

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/92011(DRP); 50-457/92011(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

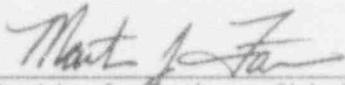
Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, Illinois

Inspection Conducted: April 21 through June 5, 1992

Inspectors: S. G. Du Pont
D. J. Hartland

Approved By:


Martin J. Farber, Chief
Reactor Projects Section 1A

6/25/92

Date

Inspection Summary

Inspection from April 21 through June 5, 1992 (Reports No. 50-456/92011(DRP); 50-457/92011(DRP))

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

Results: No violations were identified.

- A discrepancy was identified in the licensee's performance tracking system. "Windows," in that it discouraged self-regulatory efforts by not giving positive credit for self-identified findings and correcting problems.
- The license demonstrated proactive involvement in monitoring and correcting the Steam Generator Safety Valve leakage prior to becoming a significant problem.
- A concern was identified with the timeliness of several long term out-of-services.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

K. L. Kofron, Station Manager
*G. R. Masters, Project Manager
G. E. Groth, Production Superintendent
*D. E. O'Brien, Acting Station Manager
*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 Administrator
*A. Haeger, Regulatory Assurance Supervisor
*P. L. Maher, Assistant Technical Staff Supervisor
*J. R. Petro, Acting Technical Superintendent
*L. Guthrie, Assistant Superintendent - Maintenance
*J. Lewand, Regulatory Assurance
*D. Skoza, Site Engineer
*K. Root, Operating

*Denotes those attending the exit interview conducted on June 8, 1992.

The inspectors also talked with and interviewed several other licensee employees.

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

Through review of records, the following LERs were reviewed to determine that reportability requirements were fulfilled, that immediate corrective action was accomplished, and that corrective action to prevent recurrence had been or would be accomplished in accordance with technical specifications:

(Closed) 457/91004: Personnel errors result in late performance of technical specification surveillance. Surveillance 1BwOS 4.6.2.1.d-1, "Unit 2 Reactor Coolant System Water Inventory Balance," was completed as scheduled on August 23, 1991. The completed surveillance was reviewed by the shift supervisor, but was not recorded as complete in the General Surveillance (GSRV) logbook. Since the GSRV logbook is used to track surveillances, a review of the GSRV logbook on August 25, 1991 revealed that the completion entry was missing and an incorrect entry of August 24, 1991 was made. Since the surveillance is performed at least once per 72 hours, the next surveillance was completed on August 27, 1991. This resulted in exceeding the required frequency. The licensee revised the GSRV program to use the completed surveillance cover sheet to prevent inaccurate entries into the

scheduling system. The inspector found the corrective actions to be effective with no recurrences noted since August 1991.

(Closed) 456/91008: Scaling deficiency of Over Temperature Delta Temperature due to preservice design error. The details of the event, licensee's actions, and corrective actions were previously documented in Inspection Reports No. 50-456/91017; 50-457/91015 and 50-456/91019; 50-457/91017.

(Closed) 456/91009: Gas Decay Tank (GDT) sample was not obtained due to a procedure deficiency. There are six gas decay tanks at Braidwood and each tank is normally isolated from the other tanks. Each tank has a technical specification limit for curies content. Due to a unit startup, the curie contents of the tanks were required to be determined. However, on August 8, 1991, when the "C" GDT was filled, actions associated with the operating procedure required the operator to isolate the tank and place another in standby, but failed to direct the operator to request a sample of the "C" GDT. The licensee discovered this error on August 27, 1991, through document reviews and immediately sampled the tank. The operating procedure was revised to require sampling of the GDT within the technical specification frequency.

(Closed) 456/92005 : Nuclear Instrumentation System Power Range Channel N-41 was declared inoperable. Discussion of the details of the event and corrective actions were previously documented in Inspection Reports No. 50-456/92011; 50-457/92011.

No violations or deviations were identified.

3. Safety Assessment/Quality Verification (40500)

During the inspection period, the inspectors reviewed the Station Management's and Quality Assurance organization's involvement in identifying and correcting problems. During previous inspection periods, personnel errors were identified as recurring problems.

The licensee, both station and corporate, uses several different management tools to identify problems. One of these tools is corporate's "Windows", a program involving trending of activities and problems in the different functional areas relating to the station. These functional areas are rated based upon several indicators such as inputs and findings by the NRC, quality assurance, and industry overview organizations. These ordinal ratings, evaluated quarterly, are green for "superior," white indicating "satisfactory," yellow outlined with white as "improving," yellow for "needing attention," and red indicating "unsatisfactory." The Windows program was implemented several years ago with some success in identifying problem areas. However, the Windows program has been less than successful in forecasting precursors relating to personnel errors, such as inattention to details, communication problems, or inadequate task briefings.

Previously, the Windows program relied primarily on findings by the NRC, industry overview organization, and Nuclear Quality Programs (NQP) to identify personnel related errors which would reduce the rating. The Windows programs for operations, maintenance, and other functional areas are currently being revised to include the ability to identify personnel error precursors. The inspector reviewed the parameters used as inputs to the operating window reflecting personnel performance and found them to be adequate and logical for indicating precursors that would forecast personnel related errors.

The personnel performance category evaluates seven precursors: (1) number of personnel errors identified during the quarter, (2) cumulative personnel errors during a following 12 month period, (3) Person-Rem Efficiency measured by Person-Rem per 1000 hours of work under radiation work permits, (4) number of personnel contamination events cumulative during a following 12 month period, (5) industrial recordable accidents, (6) number of security badge control occurrences, and (7) number of security door violations. The first two inputs, number of errors per quarter and the 12 month cumulative errors, are direct indications of personnel errors; however, the additional five are good precursors that trend work practices. These work practice related problems could forecast the potential for personnel errors in operating performance, due to inattention to detail, communication problems, or inadequate task briefings, before errors occur in safety-related operations.

The inspector also evaluated the effectiveness of the Windows program and found that one aspect of the program was not being effectively used by the station. Because of the potential to forecast potential personnel related problems by observing work practices in non safety-related activities, it would be a benefit to a station department to use NQP to evaluate a department's work practice. The Operating Department requested that NQP observe control room performance during the last quarter of 1991. This was an example of the operations department identifying root causes for personnel related performance problems identified by the NRC in October 1991. The operations department was able to implement several significant corrective actions based upon the identified root causes. This was also an example of team work between station departments to resolve problems. However, many other opportunities to involve NQP or use the full potential of the Windows program were not used by other departments to identify root causes to personnel related problems. Although Station Management and Regulatory Assurance are adequately addressing the personnel errors noted during previous inspection periods, it is also apparent that the Windows program's effectiveness is not being fully utilized.

The inspectors review of the parameters used by the Windows program identified one discrepancy in the licensee's ability to self-identify and correct problems. As previously stated, a functional area is rated by several indicators and adjusted by findings by the NRC, the industry overview organization, and NQP. In all three cases, the functional area is rated negatively with findings from any of the three organizations. There is no credit given for correcting NQP identified findings. NQP is

a critical element in the station's self-identifying process. Since the program only adjusts a rating negatively for NQP findings, this is considered to be adverse to promoting self-identification of issues.

The inspector also reviewed NQP's use of the Windows program. NQP has developed additional precursors for their monitoring of the functional areas. Some of these, such as oral and written communications, supervisory involvement, and task briefings provide additional precursors for forecasting personnel performance problems and identifying root causes. NQP also monitors and evaluates the collective performance in all the functional areas relating to these precursors. Although written communications was not recently identified as problems in any of the Window's functional areas, it was identified by NQP as a precursor to personnel performance in the majority of the Window's functional areas. The inspector found this to be an example of proactive and performance based evaluation on the part of NQP.

No violations or deviations were identified.

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.

On a sampling basis the inspectors verified proper control room staffing and coordination of plant activities; verified operator adherence with procedures and technical specifications; monitored control room indications for abnormalities; verified that electrical power was available; and observed the frequency of plant and control room visits by station managers. Continued improvements in professionalism were noted during the inspection period. The operators demonstrated awareness of events within the industry and were active in addressing these events. The inspectors also noted that operator's logs were concise and accurate.

During tours of accessible areas of the plant, the inspectors made note of general plant and equipment conditions, including control of activities in progress. The specific areas observed were:

Engineered Safety Features (ESF) Systems

Accessible portions of ESF systems and their support systems components were inspected to verify operability through observation of instrumentation and proper valve and electrical power alignment. The inspectors also visually inspected components for material conditions. No deficiencies were observed during this inspection period.

Radiation Protection Controls

The inspectors verified that workers were following health physics procedures and randomly examined radiation protection instrumentation for operability and calibration. No deficiencies were noted during this inspection period.

Security

During the inspection period, the inspectors monitored the licensee's security program to ensure that observed actions were being implemented according to their approved security plan. The inspectors noted that badge control occurrences were significantly reduced during this inspection period.

Housekeeping and Plant Cleanliness

The inspectors monitored the status of housekeeping and plant cleanliness for fire protection and protection of safety-related equipment from intrusion of foreign matter. Several balance-of-plant valve packing leaks were noted by the inspectors and the licensee during the inspection period.

Events

The inspectors observed or reviewed documentation associated with the following events to verify that appropriate actions and responses were taken and that procedures were adhered to:

On May 31, 1992, while Unit 2 was in the progress of starting up following a seven day forced outage, the 2B rod drive motor-generator output breaker tripped open followed shortly by the tripping of the output breaker for the 2A motor-generator. This resulted in all control and shutdown control rods inserting. The unit operator responded appropriately by manually tripping the reactor to ensure that all control rods fully inserted.

The licensee's troubleshooting and testing revealed that the causes of the output breaker trips were instrument drift and drifting of relay setpoints. The output voltage for the 2B motor-generator had drifted and was incorrectly indicating output voltage lower than actual. Operating procedures require verifying and adjusting the output to within a prescribed band on a shiftly basis. Since the output voltage was raised several volts to maintain the indicated voltage within range, this raised actual voltage and current to within a few volts and amperes of the under excitation trip setting. A momentary spike above the trip setting resulted when the control rod bank was withdrawn for the

reactor startup resulting in the tripping of the output breaker.

After the 2B motor-generator output breaker tripped, the voltage regulator for the 2A motor-generator shifted from the 2A motor-generator to a single motor-generator mode of operation as expected. Shifting of modes to single motor-generator normally raises the underexcitation settings to a higher value. However, the relay settings were found to have drifted and the momentary spike due to rod movement exceeded the setting resulting in the subsequent tripping of the 2A motor-generator output breaker. The licensee recalibrated the 2B motor-generator output voltage indication and replaced the 2A underexcitation relay. The unit was successfully returned to service on June 2, 1992.

Since the root causes were related but independent of each other, a high probability existed for failure to determine and identify both. The licensee took a conservative approach to determining the root causes and developed an extensive test that was successful in identifying both root causes.

The licensee also demonstrated another example of taking conservative approaches towards safety. On May 23, 1992, the licensee shut down Unit 2 because of steam leaks past the 2B Steam Generator Safety Valve. The licensee was monitoring the leakage over a two week period prior to the shutdown. Although the leakage was minor and within limits, station and corporate management scheduled the outage to replace the safety at the earliest possible time considering load demand and availability of spare parts. The replacement was successful and well coordinated, reflecting good scheduling and pre-task planning. This is considered to be a conservative approach to safety.

The inspectors also monitored various records, such as tagouts, jumpers, shift logs and surveillances, daily orders, maintenance items, various chemistry and radiological sampling and analyses, third party review results, overtime records, QA and/or QC audit results and postings required per 10 CFR 19.11.

No violations or deviations were identified.

5. Monthly Maintenance Observation (62703)

Routinely, station maintenance activities were observed and/or reviewed 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:

- Replacement of Unit 2 diesel generator cooling water wrinkle belly.
- Repairs to the Unit 2 Feedwater Isolation Valve.
- Replacement of Unit 2 "2A" Steam Generator Safety Valve.
- Troubleshooting and repairs to the control room chillers.

During a review of maintenance work requests (NWRs), the inspectors identified a concern with several long term out-of-services. Both units have had the positive displacement charging pumps (PDPs) out-of-service for greater than two years. The Radwaste Evaporator Effluent Monitor (equipment number OPR06) was taken out-of-service on September 8, 1987 due to the lack of available cooling water to the startup pump for the monitor during the startup phase. The initial estimated duration for this out-of-service was for one year. No apparent progress to return these components to service has been evident.

It is not clear whether these components are to be returned to service, permanently removed from service, or modified. None of the components are required for operation by the technical specifications but are described by the Final Safety Analysis Report (FSAR). This is an Unresolved Item (50-456/92011-01(DRP)) until further information is provided by the licensee. The licensee is requested to provide information pertaining to the control of long term out-of-services, address returning the systems to agreement with the FSAR, or modifying the systems and revising the FSAR.

One Unresolved Item was identified.

6. Surveillance Activities

The licensee identified, on May 28, 1992, that a Safety Evaluation Report (SER) commitment to test control room in-leakage was not performed in the required 18 month frequency. This testing was committed by the SER because of the elimination of chlorine detectors and the close proximity to railroad traffic transporting quantities of chlorine.

The root cause was determined by the licensee to be a failure of the surveillance tracking system to include this commitment. The licensee

verified that all other SER commitments were included and that this was an isolated occurrence. Additionally, the control room in-leakage testing was previously conducted within the committed frequency.

The licensee also determined that the efforts to remove the commitment contributed to the missed testing. On November 26, 1991, the licensee requested removal of the commitment based upon an agreement with representatives of Will County to provide notification to Braidwood of a chlorine accident. However, no commitment release was obtained. Because of expectations of removing the commitment and miscommunications, individuals responsible for tracking the surveillance failed to schedule it in January 1992.

The licensee took immediate actions by scheduling and performing the surveillance, added the surveillance to the computer surveillance tracking system, notified the NRC of the missed surveillance, and re-submitted a request to remove the commitment.

7. Report Review

During the inspection period, the inspector reviewed the licensee's Monthly Performance Reports for April and May 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 Reports for April and May 1992.

No violations or deviations were identified.

8. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. An Unresolved item disclosed during the inspection is discussed in Paragraph 5.

9. 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 June 8, 1992. 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.