

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/92025(DRP); 50-457/92025(DRP)

Docket Nos. 50-456; 50-457

Licenses No. NPF-72; NPF-77

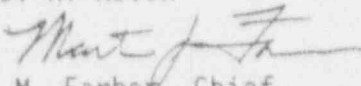
Licensee: Commonwealth Edison Company
Opus West III
1400 Opus Place
Downers Grove, IL 60515

Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, Illinois

Inspection Conducted: December 1, 1992 through January 19, 1993

Inspectors: S. G. Du Pont
J. R. Roton

Approved By:  M. Farber, Chief
Reactor Projects Section 1A

2/3/93
Date

Inspection Summary

Inspection from December 1, 1992 through January 19, 1993 (Reports No. 50-456/92025(DRP); 50-457/92025(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of licensee action on previously identified items; licensee event report review; operational safety verification; monthly maintenance observation; monthly surveillance observation; report review and meetings.

Results: One violation was identified in one of the five areas inspected. In the remaining areas, no violations were identified.

The following is a summary of the licensee's performance during this inspection period:

Plant Operations

The licensee's performance in this area continues to be good. Shift briefings for the implementation of the steam generator molar ratio chemistry control were noted as being very good. The response of Unit 1 personnel to the January 7, 1993 reactor trip was outstanding.

Radiological Controls

The inspectors reviewed the licensee's response to the three violations issued in Inspection Report 456/92023; 457/92023. The inspectors noted the responses as being thorough with sufficient corrective actions taken to preclude recurrence.

Safety Assessment/Quality Verification

A violation was issued due to the licensee's failure to take timely corrective action. In this case, a corrective action item committed to in LER 90-014 remains open some two-and-one-half years later. The inspectors feel the importance of the corrective action warrants more aggressive pursuit of its implementation.

Engineering and Technical Support

Performance in this area continues to improve. The licensee's troubleshooting of the Unit 1 reactor trip is a solid example of the involvement of the technical staff in the day-to-day activities of the plant.

Maintenance and Surveillance

The licensee's performance in maintenance and surveillance activities during this inspection period was good.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

K. L. Kofron, Station Manager
G. R. Masters, Project Manager
*G. E. Groth, Maintenance Superintendent
*D. Miller, Technical Services Superintendent
D. E. Cooper, Assistant Superintendent - Operations
R. J. Legner, Services Director
A. D. Antonio, Nuclear Quality Program Superintendent
*R. Byers, Assistant Superintendent Work Planning
G. Vanderheyden, Technical Staff Supervisor
S. Roth, Security Administrator
*K. G. Bartes, Nuclear Safety Supervisor
A. Haeger, Regulatory Assurance Supervisor
*J. Lewand, Regulatory Assurance
*D. J. Skoza, Engineer

*Denotes those attending the exit interview conducted on January 21, 1993.

The inspectors also interviewed several other licensee employees.

2. Licensee Action on Previously Identified Items (92701, 92702)

a. Unresolved Item

(Closed) 456/92017-04; 457/92017-04: Failure to Adequately Control Work Which Involves Systems/Components Important to Safety. In assessing the licensee's response to this item, the inspectors reviewed the corrective actions committed to in Licensee Event Report (LER) 456/90014, dated September 11, 1990, Corrective Action, item number 456-200-90-03201, states that a "formal methodology will be developed to facilitate restoration of components to operable status where completion of the work package must be deferred until a later date." The inspectors noted that this corrective action remains open.

In their response to the unresolved item, the licensee stated that "systems in place adequately maintain control of work which involves systems/components important to safety." This response is inadequate in that it fails to address the issue of deferred work and the operability of components left "as-is" pending completion of deferred work packages.

The methodology committed to as a corrective action for LER 456/90014 would provide the system to ensure adequate control.

b. Because the significance of the corrective action warranted prompt resolution, the failure to implement the corrective action identified in LER 456/90014, in a timely manner, is a violation of 10 CFR 50, Appendix B, Criteria XVI (50-456/92025-01(DRP); 50-457/92025-01(DRP)).

c. Violations

(Closed) 456/92023-01; 457/92023-01: Failure to comply with radiological postings

(Closed) 456/92023-02; 457/92023-02: Addition of sulfur hexafluoride to the Unit 1 condensate system without a written procedure.

(Closed) 456/92023-03; 457/92023-03: Failure to perform a 10 CFR 50.59 evaluation prior to adding sulfur hexafluoride to Unit 1 as an experiment.

The inspectors reviewed the licensee's response to the Notice of Violation which cited these three Severity Level IV violations. The inspectors found the response to be thorough with appropriate corrective actions taken to preclude recurrence.

One violation was identified.

3. Licensee Event Report (LER) Review (92700)

LERs were reviewed and closed based on the following criteria:

- Reportability requirements were met.
- Immediate corrective actions were accomplished.
- Corrective actions to prevent recurrence has been or will be initiated per technical specifications.

No violations or deviations were identified.

The inspectors reviewed the following LERs and have determined that the corrective actions appear appropriate to prevent similar events:

(Closed) 456/92007: Reactor Trip due to Main Generator Neutral Ground Back-up Relay Trip.

(Closed) 456/92011: Inadequate Testing Frequency for Auxiliary Feedwater Pump Start on Reactor Coolant Pump Bus Undervoltage.

(Closed) 456/92012: 1A Auxiliary Feedwater Pump Start Due to Low-2 Steam Generator Level as a Result of Leakage Past 1FW079A.

(Closed) 456/92013: Spurious Safety Injection Signal Due to Unknown Causes.

(Closed) 456/92014: Inadequate Snubber Testing Program Due to Personnel Error.

4. Operational Safety Verification (71707)

The inspectors verified that the facility was being operated in conformance with the licenses and regulatory requirements and that the licensee's management control system was effectively carrying out its responsibilities for safe operation.

The following activities were observed, evaluated, or reviewed:

- Unit 1 Reactor Trip While Performing Reactor Coolant Pump Underfrequency Surveillance.
- Unit 1 Steam Generator Molar Ratio Chemistry Control.

Unit 1 Reactor Trip While Performing 1BwVS 3.1.1-6, "Reactor Coolant Pump Underfrequency Quarterly Surveillance." On January 7, 1993, Unit 1 tripped from 100% reactor power. The trip was caused by a component failure on the 215 Universal Logic Card, which is the decision maker for the two out of four logic in the Reactor Coolant Pump Under-Frequency (RCP-UF) circuit. At the time of the trip, technical staff personnel were performing 1BwVS 3.1.1-6, "Unit One Reactor Coolant Pump Underfrequency Quarterly Surveillance." The RCP-UF surveillance performs verification of the trip actuating device for the Reactor Coolant Pump (RCP) bus underfrequency input to the Solid State Protection System (SSPS). The RCP underfrequency trip coincidence logic is two out of four buses with permissive P-7. Each RCP bus contains an A-train and B-train UF relay. Testing is performed on each relay independently with verification of control room annunciation and reset. This sequence is repeated for all four of the RCP buses in 1BwVS 3.1.1-6.

Testing had been completed satisfactorily on bus 156, 157, and bus 158 A-train relays. Upon actuation of the bus 158 B-train relay, a trip signal was generated resulting in a reactor trip and a trip of all four RCPs. Procedure 1BwEP-0, "Unit One Reactor Trip/Safety Injection," was entered. The relay was reset and surveillance stopped. Operations immediately proceeded to stabilize the plant and re-start the 1D RCP on bus 159.

The response of Control Room personnel was excellent and all safety systems responded normally. After the plant stabilized in Mode 3, RCP-UF surveillance was performed in an effort to recreate the failure and collect more data. The surveillance was performed satisfactorily indicating an intermittent logic problem.

Troubleshooting identified the failed 215 Universal Logic Card to be the cause of the trip. Additional troubleshooting was completed to expose any other degraded or questionable components which could have contributed to the event. These actions verified the failure found in

the SSPS bi-monthly test and completed the troubleshooting action plan. The failed Universal Logic Card was sent to the vendor for a detailed failure analysis.

Unit 1 Steam Generator Molar Ratio Chemistry Control. On December 2, 1992, the licensee implemented a change to the Chemistry Control Program for Unit 1. The intent of this new program is to establish a chemically neutral steam generator crevice environment to prevent cracking of the tubes. From the hideout return data over the last three cycles, it has been determined that sodium and chloride are the dominant impurities remaining in solution in the crevice. The imbalance of sodium to chloride has caused the formation of sodium hydroxide, or caustic, in the crevice and would explain the cracking of the tubes.

The Molar Ratio Control Program was implemented using the following actions:

- a. The parts-per-billion (PPB) ratio of sodium to chloride in the steam generator blowdown water is being maintained between 0.2 and 0.5. This is being accomplished in three steps: First, one blowdown demineralizer with only cation resin at 200 parts-per-million is in operation. This selectively removes sodium allowing chloride to return to the secondary system; Second, a second blowdown demineralizer with the normal ratio of cation to anion resin is operated intermittently as the chloride concentration increases (similar to the way the cation demineralizer is used in the chemical volume and control system to remove lithium); Third, if the chloride concentration remains too low, a condensate polisher will be placed on line at about 1000 gallons-per-minute to leak chlorides into the system.
- b. In order to determine the effects of the chemistry change on the device environment, a prompt hideout return study needs to be performed 6 to 12 weeks after implementation. This will require a Mode 3 entry for 8 to 12 hours.
- c. Continue to maintain a feedwater Hydrazine concentration of 100 PPB to minimize iron transport and reduce the corrosion potential in the steam generator.

The inspectors reviewed the special procedure and safety evaluation used to control and approve the implementation of this program. The procedure and evaluation were thorough.

5. Monthly Maintenance Observation (62703)

Routinely, station maintenance activities were observed and/or reviewed by the inspectors to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with technical specifications.

The following items were also considered during this review: approvals were obtained prior to initiating the work; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; and activities were accomplished by qualified personnel.

The following maintenance activities were observed and reviewed:

- Nuclear Work Request (NWR) A58545; "1ES007, Extraction Steam supply Valve to 15 A and B Low Pressure Heaters Stuck Closed."
- NWR A57970; "2FW01AB, 27B Heater Divider Plate Repair."

6. Monthly Surveillance Observation (61726)

The inspectors observed several of the surveillance testing required by technical specifications during the inspection period and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that results conformed with technical specifications and procedure requirements and were reviewed, and that any deficiencies identified during the testing were properly resolved.

The following surveillance activities were observed and reviewed:

- 1BWVS 3.1.1-6, "Reactor Coolant Pump Underfrequency Quarterly Surveillance."

7. Report Review

During the inspection period, the inspector reviewed the licensee's Monthly Performance Report for December 1992. The inspector confirmed that the information provided met the requirements of Technical Specification 6.9.1.8 and Regulatory Guide 1.16.

The inspector also reviewed the licensee's Monthly Plant Status Report for November 1992.

No violations or deviations were identified.

8. Exit Interview (30703)

The inspectors met with the licensee representatives denoted in Paragraph 1 during the inspection period and at the conclusion of the inspection on January 21, 1993. The inspectors summarized the scope and results of the inspection and discussed the likely content of this 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.