

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-456/90021(DRP); 50-457/90023(DRP)

Docket Nos. 50-456; 50-457

Licenses No. NPF-72; NPF-77

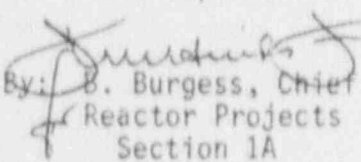
Licensee: Commonwealth Edison Company
Opus West III
1400 Opus Place
Downers Grove, IL 60515

Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, Illinois

Inspection Conducted: October 28 through December 15, 1990

Inspectors: S. G. DuPont
R. A. Kopriva

Approved By:  B. Burgess, Chief
Reactor Projects
Section 1A

DEC 26 1990
Date

Inspection Summary

Inspection from October 28 through December 15, 1990 (Reports No. 50-456/90021(DRP); 50-457/90023(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of plant operations, engineering safety feature systems, monthly maintenance observations, report review, and site visit and management meeting.

Results: Of the five areas inspected, no violations were identified in any areas.

During this report period, an enforcement conference was held pertaining to violations identified with the October 3, 1990, Reactor Coolant System (RCS) inventory loss which was identified in Inspection Report 50-456/90020. On October 3, 1990, the licensee violated their surveillance and administrative procedures resulting in a loss of the RCS inventory.

In the area of operational safety, Unit 1 experienced an unplanned trip and a forced outage stemming from problems associated with the 1B turbine driven feedwater pump. Unit 2 performance was good. While the licensee's response to the unit trip was good, followup in determination and resolution of root cause problems appears to be weak. Continued emphasis needs to be enforced

on good communications along with a good understanding of the administrative procedures being used.

Housekeeping is generally good. The licensee needs to maintain their efforts in this area so as not to decline. Valve leaks and catch basins should be monitored such that potentially worsening conditions are corrected in a reasonable time period.

Plant operations and maintenance/surveillance continues to be adequate with no noticable trends.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- *K. L. Kofron, Station Manager
- *G. E. Groth, Production Superintendent
- *R. J. Legner, Services Director
- *D. E. O'Brien, Technical Superintendent
- *R. D. Kyrouac, Nuclear Quality Program Superintendent
- S. Roth, Security Administrator
- *G. R. Masters, Assistant Superintendent - Operations
- R. L. Byers, Assistant Superintendent - Work Planning
- *D. E. Cooper, Technical Staff Supervisor
- *D. J. Miller, Regulatory Assurance Supervisor
- P. Smith, Operating Engineer
- R. Yungk, Operating Engineer
- W. B. McCue, Operating Engineer
- *E. W. Carroll, Regulatory Assurance
- *M. A. Gorski, Nuclear Safety
- *M. J. Andrews, Operating Staff
- *R. H. Richard, Operating Staff

*Denotes those attending the exit interview conducted on December 13, 1990, and at other times throughout the inspection period.

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

2. Plant Operations (71707, 93702)

During the inspection period, 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. This was done on a sampling basis through routine direct observation of activities and equipment, tours of the facility, interviews and discussions with licensee personnel, independent verification of safety system status and limiting conditions for operation, corrective action, and review of facility records.

On December 1, 1990, the Unit 1 1B feedwater pump tripped. The unit Nuclear Station Operator (NSO) attempted to maintain the steam generators' water level by ramping back from 100% power. However, these efforts did not prevent the 1B steam generator from reaching the low-low water level setpoint and resulting in a reactor scram. All systems and the NSOs responded as expected during the scram and the unit was stabilized in Mode 3 at normal operating temperature and pressure. The licensee began

an investigation for the cause of the feedwater pump trip but was unable to determine the root cause beyond the possible fouling of the in-line lube oil filter due to water residue within the lube oil sump. This could have resulted in a high differential pressure across the filter and a momentary low lube oil pressure. However, this could not be confirmed and did not fully explain the feedwater pump trip.

The licensee declared the 1B feedwater pump inoperable and continued the investigation of the pump trip. On December 3, 1990, the licensee committed to verifying that a similar possible intrusion of water did not exist in the 1C feedwater pump lube oil sump prior to commencing a unit startup. The 1B and 1C feedwater pumps are turbine driven with similar design lube oil systems. The 1A feedwater pump is motor driven with a sealed lube oil system. The licensee has experienced previous problems with water intrusion into the turbine driven pumps' lube oil system. The licensee, at both Byron and Braidwood stations, had implemented corrective actions by installing a portable centrifuge on the turbine driven pumps to separate the water from the lube oil. This centrifuge is routinely switched between the pumps. Prior to the 1B feedwater pump trip, the centrifuge was installed on the 1C pump.

The licensee's inspection of the 1C feedwater pump lube oil sump verified that water intrusion into the lube oil did not exist. The licensee commenced a normal reactor startup on December 3 and returned the unit back on line on December 4, 1990.

The inspectors had several concerns with the recovery from the unit scram. These concerns were addressed with the licensee and partially resolved. The inspectors discussed the licensee's investigation efforts and plans to return the unit to service with the operating shift Station Control Room Engineer (SCRE) and Shift Engineer (SE) on December 2, 1990. At that time, the licensee planned to startup and return the unit to service. However, during the discussions with the SE and SCRE it was revealed that the root cause of the 1B feedwater pump trip had not been determined nor was it determined that the 1C pump was also not vulnerable to tripping. The SE stated that startup was allowed since the root cause of the unit scram, low-low steam generator, was known and that startup up to 50% power is achievable with only the 1A motor driven feedwater pump.

The inspector discussed this concept with the station manager, production superintendent and the assistant superintendent of operations on December 3.

The licensee stated that the plans to inspect the 1C pump had been developed by plant management, but that station management had not informed the operating shift supervision of this plan until December 3. The licensee also stated a difference in the definition of root cause in that, for this event, the root cause of the unit scram was the low-low steam generator water level and not the tripping of the feedwater pump. The inspector disagrees with this philosophy in that the feedwater pump trip coupled with the inability of maintaining steam generator water level during the power runback, resulted in the scram.

Since the licensee verified that the 1C and 1A pumps were not affected, startup of the unit on December 3 was allowable. It should be noted that other, not related, problems with the recombiner prevented a reactor startup until December 3.

The second concern pertained to the transferred knowledge of the event to the on-coming SCRE on December 3. The SCRE had returned to shift rotation on the morning of December 3 after several days of being on a normal off shift period. Through discussions with the SCRE it was revealed that only minimal information pertaining to the feedwater pump trip was discussed during the shift turnover between SCREs, other than that some problems existed with the feedwater pump lube oil system. A review of the SE logs and turnover sheets also revealed that only minimal information of the event was documented, such as the time of the reactor scram and feedwater trip, and that low-low steam generator level setpoint had been reached. However, the SE's log was not very descriptive on the root cause of the feedwater pump trip or the course of the investigation. This was also discussed with the licensee on December 3. The licensee expressed that it is not the intent of a single log or document to contain all of the details and activities of an event, but that by using several documents, such as unit logs, various turnover sheets and night orders, a complete understanding of the activities can be obtained. However, a review of both the SE's logs and turnover sheets did not provide information pertaining to limitations for startup, troubleshooting and investigation activities or the as-found conditions of the lube oil system. These concerns are ongoing and of similar nature to those addressed in Inspection Report 50-456/90023. These concerns will be resolved with resolution of the issues documented in Inspection Report 50-456/90023.

Engineered Safety Features (ESF) Systems

Accessible portions of ESF systems and components were inspected to verify: valve position for proper flow path; proper alignment of power supply breakers or fuses (if visible) for proper actuation on an initiating signal; proper removal of power from components if required by TS or FSAR; and the operability of support systems essential to system actuation or performance through observation of instrumentation and/or proper valve alignment. The inspectors also visually inspected components for leakage, proper lubrication, and cooling water supply.

Radiation Protection Controls

The inspectors verified that workers were following health physics procedures for dosimetry, protective clothing, frisking, posting, etc., and randomly examined radiation protection instrumentation for use, operability, and calibration.

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 inspector noted that persons within the protected area displayed proper photo-identification badges and those individuals requiring escorts were properly escorted. The inspector also verified that checked vital areas were locked and alarmed. Additionally, the inspector also verified that observed personnel and packages entering the protected area were searched by appropriate equipment or by hand.

Housekeeping and Plant Cleanliness

The inspectors monitored the status of housekeeping and plant cleanliness for fire protection, protection of safety-related equipment from intrusion of foreign matter and general protection.

The inspectors also monitored various records, such as tagouts, jumpers, shift logs and surveillances, daily orders, maintenance items, various chemistry and radiological sampling and analysis, 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.

3. 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 significant process parameter values 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, the following ESF components were walked down:

Unit 1

1B Diesel Generator
1B Auxiliary Feed Pump

Unit 2

Diesel Driven Auxiliary Feed Pump

No violations or deviations were identified.

4. Monthly Maintenance Observation (62703)

Station maintenance activities affecting the safety-related systems and components were observed/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 maintenance activity was observed and reviewed:

Unit 1

1B Turbine Driven Feed Pump

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.

No violations or deviations were identified.

5. Report Review

During the inspection period, the inspector reviewed the licensee's Monthly Performance Report for November 1990. 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 1990.

No violations or deviations were identified.

6. Site Visit and Management Meeting (30702)

An Enforcement Conference was held at the Braidwood Nuclear Station on December 11, 1990, between staff members of Region III, the Office of Nuclear Reactor Regulations, and Commonwealth Edison Company. The Enforcement Conference pertained to the event of October 4, 1990, in which procedural errors were violated resulting in a reactor coolant spill. The details of the event are identified in Inspection Report 50-456/90020.

While on site, members of the NRC performed a plant tour of the turbine building, auxiliary building, and control room.

No violations or deviations were identified.

7. Exit Interview

The inspectors met with the licensee representatives denoted in Paragraph 1 during the inspection period and at the conclusion of the inspection on December 13, 1990. 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.