

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/88014(DRS); 50-457/88015(DRS)

Docket Nos. 50-456; 50-457

Licenses No. NPF-72; NPF-75

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, Illinois

Inspection conducted: April 19-27, 1988

Inspector: *F. Maura*
F. Maura

5-5-88
Date

Approved By: *M. P. Phillips*
M. P. Phillips, Chief
Operational Program Section

5/5/88
Date

Inspection Summary

Inspection on April 19-27, 1988 (Reports No. 50-456/88014(DRS);
No. 50-457/88015(DRS))

Areas Inspected: Routine, unannounced safety inspection to review actions on
previous inspection items (92701 and 92702).

Results: No violations or deviations were identified.

Details

1. Persons Contacted

Commonwealth Edison Company

- *P. Barnes, Regulatory Assurance Supervisor
- C. Bedford, Regulatory Assurance
- *E. Carroll, Regulatory Assurance
- *J. Davis, TRB Coordinator
- *T. Lewis, Regulatory Assurance
- *M. Lohmann, Startup Superintendent
- G. Nelson, Assistant Technical Staff Supervisor
- *D. O'Brien, Station Services Superintendent
- *J. Parish, Project Startup

Westinghouse Corporation

- *B. Palowitch, Startup Test Supervisor

NRC

- *T. Taylor, Resident Inspector

*Denotes those attending the exit meeting of April 27, 1988.

2. Action on Previous Inspection Items

- a. (Closed) Open Item (456/86043-01(DRS)): Update of FSAR to correct the ESW pumps design requirements. The licensee submitted to NRR Amendment 49, dated October 1987, which added a $\pm 10\%$ tolerance on the total developed head for an ESW pump. This item is considered closed.
- b. (Closed) Unresolved Item (456/87025-04): Incore Seal Table high pressure seals leakage. The licensee issued NWR 18984 on January 17, 1988, to tighten fittings at incore locations A9, B3, J10, H6, and G5. Following the repair work, an inspection of all fittings was performed by the licensee on February 25, 1988, during which no leakage was noted at 2235 psig and 557F. This item is considered closed.
- c. (Closed) Violation (456/87025-05(DRS)): Incorrect test deficiency resolution. By letter, L. D. Butterfield to A. B. Davis, dated September 23, 1987, the licensee acknowledged the violation and specified the actions taken to correct the violation and prevent similar violations. The inspector reviewed the addendum to Bwsu RC-33 documenting the correct water density corresponding to the pressurizer temperature measured in the test, including the recalculated values of RCS leakage; Table B of surveillance procedures 1 BwOS 4.6.2.1.d-1 and 2 BwOS 4.6.2.1.d-1; the training records of the review of this violation conducted with members of the Test Review Board (TRB) and

System Test Engineers; and the assignment of dedicated teams of TRB members, on a weekly basis, to perform the review function during periods of high startup test activity. The inspector has no further questions. This item is considered resolved.

- d. (Closed) Open Item (456/87025-06(DRS)): Project Engineering Department (PED) evaluation of acceptance criteria 4.8 of Bwsu RD-31 not completed. The inspector reviewed PED's evaluation of Startup Test RD-31 transmitted by letter, D. Elias to E. E. Fitzpatrick, dated July 28, 1987, which accepted the test results. The evaluation includes Westinghouse letter CBW-5868 dated April 2, 1987 accepting the D. C. Hold Cabinets 2AC, 1BD, and 2BD higher than expected voltages for certain coils, and letter CBW-5938, dated June 10, 1987, accepting the overall test results and concluding that the system performed per the Westinghouse design basis. This item is considered closed.
- e. (Closed) Open Item (456/87025-07(DRS)): Project Engineering Department review of Bwsu RD-33 needed to determine if rod drop times of the three rods which exceeded the two-sigma acceptance criteria were adequate, and if the decelerating devices performed satisfactorily. The inspector reviewed the applicable sections of Bwsu RD-33; the Project Engineering documentation of their review of Bwsu RD-33, and Approval of test dated October 9, 1987; and the results of Westinghouse's review as transmitted to CECO by letter, J. L. Tain to B. R. Shelton dated August 4, 1987. The review by Westinghouse's Mechanical Equipment Design, dated June 8, 1987, states that the redrops of the three rods not meeting the original two-sigma limit met the 0.020 second band which is typically contained in Westinghouse startup test procedure. Regarding the performance of the decelerating devices the letter states that a review of the times through the dashpot for each of the rods does not indicate any significant differences.

Westinghouse's review made two recommendations to PED as follows:

- (1) that the complete test sequence be used during Braidwood Unit 2 testing, and
- (2) that the licensee review the Unit 1 rod drop traces to verify consistency in the dash pot region.

Although no documentation could be found addressing the two recommendations, the licensee is pursuing the disposition of both items with PED.

The inspector reviewed portions of Bwsu RD-73, Rod Drop Time Measurement Testing (for Unit 2), and determined that appropriate statements have been included to ensure review of traces in dashpot region for proper operation, and that acceptance criteria 4.3 has been expanded to include the requirement that drop times for each rod found outside two sigma region be within a band of 0.020 seconds.

- f. (Closed) Open Item (456/87025-08(DRS)): Ensure that lessons learned from Byron startup program are incorporated into the Braidwood Units 1 and 2 startup test program. The inspector reviewed Tech Staff Memo #523 dated February 8, 1988, which required that during the 30 day pre-test review applicable comments from PED's post test approval packages of Byron Unit 2 and Braidwood Unit 1 be incorporated into Braidwood Unit 2 tests. This is being done by one individual (P. Devine) to ensure consistency. In addition, throughout this inspection the following has been noted: (1) Braidwood startup tests often show references to Byron startup tests, (2) open items have been generated to incorporate into the Braidwood Unit 1 and 2 startup test items identified during the review of Byron or Braidwood Unit 1 test results, (3) Regulatory Assurance pink slips have been used to flag items identified during the review of Byron or Braidwood Unit 1 tests for incorporation into the Unit 2 startup test program. Other reasons the licensee feels have ensured an effective "lesson learned program" include: (1) the use of Byron startup test program key personnel as Shift Test Director and as System Test Engineers for complex tests performed at Braidwood, (2) the fact that several Braidwood Test Engineers participated in the Byron test program to gain experience, and (3) the use of the same engineers who performed the startup testing on Unit 1 to perform the tests in Unit 2. This item is considered closed.
- g. (Closed) Violation (456/87025-09(DRS)): Failure to provide adequate justification and subsequent approval of an incorrect major change to a test procedure, and inadequate verification of the test procedure step resulting in the verification of an incorrect reactor protection logic. By letter, L. D. Butterfield to A. B. Davis, dated September 23, 1987 the licensee acknowledged the violation and specified the actions taken to correct the violation and prevent similar violations. The inspector reviewed the training records of the review of this violation by members of the Test Review Board (TRB) and System Test Engineers; and the assignment of dedicated teams of TRB members, on a weekly basis, to perform the review function during periods of high startup test activity. The inspector has no further questions. This item is considered closed.
- h. (Closed) Open Item (456/87025-11(DRS)): Completion of Project Engineering Department review of BwSU IT-32C test results, and Test Deficiency 401 A-E resolution. The licensee closed Test Def. 401 A-E by writing NWR 14467 to recalibrate ITR-0433A. On July 21, 1987, the recorder was found to be in calibration and no adjustments were required; therefore, NWR 14467 was closed. The inspector reviewed Project Engineering Department's (PED) review and approval of the test results, dated November 19, 1987. The PED review included a Westinghouse review which concluded that the system performed per Westinghouse design basis. Since no problem was found on recalibrating ITR-433A or with the LP IB WRT COLD Conditioning Card, the inspector reviewed portions of startup tests BwSU IT-32C at 30, 50, and 90 percent power to determine the subsequent performance

of the instrumentation. While the above instruments were within tolerance at 30% power they were not at 50%. In addition other instruments were out of tolerance range at the higher power levels. The inspector reviewed NWRs A15123, A15342, A17932, and A17933 addressing the recalibration of the instruments. As of December 16, 1987, the temperature instruments addressed by this Open Item were reading within tolerance limits. This item is considered closed.

- i. (Closed) Open Item (456/87032-03(DRS)): Several Startup Test results have not yet received Project Engineering Department (PED) approval. The inspector reviewed PED's approval packages for Startup Tests BWSU FH-32, dated November 19, 1987; BWSU IT-30, dated October 31, 1987; BWSU IT-31 (at 30% power), dated December 8, 1987; and BWSU FW-33A, dated October 29, 1987. With regard to BWSU IT-30 PED recommended incorporation of On-Site PED comments in the Unit 2 test procedure. The inspector reviewed BWSU IT-70 and determined the comment had been addressed. No other issues were identified. This item is considered closed.
- j. (Closed) Violation (456/87041-04(DRS)): Failure to initiate a deficiency, during performance of BWSU PI-30, in accordance with the Startup Manual procedures. By letter, L. D. Butterfield to A. B. Davis, dated March 23, 1988 the licensee acknowledged the violation and specified the actions taken to correct and prevent further similar violations. The inspector reviewed BWSU PI-70; the April 5, 1988, review of TRB comments associated with Unit 2 startup Tests which indicated some weaknesses in the overall startup program execution; and the training given to the Technical Staff personnel which emphasized the TRB observations. All commitments addressed in the licensee's letter of March 23, 1988, concerning this item were carried out. This item is considered closed.
- k. (Closed) Violation (457/87039-06a(DRS)): Failure to initiate a Deficiency during the post test review of BwPT RY-50. In their response to this violation, L. D. Butterfield to A. B. Davis dated March 23, 1988, the licensee disagreed with the inspector's position that a deficiency should have been generated for computer points PD480, PD483 once TCR #27 was incorporated. The inspector reviewed the applicable test steps of procedure BwPT RY-50 (9.8.5, 9.8.8, 9.8.16 and 9.8.20), Acceptance Criteria 4.3, and Table 11.8-A (pages 230 and 233). The inspector agrees with the licensee's position that the recording of the computer points was to obtain base line data (compare computer pressure readings to the pressure indicators), and that the only deficient condition was the pressure at which the pressurizer PORV opened. This item will be withdrawn as an example from the violation.

1. (Closed) Violation (457/87039-06b(DRS)): Failure to initiate a deficiency during performance of BwPT AB-50 as required by the Startup Manual procedures. The inspector reviewed the records of the training conducted April 3, 1988, concerning revised Training Instruction TI-3, Test Execution. All commitments addressed in the licensee's letter (L. D. Butterfield to A. B. Davis) of March 23, 1988, concerning this item were carried out. This item is considered closed.

m. (Closed) Open Item (457/87039-07(DRS)): Essential service water (SX) flow to the component cooling water (CCW) heat exchanger (15,000 gpm) was less than the design minimum (18,100 gpm) and the test procedure BwPT SX-50, Retest 10, acceptance criteria (16,000 gpm). The inspector reviewed Westinghouse letter to CECO dated January 18, 1988, J. L. Tain, to D. Elian, describing the results of their analysis of the single RHR train cooldown from 350F to 200F. According to Westinghouse the reduction in SX flow to the CCW heat exchanger from 18,100 gpm to 15,000 gpm resulted in an increase in cooldown time of 4.2 hrs (from 54.2 to 58.4 hrs). The analyses assumed:

- (1) RCS temperature of 350F four hours after the reactor trip
- (2) a single RCP in operation during cooldown
- (3) no steam dump once RHR cooldown was initiated
- (4) reduced heat loads on the CCW system, identical to those assumed in the original design calculations for the single train RHR cooldown (recycle evaporators and waste gas compressors not operating).

The inspector reviewed licensee's procedures 2 BwGP 100-5, Rev. D, "Plant Shutdown and Cooldown" and BwOP CC-8, Rev. 51A, "Isolation of CC Between Units 1 and 2" and determined that the conditions used by Westinghouse in their analyses were conservative because although the unit shutdown is accomplished with at least 2 RCPs the licensee continues the use of the steam dumps or the steam generators PORVs until a temperature of approximately 212F is reached. In addition the recycle evaporators, the waste gas compressors, and the spent fuel pit heat exchangers are transferred to Unit 1 prior to initiating cooldown with the CCW system. The inspector also reviewed a Westinghouse letter to S&L Engineers dated December 28, 1973, L. D. Parks and W. E. Kortier to G. F. Hoveke, which states that for the post accident recirculation phase 13,600 gpm provides adequate cooling.

n. (Closed) Violation (457/87029-12a(DRS)): Incorrect acceptance criterion steps did not adequately test the RHR suction isolation valves on high RCS pressure (>360 psig). In their response to this violation, L. D. Butterfield to A. B. Davis, dated March 23, 1988, the licensee disagreed with the inspector's position that the steps associated with the acceptance criteria were incorrect. However,

to address the inspector's concern the licensee issued an addendum to the post-test Test Review Board comments which clarifies the acceptance criteria as being applicable only to decreasing RCS pressure. The inspector reviewed the applicable preop test steps (9.6.1 thru 9.6.22); FSAR Amendment 44 pages 5.4-27, 5.4-29, and 9.6-1; Westinghouse letter to CEC, W. E. Kortier to J. D. Deress, dated May 11, 1984; and electrical schematic diagrams 20E-2-4030 RH04 and 20E-2-4030 RH05. The inspector determined that while the overall test procedure section 9.6 (steps 9.6.1 thru 9.6.22) proves the interlocks worked as designed, the steps referred to in acceptance criteria 4.4 (steps 9.6.8 and 9.6.17) were not the correct steps to satisfy the criteria. The procedure should have been written more clearly to accomplish the same purpose. Therefore, the citation stands as written. Based on the action taken by the licensee this item is considered closed.

- o. (Closed) Violation (457/87039-12b(DRS)): Approved startup test procedure was inadequate and if used as written would have caused an erroneous trip of the Unit 1 main generator. In their response, L. D. Butterfield to A. B. Davis, dated March 23, 1988 the licensee acknowledged this violation. The inspector reviewed the licensee's actions taken to correct this violation and to prevent further similar violations which consisted of a revision to Tech Staff Memo #523, dated March 24, 1988. It includes a requirement that the 30-day pre-test review verify that the conversion from Unit 1 to Unit 2 has been done correctly. While no records exist documenting that all that personnel are aware of this new requirement, the licensee has assigned one individual (P. Devine) to ensure this work is been done. This item is considered closed.

3. Exit Interview

The inspector met with licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on April 27, 1988. The inspector summarized the scope and results of the inspection and discussed the likely content of the inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.