Feedwater Operating Procedure.

OP 1106.06 has been revised to satisfy the concern of this open item.

(Closed) Open Item (313/79-09-12) Startup Procedure.

OP 1102.02 has been revised (Rev 6, PC-2) to include verification that the hydrogen purge system is aligned.

(Closed) Open Item (313/79-09-15) - Closing pump room doors when the recirculation phase of post-LOCA cooling is initiated.

Revision 4, PC-1 and PC-2 added the necessary steps to emergency procedure 1202.06.

(Open) Open Item (368/79-09-04) - Same as above item 313/79-09-15.

The corresponding Unit 2 procedure, 2202.06, has not yet been revised to include this step at the appropriate time.

3. Continued Review of Licensee Actions Taken in Response to IE Bulletin 79-05A(Unit 1)

a. On-site Inspection of Engineered Safety Features

The inspector examined piping and instrument diagrams of the following systems, identifying valves in critical flow paths:

- Reactor Building Cooling System
- Penetration Room Ventilation System
- Hydrogen Purge System
- Emergency Feedwater
- HPI
- LPI
- Core Flooding
- Service Water
- Diesel Generator Fuel Oil
- Reactor Building Spray
- Diesel Generator Air Start

The position of valves in these critical flow paths was determined by direct inspection. Further, the position of electrical breakers serving valves and pumps in critical flow paths was determined. At this time, valves and circuit breakers were positioned consistent with the plants mode of operation (cold shutdown, decay heat removal system in operation.)

No items of noncompliance or deviations were identified.

b. Emergency Procedure Walkthrough

The inspector walked through the steps of the following emergency procedures:

Procedure#	Title
1202.05	Degraded Power
1202.06	Loss of RC or RC Pressure
1202.14	Loss of RCS flow
1202.26	Loss of OTSG Feed
1202.23	OTSG Tube Rupture
1106.06	Emergency FW Pump Operation

As a result of the above the inspector identified the following open items:

- (1) In procedure 1202.23 step 3.7 delete the reference to Valve CV-6671 (313/79-10-01).
- (2) To procedure 1106.06 (valve lineup attachment), add the requirement that the turbine governor valve be manually latched. The licensee made the required procedure change during the period of this inspection.

c. Audit of Unit 1 Operators

An audit of the Unit 1 Operators was conducted by a team made up of one I & E Inspector and one NRR Operator Licensing Branch person to determine the adequacy of the ANO training program following the TMI event. A total of 9 licensed personnel were audited. Four of these were senior licensed operators and five were licensed operators. These operators were selected at random and all were regularly assigned shift personnel with the exception of one staff supervisor.

The areas of the audit included the following:

- . . . TMI Accident
- . . . Small Break Loss of Coolant Accident
- . . . TMI Related Design Changes
- . . . TMI Related Procedure Changes
- . . . Operation of the Emergency Feedwater System

The audit was conducted by oral questioning and by walk through on May 22, 1979. Approximately 1½ hours were spent with each operator.

The results of this audit indicated that two licensed operators were deficient in the areas of design changes and procedure changes. It was indicated that both of these individuals had been on days off just prior to the audit and therefore had been given minimum time to review ongoing procedure and design changes. Also neither of these individuals had received the TMI simulator training. Each of these operators has since received additional TMI training, including a trip to the B & W simulator, and has successfully passed a licensee administered written exam with a grade of greater than 90 per cent.

The effectiveness of the licensee's training program will continue

to be observed by the I & E resident inspector. No further audits of licensed operators are planned prior to Unit 1 start-up.

No items of noncompliance or deviations were identified.

4. Review of Design Changes Associated with the Commission Order of May 17, 1979 (Unit 1)

The inspector reviewed the following documents associated with items a and c of part IV of the Commission order to AP&L dated May 17, 1979, and with enclosure one of AP&L's letter to H. Denton, Director NRR, dated May 11, 1979.

*IDCR 1-79-19	Autostart of P7B
**BWR 1-79-176	Installation of the circuit for IDCR 1-79-19
***JO 5448c	I & C
IDCR 1-79-22	P7B autostart alarm
IDCR 1-79-15	Reactor Trip on Turbine Trip or Main FW Pumps Tripped
BWR 1-79-175	Circuit Installation for IDCR 1-79-15
JO 7310	I & C functional tests circuit utilizing test approved in IDCR 1-79-15H.
DCR 79-1025	Installation of orifice plates and flow instrumentation for EFW.
BWR 1-79-80	Test of EFW flow transmitters and indication utilizing test approved as DCR 79-1025H.

At the inspector's request the licensee performed additional testing to verify the override of an autostart signal if the P7B handswitch is in pull-to-lock. No other items of concern were identified and the above design changes appear to have been properly implemented and tested.

5. Operability Test of the Emergency Feedwater (EFW) Motor Driven Pump from Vital Power (Unit 1)

The inspector observed tests conducted on May 20, 1979, to demonstrate the capability of being able to make the manual alignment of the EFW motor driven pump to vital power within 5 minutes. The tests were conducted in accordance with Work Plan Number 75 which incorporated the normal actual procedural steps.

*IDCR	Interim Design Change Request
**BWR	Bechtel Work Request
***JO	Job Order

Two tests were made. The results of the first test were incomplete due to a feature built into the new automatic start design of the EFW motor driven pump which required an additional manual switching operation not previously included in the emergency procedure. The second test run was completed in 2 minutes and 36 seconds.

No items of noncompliance or deviations were identified.

6. Emergency Feedwater Pump Turbine Overspeed Trip Test (Unit I)

The inspector witnessed portions of the overspeed test of the EFWP Turbine which was conducted on June 1, 1979, and verified that the minimum crew requirements were met, that test prerequisites were completed, that the tachometer used was in calibration, that the required data was recorded and that the test procedure (OP 1106.06 Supplement 5, Revision 3, PC-3) was available and in use by test personnel. The inspector also verified the qualifications of two of the test personnel and reviewed the test results.

No items of noncompliance were identified, but the inspector made the following observations:

- a. The procedure requires that one steam trap bypass valve be opened (MS-20D). The operator used an additional steam trap bypass valve also. The procedure should be revised to include the use of both bypass valves if such is desirable. (Open Item 313/79-10-02).
- b. Yellow and magenta tape was observed to be on the floor around the emergency feedwater pumps. Its meaning was not clear since there were no step off pads or signs and personnel freely crossed the line. (Open Item 313/79-10-03).
- c. When one of the steam trap bypass valves is opened, steam enters the P7B motor, especially when the room cooler is not operating. (Open item 313/79-10-04).
- d. The support for the P7B discharge line appeared to be inoperable. (Open item 313/79-10-05).

7. Operating Procedure 1203.12 (Unit I)

This procedure, which provides operator guidance for response to annunciators was found to be outdated for Annunciator K-11, Panel A-1, SLBIC Trouble. The inspector expressed concern that other portions of this procedure may also need revision, in view of the recent design changes involving annunciators. (Open Item 313/79-10-06).

8. Apparent Drawing Error (Unit 1)

The inspector pointed out to the Plant Engineering Superintendent that drawings M402 sheet 3 of 4, Rev 7 and M204, Rev 20c appear to be outdated with respect to the handswitches which control CV-2813 and CV-2814. Corrective action was initiated. (Open item 313/79-10-07).

9. Followup on Licensee Actions Taken in Response to IE Bulletin 79-05B (Unit 1)

- a. IE Bulletin 79-05B, Nuclear Incident at Three Mile Island-Supplement, was issued to operators of nuclear plants with Babcock and Wilcox pressurized water reactors on April 21, 1979. AP&L's response to this bulletin was provided in a letter dated May 4, 1979. The inspectors reviewed this response upon receipt to confirm the validity of the licensee's review of the bulletin.
- b. The inspectors performed on site observations and inspections to verify the implementation of the licensee's commitments in his letter of May 4, 1979. Specific points verified included the following:
 - (1) The licensee's emergency procedures have been revised to include detailed methods for establishing and maintaining natural circulation flow.
 - (2) The licensee has added appropriate caution notes to the emergency procedures concerning overriding engineered safeguards features (ESF).
 - (3) Emergency procedures have been revised to specify the conditions under which High Pressure Injection (HPI) may be secured.

- (4) The licensee has developed a procedure to aid in recognizing a spurious actuation of ESF and to provide for its orderly termination.
- (5) The licensee's emergency procedures have been revised to address the problem of a decreasing pressurizer level if cold water is injected into the steam generators to raise the level prior to initiating natural circulation.
- (6) The licensee's emergency procedures have been revised to give consideration to the loss of all feedwater flow while in the natural circulation mode.
- (7) The licensee's procedures consider the reactor vessel pressure/temperature limitations as a limiting factor for continued HPI operation.
- (8) While in cold shutdown, the licensee changed the electromagnetic relief valve setpoint from 2255 to 2450 psig and changed the high pressure reactor trip setpoint from 2355 to 2300 psig.
- (9) The licensee's procedures provide guidance and anticipated instrument response and annunciation for:
 - a. loss of main feedwater
 - b. turbine trip
 - c. Main Steam Isolation Valve (MSIV) closure
 - d. loss of offsite power
 - e. low steam generator level
 - f. low pressurizer level
- (10) The licensee has installed a control grade reactor trip which will actuate upon loss of main feedwater pumps or upon a turbine trip.
- (11) Emergency procedures have been revised to require a manual reactor trip upon the closure of a MSIV.
- (12) The licensee has not incorporated a procedural requirement for a reactor trip upon a loss of offsite power.

- (13) Emergency procedures require that the reactor be tripped if steam generator level falls to 15 inches.
- (14) The licensee has not incorporated a procedural requirement for a reactor trip upon low pressurizer level, unless pressurizer level continues to fall, exhibiting loss of coolant accident conditions.
- (15) The licensee has made the necessary procedure changes to provide for early NRC notification of serious events. Standing Order number 36 provides for a continuous communication channel with the NRC.
- (16) The licensee provided a proposed design for safety grade anticipatory reactor trips on loss of main feedwater and/or on turbine trip by letter dated May 21, 1979.
- (17) In response to this bulletin, the licensee submitted Technical Specification change proposals on 4/24, 6/6, and 6/8/79.
- (18) The licensee has provided operator training in the revised procedures. Through discussions with operators, the inspector confirmed that they had been instructed in the new/revised procedures and that they understand the available techniques for determining the margin to saturation.

10. Review of Licensee Actions Taken in Response to IE Bulletin 79-06B (Unit 2)

a. Emergency Procedure Review

The inspector reviewed selected emergency procedures to verify compliance with IEB 79-06B. The following procedures were reviewed:

- OP 2202.01, PC-2, Rev 0 5/17/79 Load Rejection
- OP 2202.02, PC-2, Rev 0 5/17/79 Blackout
- OP 2202.03, PC-3, Rev 0 5/17/79 Turbine Trip
- OP 2202.04, PC-3, Rev 0 5/30/79 Reactor Turbine Trip
- OP 2202.05, PC-1, Rev 1 5/17/79 Degraded Power
- OP 2202.06, PC-9, Rev 0 5/30/79 Loss of Reactor Coolant
- OP 2202.08, (draft) Rev 1 5/1/79 Inadvertent SIAS
- OP 2202.23, PC-4, Rev 0 5/30/79 Steam Generator Tube Rupture
- OP 2202.26, PC-2, Rev 0 5/30/79 Loss of S/G Feed

The inspector noted that procedure number OP 2202.06 (Case I) was deficient in the following areas:

1. Case I description should read, rupture greater than HPSI capacity (vice greater than charging capacity).
2. Procedure step 3.1 should require that 1 RCP/Loop remain in operation until LPSI is established.
3. A step should be added requiring operator to monitor margin to saturation and maintain at least 50⁰F subcooling.
4. Procedure step 3.2 should require that operator use pressurizer pressure in addition to pressurizer level in his decision to secure HPSI.

A licensee representative indicated that the above changes would be incorporated into OP 2202.06. (Open Item 368/79-10-01) Of those procedures reviewed, no other deficiencies were noted.

B. Verification of ESF Valve Lineups

On February 27, 1979, the inspector completed the verification of valve lineups for the SIAS and Reactor Building Spray system. The Unit was in Mode 3 and engaged in setting the Main Steam Safety Relief Valves. During this verification the inspector found valve 2SI-5091-3, LPSI Header CV Bypass, to be unlocked and closed. Prior to entering Mode 3, procedure 2102.01, Plant Startup, PC-12 step 8.12 requires that the LPSI system be aligned per attachment H to 2104.40 and per the category E valve alignment sheet attached to procedure 2102.01. Procedure step 2102.03 and the valve alignment sheets had all been initialed indicating that valve 2SI-5091-3 was in the locked closed position. The shift supervisor could determine no reason for the off-normal valve alignment and the valve was then positioned to the locked open position as required by procedures. The inspector determined that despite the above misaligned valve there was an operable flow path for LPSI at all times. From discussions with operations management personnel it appears that despite the initialed procedure steps valve 2SI-5091-3 was never properly positioned according to procedures upon entering Mode 3. Technical Specification 6.8.1.a through Regulatory Guide 1.33 requires that procedures for aligning emergency core cooling systems be implemented and followed. The failure to properly position valve 2SI-5091-3

according to procedures prior to entering Mode 3 on February 26, 1979, constitutes an item of noncompliance at the infraction level. During the review of this incident the inspector found that no consistent method for filing completed system valve lineups exists. Completed valve lineup sheets may be filed with the startup procedure in the administrative office area or they may be left in a notebook in the Shift Supervisors Office depending on the individuals involved. This leads to out-of-date valve lineups filed in the control room area. The assistant operations Superintendent agreed to review and resolve the above. Toward the end of this inspection period, a revised standing order concerning valve lineups was issued. Its implementation will be reviewed during a future inspection. (Open item (368/79-10-02).

No other items of noncompliance or deviations were identified.

11. Exit Meetings

Exit meetings were conducted at the end of various segments of this inspection with Mr. J. P. O'Hanlon (General Manager) and other members of the AP&L staff.