

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-454/88008(DRS); 50-455/88008(DRS); 50-456/88016(DRS)

Docket Nos. 50-454; 50-455; 50-456

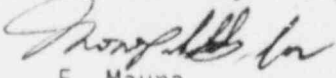
Licenses No. NPF-37; NPF-66; NPF-72

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

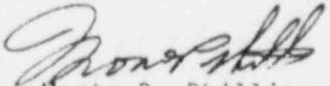
Facility Name: Byron Station, Units 1 and 2  
Braidwood Station, Unit 1

Inspection At: Byron Site, Byron, Illinois  
Braidwood Site, Braidwood, Illinois

Inspection Conducted: May 9-19, 1988

Inspector:   
F. Maura

5/27/88  
Date

Approved By:   
Monte P. Phillips, Chief  
Operational Program Section

5/27/88  
Date

Inspection Summary

Inspection on May 9-19, 1988 (Reports No. 50-454/88008(DRS);  
No. 50-455/88008(DRS); No. 50-456/88016(DRS))

Areas Inspected: Routine unannounced safety inspection to review action on  
previous inspection items (92701 and 92702) and followup on SER items (92718).

Results: No violations or deviations were identified.

## DETAILS

### 1. Person Contacted

#### Commonwealth Edison Company

#### Byron Station

- M. Blessing, Technical Staff, Electrical Group
- J. Bowers, Operating Foreman
- \*J. Ewald, Technical Staff, Primary Group Leader
- \*W. Kouba, ATSS
- D. Kruger, Technical Staff, Electrical Group Leader
- S. Merrell, Operating Department
- \*D. Robinson, Onsite Nuclear Safety
- \*M. Snow, Regulatory Assurance Supervisor
- \*J. Snyder, QA Inspector
- S. Swanson, Operating Department
- \*R. Ward, Services Superintendent
- \*E. Zittle, Regulatory Assurance

#### Braidwood Station

- \*P. Barnes, Regulatory Assurance Supervisor
- \*E. Carroll, Regulatory Assurance
- C. Bearden, Operating Staff
- K. Boyle, Operating Staff

#### NRC

- \*P. Brochman, Senior Resident Inspector, Byron
- N. Giles, Resident Inspector, Byron
- \*T. Taylor, Resident Inspector, Braidwood
- \*T. Tongue, Senior Resident Inspector, Braidwood

\*Denotes those attending the exit meeting of May 18, 1988, at the Braidwood Station, or May 19, 1988 at the Byron Station.

### 2. Action on Previous Inspection Items

- a. (Closed) Open Item (454/86035-01; 455/86022-02(DRS)): Modify Unit 1 recirculation sump penetration sleeves vent to make valves more accessible, and update CILRT test procedure to ensure valves are opened during CILRT. The inspector reviewed Units 1 and 2, Primary Containment Type A Integrated Leak Rate Test, Procedure 1BVS 6.1.2.a.1, Revision 1, dated April 2, 1987, and 2BVS 6.1.2.a-1, Revision 2, dated May 8, 1987; P&IDs M-61, Revision AD and M-136, Revision AC, and determined that the valves have been included in the pretest check list to verify they are open. The licensee plans to perform the sleeves vent modification to improve accessibility during the 1988 refueling outage. This item is considered closed.

- b. (Closed) Open Item (454/86035-02; 455/86022-03(DRS)): Obtain NRR acceptance of justification to perform CILRTs with the containment liner channel plugs installed. By letter, S. C. Hunsader to T. E. Murley, dated February 2, 1988, the licensee submitted to NRR their justification for performing CILRTs with the containment liner leak chase channel plugs installed. A Unit 1 CILRT is scheduled for next September. The inspector reviewed Unit 1 CILRT procedure IBVS 6.1.2.a-1, Revision 1, dated April 2, 1987, and determined that the procedure does not address the status of the leak chase channel plugs during the test. According to the licensee, the procedure is being revised to specify the status of the plugs (removed or installed), and if a response is not received from NRR prior to the test performance, the channel plugs will be removed during the CILRT. This item is considered closed.
- c. (Closed) Violation (454/86035-03; 455/86022-04(DRS)): Failure to develop a periodic test program for Type B local leak rate testing of the fuel transfer tube bellows. The inspector reviewed local leakage rate test procedures IBVS 6.1.2.d-1.5, Revision 2, dated March 30, 1988; and 2BVS 5.1.2.d-1, Revision 0, dated October 31, 1986, and determined that the licensee has established a procedure to local leak rate test each unit fuel transfer tube bellows. This item is considered closed.
- d. (Closed) Unresolved Items (454/86045-02 and 455/86041-08(DRS)): Inadequate test evaluation of reactor containment fan cooler (RCFC) heat removal capability during preop test VP 93.61 (Unit 2) and VP 93.10 (Unit 1). By letters dated January 13 and 23, 1987 (S. C. Hunsader to H. R. Denton), the licensee provided NRR with its reevaluation of the RCFC capability based on the results of the preop test and test conducted at Wyle Laboratories. By letter, S. A. Varga to D. L. Farrar, dated February 6, 1987, the NRR staff found the Byron Unit 2 RCFCs, and consequently the Unit 1 RCFCs, to be adequate to perform their design function. By FSAR Amendment 49, dated October 1987, the licensee updated Table 5.2-56 to reflect the new minimum fan flow requirement of 54,000 cfm. These items are considered resolved.
- e. (Closed) Unresolved Item (455/86034-04(DRS)): Inverter performance concerns based on review of preop tests AP 5.61 and IP 46.60. The inspector reviewed the resolution to Station Electrical Engineering recommendation of November 15, 1985, as documented in AIR No. 6-86-003. The licensee took voltage readings at the 480VAC ESF buses supplying the four Unit 2 inverters with the Station Auxiliary Transformers (SATs) loaded (all RCPs running) and with the SATs unloaded. The voltages ranged from a low of 486V to 490V with the SATs loaded to a high of 491V to 494V with the SATs unloaded. No transfer to the inverter's D.C. supply was noted.

Resolution to Deficiency No. 64054 was reviewed by the inspector, who noted that two sets of data were taken for Instrument Bus 212. At a load of 42 amps (N2/3 design load) inverter 212 output voltage

was 118.5 VAC (117.1 VAC at Panel 2PA45J) with a frequency of 60.75HZ, while at no load the output voltage was 119VAC (117.1V at Panel 2PA45J) with a frequency of 60.65HZ. In addition, the inspector reviewed a recent weekly surveillance package of Unit 2 (2BOS 8.3.1-1 and 2, ESF Onsite Power Distribution Weekly Surveillance for Divisions 21 and 22) performed on April 7, 1988, with the unit in operation to verify that the inverter's input and output voltage were presently satisfactory. The input voltage to the inverter ranged from 480 to 498VAC, which was within the acceptance criteria of 455 to 510VAC. The output voltage ranged from 117VAC to 120VAC which was within the acceptance criteria range of 112 to 124VAC. This item is considered resolved.

- f. (Closed) Open Item (455/86041-07(DRS)): Review results of Startup Test 2.093.80 and verify RCFCs are capable of maintaining the bulk containment temperature below 120°F during normal operation. The inspector reviewed the applicable sections of Startup Test 2.093.80, including Sargent & Lundy Engineers (S&L) review of the test data as transmitted to CECO by letter, T. D. Hottle to D. Elias, dated April 6, 1987. The review showed that the bulk containment air temperature was less than 120°F (maximum of 113°F for Train A and 115°F for Train B). A capacity verification calculation was performed by S&L which showed that the projected cooling capacity at the maximum design conditions is larger than the sensible heat removed during the test. In order to justify the assumption (the amount of heat generated in the containment is constant at all power levels) and methodology used during the evaluation the licensee is taking additional data at high power operation (AIR 87-0240). This item is considered closed.
- g. (Closed) Open Item (455/87014-04(DRS)): Revise FSAR Table 14.2-77 to indicate that the isothermal temperature coefficient was determined (Startup Test IT 47/80) by changing the reactor coolant temperature by approximately 3°F. Amendment 48 to the FSAR, dated July 1987, changed Table 14.2-77 to indicate a change in reactor coolant of N3°F would be used to determine the isothermal temperature coefficient. This item is considered closed.
- h. (Closed) Unresolved Item (455/87014-05): Need to verify justification for deleting rod drop testing at condition other than hot, full-flow. The inspector reviewed Westinghouse letters, J. L. Tain to J. D. Deress, dated December 20, 1984, and J. F. Duran to G. Seguin, dated February 16, 1987. The inspector also reviewed NRC's letter, V. S. Noonan to D. L. Farrar, dated October 1, 1986, accepting the licensee's proposal to delete rod drop measurements test at conditions other than hot, full-flow for Byron Unit 2 and Braidwood Units 1 and 2. While the statement that rod drop times at cold conditions and hot, no-flow fall under the hot, full-flow values is incorrect, the fact remains that the rod drop times acceptance criteria in the FSAR and Technical Specifications are applicable only with the reactor coolant system at hot, full-flow conditions. Westinghouse also stated in their 1984 letter that,

based on their experience, the drop times for the other three test conditions should fall under the hot, full-flow acceptance criteria, although that was not a design requirement. The acceptance criteria for rod drop time in the Technical Specification was 2.40 seconds. A review of Startup Test 2.64.85, Rod Drop Time Measurement Testing, showed that the slowest rod drop time for Byron 2 was 1.47 seconds. Because of the large margin between the slowest rod and the acceptance criteria Westinghouse in their 1987 letter did not feel it was necessary to perform the test under the other plant conditions. This item is considered resolved.

- i. (Closed) Unresolved Item (455/87014-10(DRS)): In Startup Test RC2.63.85, Shutdown From Outside the Control Room, TCR No. 3, improperly changed the minimum shift crew size from seven to nine individuals. The inspector reviewed the results of completed tests RC2.63.35 (Byron Unit 1), RC2.63.85 (Byron Unit 2), and 1BWSU RC-35 (Braidwood Unit 1). Both, Byron Unit 1 and Braidwood Unit 1 tests were performed using the minimum shift crew of seven individuals. A review of procedure BAP 320-1 showed that the Byron station requires a shift manning of 15 individuals. The licensee stated that normal shift manning consists of 18 individuals. The inspector determined that the licensee has already demonstrated that the units can be shutdown from outside the control room utilizing the minimum crew of seven individuals, and that the Byron Unit 2 test demonstrated that the remote shutdown equipment worked properly. This item is considered resolved.
- j. (Closed) Violation (454/87032-01; 455/87030-01; 456/87028-01(DRS)): Inadequate quality controls to ensure that final revision of EOPs reflect approved draft documents, and that the consequences of changes have been fully examined. By letter, L. D. Butterfield to A. B. Davis, dated October 15, 1987, the licensee acknowledged the violation and stated the actions taken to correct the violation and prevent recurrences. The inspector reviewed portions of the Procedure Generation Package (PGP), dated January 25, 1988, and determined that the commitment stated in the licensee's October 15, 1987 letter had been incorporated into the PGP. The inspector discussed the violation issues with the licensee and determined that additional corrective actions have been taken as follows:
- (1) EOPs are drafted at the Braidwood Station using the Westinghouse Owners Group (WOG) guidelines. The draft is sent to Byron Station where it is checked against the WOG and a "Master" copy for one of the four units is developed (typically Braidwood Unit 2).
  - (2) From the "master" copy copies are made for the other three units. The four sets are then proofread.
  - (3) One dedicated Special Projects individual at Byron coordinates the typing, verification, and validation of the EOPs.

- (4) Verification is done by an individual knowledgeable in plant systems operation, but not the same individual who wrote the EOP.
- (5) Verification for written correctness is done line by line. A second verification for technical accuracy is also performed. Any discrepancies identified are documented and resolved.
- (6) A step by step comparison to ensure correctness of unit nomenclature and consistency of information is performed. Any discrepancies are documented.
- (7) Finally validation of one set is performed and documented.

This item is considered closed.

- k. (Closed) Unresolved Item (454/87032-02; 455/87030-02; 456/87028-02(DRS)): Licensee to provide documentation showing that the Emergency Operating Procedure (EOPs) have been adequately verified and validated. In their letter, L. D. Butterfield to A. B. Davis, dated October 15, 1987, the licensee included an attachment showing how each EOP had been originally validated. The inspector reviewed portions of the Procedure Generation Package (PGP), dated January 25, 1988, which described how EOPs will be verified and validated. Presently an individual validation form (Attachment M to PGP, Section V) will be generated for each new EOP or EOP revision. The first group of EOPs to be verified/validated, since the January 1988 revision to the PGP, will occur in June 1988. This item is considered resolved.

### 3. Safety Analysis Report Items

#### a. Byron Station - Unit 2

(Closed) SER Item (455/83000-14): Demonstrate remote shutdown capability. The inspector reviewed the results of Startup Test RC2.63.85, Shutdown From Outside the Control Room, performed on February 8, 1987, and PED's evaluation as documented by letter dated July 2, 1987. The test demonstrated the station's capability to remotely shutdown Unit 2 from power operation (~20%) to stable hot standby conditions and maintain hot standby conditions for 30 minutes. The test also demonstrated the capability to go into cold shutdown by partially cooling the plant below 350F by at least 50F (40F/hr) using the RHR system and that heat transfer to the essential service water cooling towers could be established. This item, the last of all previously identified SER items, is considered closed.

#### b. Braidwood Station - Unit 1

(Closed) SER Item (456/86000-11): Demonstrate remote shutdown capability. The inspector reviewed the results of 1BWSU RC-35, Shutdown From Outside the Control Room, performed on September

1988, including PED's evaluation, as documented by letter dated February 10, 1988, and Westinghouse's evaluation documented by letter dated October 9, 1987. The test demonstrated the station's capability to remotely:

- (1) Shutdown Unit 1 from power operation (~21%) to stable hot standby conditions, and maintain hot standby for 30 minutes, using the minimum shift crew,
- (2) Go into cold shutdown by partially cooling the plant from hot standby conditions (established cooldown rate of ~29F/hr for ~2 hrs).

This item is considered closed.

4. Exit Interview

The inspector met with licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on May 18, 1988, at the Braidwood Station and on May 19, 1988, at the Byron Station. The inspector summarized the scope and results of the inspection and discussed the likely content of the inspection report. The licensee acknowledge the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.