

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-456/88003(DRP); 50-457/88003(DRP)

Docket Nos. 50-456; 50-457

License Nos. 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: January 1 through February 13, 1988

Inspectors: T. M. Tongue
T. E. Taylor
J. M. Jacobson

Approved By: *R. M. L. Hinds, Jr.*
J. M. Hinds, Jr., Chief
Reactor Projects Section 1A

2/25/88
Date

Inspection Summary

Inspection from January 1 through February 13, 1988 (Report Nos. 50-456/88003(DRP); 50-457/88003(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of technical specification review; operational safety verification; radiological protection; engineered safety feature systems; physical security; monthly maintenance observation and modification installations; surveillance test shift briefing; monthly surveillance observation; training effectiveness; report review; and meetings and other activities.

Results: No violations or deviations were identified.

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DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- + J. O'Connor, President
- + B. Thomas, Executive Vice President
- + C. Reed, Senior Vice President
- +*T. J. Maiman, Vice President
- +*K. Graesser, General Manager
- +*M. J. Wallace, Manager of Projects
 - D. L. Shamblin, Project Manager
- + E. E. Fitzpatrick, Station Manager
 - W. E. Vahle, Construction Superintendent
- +*D. E. O'Brien, Station Services Superintendent
 - K. Kofron, Production Superintendent
- +*L. E. Davis, Assistant Superintendent - Technical Services
 - B. Byers, Assistant Construction Superintendent
 - M. Lohman, Project Startup Superintendent
 - P. Cretens, Station Startup Assistant Superintendent
 - F. Willaford, Security Administrator
- *D. Paquette, Maintenance Assistant Superintendent
- +*G. Masters, Operations Assistant Superintendent
 - E. L. Martin, Quality Assurance Superintendent
 - R. Benn, Assistant Security Administrator
- +*P. Barnes, Regulatory Assurance Supervisor
 - M. Takaki, Regulatory Assurance
 - J. Gosnell, Quality Control Supervisor
 - P. E. Aker, Radiation/Chemistry Supervisor
- +*J. Jasnoz, Technical Staff AR/PR Coordinator
- +*R. Lemke, Technical Staff Supervisor
 - E. R. Netzel, Quality Assurance Supervisor
 - G. M. Orlov, Staff Assistant to Project Manager
 - P. G. Holland, Regulatory Assurance
- +*T. W. Simpkin, Regulatory Assurance Operating Experience Group
 - R. C. Bedford, Regulatory Assurance
 - R. D. Kyroutac, Quality Assurance Supervisor
 - L. Kline, Regulatory Assurance Industry Group
 - L. W. Raney, Nuclear Safety
 - R. J. Ungeran, Operating Engineer Unit 1
 - R. Yungk, Operating Engineer Unit 2
 - R. Legner, Lead Operating Engineer
 - T. O'Brien, Tech Staff
 - S. Hedden, Master, Instrument Maintenance
 - R. Hoffman, Master, Mechanical Maintenance
 - J. Smith, Master, Electrical Maintenance
 - W. McGee, Training Supervisor
 - B. Tanouye, Project Construction Department
 - A. J. D'Antonio, Quality Control
- +*E. Carroll, Regulatory Assurance

NRC Personnel

+A. B. Davis, Regional Administrator
+C. J. Paperiello, Deputy Regional Administrator
+H. J. Miller, Director, Division of Reactor Safety
+E. G. Greenman, Acting Director, Division of Reactor Projects
+W. L. Forney, Chief, Reactor Projects Branch 1
+J. M. Hinds, Chief, Reactor Projects Section 1A
+S. Sands, NRR Licensing Project Manager

*Denotes those attending the exit interviews conducted on February 4 and February 11, 1988, and at other times throughout the inspection period.

+Denotes those attending the Management Meeting and/or meeting with Chairman Zech on February 5, 1988, or the plant tour on February 13, 1988.

The inspectors also talked with and interviewed several other licensee employees, including members of the technical and engineering staffs, startup engineers, reactor and auxiliary operators, shift engineers and foremen, and electrical, mechanical and instrument maintenance personnel, as well as contractor personnel, including security personnel, construction personnel, and startup engineers.

2. Startup Test Observation (72302)

The inspectors witnessed performance of portions of the following Unit 1 and Unit 2 startup test procedures in order to verify that testing was conducted in accordance with the operating license and procedural requirements, that test data was properly recorded, and that the performance of licensee personnel conducting the tests demonstrated an understanding of assigned duties and responsibilities:

Unit 1 - NR-39 Reactor Scram from 100% Power.

Unit 2 - RP-70 Reactor Protection Logic.

No violations or deviations were identified.

3. Technical Specification Review (71301)

During the review of 2513 inspection modules, a review concerning Module 71301 was performed. During review and inspection of the Technical Specifications (TSs), the inspectors found that the TSs are enforceable, are clearly written, and accurately reflect the installed referenced systems. Additionally, the inspectors found a high degree of consistency between the TSs, Safety Evaluation Report (SER), Final Safety Analysis Report (FSAR), as-built system configurations, surveillance requirements and pre-operational test acceptance criteria. These TSs have been in use at Braidwood Unit 1 since October 17, 1986, and nearly identical TSs have been in use at Byron Station, a plant of the same design, since November 1985. This item is considered closed for Braidwood Unit 2.

No violations or deviations were identified.

4. Operational Safety Verification (71707)

The inspectors conducted routine plant tours during the inspection period to make an independent assessment of equipment conditions, plant conditions, construction activities, security, fire protection, general personnel safety, housekeeping, and adherence to applicable regulatory requirements. During the tours, the inspectors reviewed various logs and daily orders, interviewed personnel, attended shift briefings and plan of the day meetings, witnessed various construction work activities, and independently determined equipment status. During the shift changes, the inspectors observed operator, shift control room engineer, and shift engineer turnovers and panel walkdowns.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

No violations or deviations were identified.

5. Radiological Protection (71709)

The inspectors selected portions of the licensee's radiological program for review to verify conformance with facility policies, procedures, and regulatory requirements. Observed aspects included the health physics managers' awareness of any unusual conditions or challenges, the implementation of the ALARA program, the use of Radiological Work Permits (RWPs), the control and monitoring of radiation exposures, including that associated with work in high radiation areas if applicable, and the control of radioactive material.

No violations or deviations were identified.

6. Engineered Safety Feature (ESF) Systems (71710)

During the inspection, the inspectors selected accessible portions of several ESF systems to verify their status. Consideration was given to the plant mode, applicable Technical Specifications, Limiting Conditions for Operation Action Requirements (LCOARs), and other applicable requirements.

Various observations, where applicable, were made of hangers and supports; housekeeping; whether freeze protection, if required, was installed and operational; valve positions and conditions; potential ignition sources; major component labeling, lubrication, cooling, etc.; interior conditions of electrical breakers and control panels; whether instrumentation was properly installed and functioning and whether significant process parameter valves were consistent with expected values; whether instrumentation was calibrated; whether necessary support systems were operational; and whether locally and remotely indicated breaker and valve positions agreed.

During the inspection, accessible portions of the following ESF systems/components were walked down:

Unit 1

Train A Residual Heat Removal (RHR) System.

Unit 2

Train A Residual Heat Removal (RHR) System.

No violations or deviations were identified.

7. Physical Security (71881)

At various times throughout the inspection period, the inspectors monitored compliance with the Physical Security Plan (PSP). Observations were made of selections of manning levels and collateral duties of assigned personnel; access control equipment and processes, such as x-ray machines, metal detectors, explosive detectors, and other search mechanisms; whether protected area (PA) and vital area (VA) barriers were properly maintained; whether procedures were properly followed; whether compensatory measures were appropriately used when required; whether persons in the PA and VA were properly badged and escorted if required; whether various detection/assessment aids, such as fences and illumination of the PA, were operable, and whether TV monitors had sufficient clarity and resolution.

No violations or deviations were identified.

8. Monthly Maintenance Observation and Modification Installations (62703)

Station maintenance activities affecting the safety-related systems and components listed below were observed and 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 considered during this review: the limiting conditions for operation were met while components or systems were removed from and restored to service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and fire prevention controls were implemented. Work requests were reviewed to determine the status of outstanding jobs and to assure that priority is assigned to safety-related equipment maintenance which may affect system performance.

Maintenance activities on the following equipment were observed and reviewed:

Unit 1

Steam Generator 1C Narrow Range Level - Electronic Card Replacement and Testing.

NR32 Source Range - Level Trip Reset.

1A Diesel Generator Post Maintenance Test for WR (Work Request) A15289.

1B Diesel Generator Fuel Oil Leak.

ISI (Inservice Inspection) 8900C Check Valve Replacement.

1B Auxiliary Feedwater Pump Repair.

Unit 2

2A RCP (Reactor Coolant Pump) #1 Seal Leak Off Flow.

RCFC (Reactor Containment Fan Cooler) Fan Relay Post Maintenance Test.

Following completion of the maintenance of the valve, the inspector verified that the diesel generator had been returned to service properly.

During the inspection period, the licensee determined that modifications were required for the following areas:

P-8 Modification

The inspectors monitored the licensee's work in progress and verified that it was being performed in accordance with proper procedures and approved work packages, that 10 CFR 50.59 and other applicable drawing updates were made and/or planned, and that operator training was conducted in a reasonable period of time.

No violations or deviations were identified.

9. Surveillance Test Shift Briefing (93702)

While reviewing the daily operating logs, the inspector noticed an entry for a containment ventilation isolation (CVI) actuation which appeared to require an Emergency Notification System (ENS) notification. Discussions with the Nuclear Station Operator (NSO) on shift and the Tech Staff engineer involved in a Bus 142 undervoltage test during the time period in question again led the inspector to believe that a required ENS notification for a CVI had not been performed. Further discussion with Regulatory Assurance and a Tech Staff engineer who had previously performed an identical test identified that the CVI was an expected result for the test performed. The problem appears to be due to insufficient briefings prior to the start of the 18-month surveillance,

which failed to adequately inform the on-shift NSO of the expected test results. In addition, the Tech Staff engineer supervising the test was not aware that the CVI would occur. The problem of adequate briefing prior to performing a test or surveillance is considered an unresolved item (456/88003-01(DRP)).

No violations or deviations were identified. One unresolved item was identified.

10. Monthly Surveillance Observation (51725)

The inspectors observed surveillance testing required by Technical Specifications for Unit 1 during the inspection period and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that results conformed with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspectors also witnessed portions of the following test activities:

Unit 1

Steam Generator 1C Narrow Range Level Protection 18 Month Channel Verification/Calibration.

1B Feedwater Pump Instrumentation Calibration.

Unit 2

2A Emergency Diesel Generator - 24 Hour Run.

OPA02J Seismic Monitor 18 Month Surveillance.

No violations or deviations were identified.

11. Training Effectiveness (41400, 41701)

The effectiveness of training programs for licensed and non-licensed personnel was reviewed by the inspectors during the witnessing of the licensee's performance of routine surveillance, maintenance, and operational activities and during the review of the licensee's response to events which occurred during the inspection period. Personnel appeared to be knowledgeable of the tasks being performed, and nothing was observed which indicated any ineffectiveness of training.

Position specific training was observed for:

Use of Out-of-Service Cards and Personnel Protection Cards on the Moveable Incore Probes (MIPs)

P-8 Modification

The importance of "attention to detail" in response to the recent indication of an increasing trend in personnel errors.

Each of the foregoing sessions were presented at shift change "tail-gate" sessions.

No violations or deviations were identified.

12. Unit 2 Pre-Service Inspection (73755)

During the pre-service inspection of the loop 1 hot leg of the Unit 2 reactor coolant system, a rejectable ultrasonic test (UT) indication was observed in a pipe elbow adjacent to weld FW-3. The indication was initially characterized as a crack signal approximately 2 3/8 inches in length, 15% through wall, and circumferentially oriented. Subsequent to this determination, a CECo Level III individual reinspected the area in question in order to better characterize the flaw. This reinspection resulted in sizing the flaw at 1 1/2 inches in length and 20% through wall. This flaw is located within the ASME Code Section XI inspection envelope for FW-3.

The radiographs for FW-3 were retrieved from the file and reviewed by the NRC inspector. Both the original radiograph and a second one had been rejected by Pittsburgh Testing Laboratory, the non-destructive evaluation contractor, for unacceptable base metal indications. The CECo Level III inspector interpreted the indications as acceptable casting shrinkage and accepted the weld. The NRC inspector noted two axial indications approximately 1/2 inch in length and separated by approximately 1/2 inch. The indications are linear and appear to be casting shrinkage within the Code acceptance limits. This information was passed to NRR for evaluation.

The licensee is currently performing a crack growth analysis of the indication and will submit the results to NRR for evaluation. In addition a follow-up UT of the subject weld will be performed.

13. Report Review

During the inspection period, the inspector reviewed the licensee's Monthly Operating Report for December 1987 and January 1988. 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 December 1987.

No violations or deviations were identified.

14. Meetings and Other Activities (30702)

Management Meeting

On February 5, 1988, a management meeting was held onsite between the Acting Director of the Region III Division of Reactor Projects, members of the Region III staff, the Resident Inspectors, Commonwealth Edison corporate personnel, the Station Manager, and members of the licensee staff.

The subjects of the meeting were the recent indication of a trend of more frequent events due to personnel error and events due to spiking on Area Radiation Monitors (ARMs) and Process Radiation Monitors (PRMs). The meeting focused on several specific recent events and the licensee's assessments and corrective actions. The specific events discussed were:

January 25, 1988, ESF actuation when a technician tested the wrong containment pressure transmitter.

January 29, 1988, ESF actuation when an operator removed the wrong power fuses while preparing for testing undervoltage equipment.

January 31, 1988, ESF actuation when a contractor painter tripped a breaker while cleaning an electrical panel.

January 31, 1988, ESF actuation when an operator misunderstood instruction during a walk-through and commenced a safety injection test prior to starting the associated emergency diesel generator.

February 1, 1988, ESF actuation signal when a technician bumped a test switch causing it to trip.

Spurious actuations of the AR/PR system on January 8, 11, 12, 13, and 24, 1988.

In each case the licensee's assessment and planned or completed actions were found to be acceptable.

Among the actions taken, the licensee distributed a notice throughout the site, identified as "Heads Up" No. 88-8. In this Heads Up notice and through shift change mail-bag sessions, particular emphasis was placed on meticulous attention to detail regardless of the reactor status. In addition, the licensee issued a special operating order stating that the Shift Control Room Engineer in his role as Control Room Supervisor will review all surveillances to specify how to brief personnel involved.

In addition, the subject of reporting requirements as required by 10 CFR 50.72 and 10 CFR 50.73 were discussed. It appears that the reporting philosophy varies within the NRC, the industry, and utilities. The Acting Director, Division of Reactor Projects agreed to pursue the issue for clarification.

NRC Chairman Zech Onsite

On February 5, 1988, NRC Chairman Lando Zech was onsite for a tour and meeting with the licensee. The purpose of the visit was to focus on Unit 2 prior to the issuance of the full-power license. It was also an opportunity to observe continuing improvements such as the model spaces program and to tour the plant.

The Chairman talked briefly with several groups of employees at the station. He stressed the importance of the responsibilities of their jobs and expressed appreciation for their efforts.

In his exit discussion, he commented that Braidwood is moving in the right direction. He also offered additional comments, such as: personnel should guard against complacency with respect to housekeeping when the plant reaches full operational status; operators should be confident, but not overconfident; everyone should use all of his/her human faculties in monitoring the plant; and care should be exercised in the use of two-way radios and the P.A. system in the plant so that they are not distractions. He emphasized the importance of attention to detail and the importance of a good, well-planned outage/maintenance program. He also commented that he was pleased with the progress with the model spaces, and that they show care and pride in the station. He also stated that Braidwood shows evidence of a strong team organization.

The exit meeting was closed by remarks by Mr. O'Connor, President of Commonwealth Edison. He expressed pride in the Braidwood Station and thanked Chairman Zech for the visit.

Regional Administrator and Director, Division of Reactor Safety Onsite

On Saturday, February 13, 1988, Messrs. A. B. Davis, Region III Administrator, and H. J. Miller, Director, Division of Reactor Safety, visited the site with J. M. Hinds, Jr., Chief, Division of Reactor Projects, Section 1A.

The purpose of the tour was to observe first-hand the activities and appearance of the station prior to the Unit 2 initial criticality and the upcoming commission briefing for the full-power license.

Nothing was identified that would affect the full-power license, and the licensee promptly corrected or planned prompt correction for identified concerns.

15. 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 J.

16. Exit Interview (30703)

The inspectors met with the licensee and contractor representatives denoted in paragraph 1 during the inspection period and at the conclusion of the inspection on February 11, 1988. 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.