U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/91005(DRSS); 50-457/91005(DRSS)

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: February 11-15, 1991

Inspector: M. A. Kunowski Senior Radiation Specialist

Accompanying Inspector: B. L. Hamrick

2 M. Schuldeller Reviewed By: M. C. Schumacher, Chief Radiological Controls and

Chemistry Section

Inspection Summary

Inspection on February 11-15, 1991 (Reports No. 50-456/91005(DRSS); 50-457/91005(DRSS))

Areas Inspected: Routine inspection of the liquid and gaseous radioactive waste (radwaste) programs (Inspection Procedure (IP) 84750). The inspector also briefly reviewed the licensee's preparations for the upcoming Unit 1 refueling outage and actions on several previous inspection findings (IPs 83750 and 92701).

Results: The licensee's liquid and gaseous radwaste programs are adequate. Although calculated offsite doses from liquid and gaseous radwaste releases have been below Technical Specification limits, the licensee has recently begun efforts to further reduce the quantity of radioactive material released from the site (Sections 7 and 8). Operability problems plague several important radiation monitors, but the licensee has taken the appropriate compensatory actions (Section 6). The licensee's preparation for the upcoming outage appears good (Section 10).

9103180485 910305 PDR ADOCK 05000456 D PDR

3-5-91 Date

3-5-91 Date

DETAILS

1. Persons Contacted

+M. Auer, Technical Staff Engineer
+K. Bartes, Onsite Nuclear Safety Administrator
+E. W. Carroll, Regulatory Assurance
D. E. Cooper, Technical Staff Supervisor
H. Engstrom, Engineering Assistant, Chemistry
+P. Habel, Operating Engineer
+A. R. Haeger, Regulatory Assurance
M. J. Harper, Nuclear Quality Programs (NQP)
+D. Kapinus, Assistant Technical Staff Supervisor
+K. L. Kofron, Station Manager
+M. Kurth, Radwaste Shipping Coordinator
+G. Masters, Assistant Superintendent of Operations
+D. J. Niller, Regulatory Assurance Supervisor
+U. E. O'Brien, Technical Superintendent
+J. R. Petro, Chemistry Supervisor
+E. M. Roche, Lead Health Physicist, Operations
R. Thacker, Lead Health Physicist, Technical

The inspector also spoke with other licensee and contractor employees.

+R. A. Kopriva, NRC Resident Inspector +N. Shah, NRC Radiation Specialist

+Denotes those present at the exit meeting of February 15, 1991.

2. General

This was a routine inspection of the liquid and gaseous radwaste programs. In addition, the inspector reviewed several previous inspection findings and preparations for the Unit 1 refueling outage.

3. Licensee Action on Previous Inspection Findings (IP 92701)

(Closed) Open Item (456/89025-01; 457/89025-01): Review the results of the licensee's investigation of an unplanned extremity exposure of a fuel handler from a hotspot on a "shoehorn," a piece of fuel handling equipment. The licensee's investigation identified a breakdown in communications within the radiation protection group as the primary cause of the exposure, which resulted in an extremity dose of 1.253 rem being calculated and assigned to the fuel handler. Training on the communications aspect of the problem and on the characteristic radiation hazards of hotspots has been provided by the licensee.

(Closed) Violation (456/90009-01; 457/90009-01): Failure to operate the containment atmosphere sampling system quarterly. The licensee added the quarterly operation requirement to its routine surveillance tracking system after the violation was identified and has operated the system quarterly since then. In addition, the licensee has corrected several discrepancies between the actual system configuration and the description in the Updated Safety Analysis Report. These discrepancies had been identified by the inspector and documented in Inspection Reports No. 456/90009(DRSS); 457/90009(DRSS).

(Closed) Open Item (456/90024-01; 457/90025-01): Revise procedure on dewatering resins to specify the intended period of temperature monitoring. The licensee changed the procedure to specify that the operator should monitor the temperature several times per hour for the first hour after loss of suction on the dewatering equipment and occasionally thereafter.

4. Audits and Appraisals

The inspector reviewed the results of NQP Audit Number 20-90-16, which included a review of radwaste effluent monitor setpoints, compliance with Technical Specifications action statements for out-of-service monitors, and dose calculations. The audit was an indepth, generally performance-based review, conducted by experienced and knowledgeable personnel. No problems in this area were identified by the auditors.

No violations were identified by the NRC inspector.

5. Changes in the Programs and Training and Qualifications of Personnel

There have been no major equipment changes in the programs since the previous review in mid-1989 (Inspection Reports No. 456/89024(DRSS); 457/89024(DRSS)). Administrative changes are described below in Sections 7 and 8. Since a recent review of the licensee's solid radwaste program (Inspection Reports No. 456/90024(DRSS); 457/90025(DRSS)), the licensee appointed a new radwaste shipping coordinator to replace an individual who after several months in the position requested to be returned to his previous job as a radwaste operator. The coordinator oversees the onsite vendor who processes the licensee's liquid radwaste. A discussion with the newly appointed coordinator indicated that ne had over seven years experience at Braidwood, including experience with the makeup demineralizer system and contaminated laundry shipments. In addition, he recently completed a 3-day training course on shipping regulations and burial site requirements. His overall relative inexperience in the radwaste processing and shipping programs is offset by the experience of the vendor representative and the staff health physicists responsible for shipments.

No violations of NRC requirements were identified.

6. Process and Effluent Radiation Monitors

A review of records for several radwaste releases indicated that the licensee verified alarm and trip setpoints of monitors prior to the releases when the monitors were operational. However, water intrusion into the waste gas decay tank radiation monitor (ORE-PROO2) and the liquid radwaste effluent radiation monitor (ORE-PROO1) has resulted in these monitors being out-of-service (OOS) for many of the releases in 1990. Discussions with licensee engineers indicated that modifications to the systems to eliminate the problems are being pursued. Further discussions and a review of release records indicated that when the monitors were inoperable the licensee met the Technical Specification action statements (Technical Specifications 3.3.3.9 for liquid releases and 3.3.3.10 for gaseous releases) requiring the radioanalysis of two independently taken samples, dual verification of release rate calculations, and dual verification of discharge valve lineups.

The licensee has also had problems with the Unit 2 Containment Isolation radiation monitors (2RE-ARO11 and 2RE-ARO12). As described in Licensee Event Reports (LERs) 457/90-006 and 457/90-011, the detector in 2RE-ARO11 failed, and as described in LER 90-012 (and discussed in Inspection Reports No. 456/90016(DRP); 457/90019(DRP)), the detector in 2RE-ARO12 failed. Licensee representatives stated that they shipped the failed detectors to the manufacturer for analysis. Similar failures have not occurred in the comparable monitors in Unit 1 and the fuel building, and in the approximately 50 plant-wide area monitors equipped with the same model detector. The results of the manufacturer's analysis will be reviewed during a future inspection.

The inspector also reviewed the licensee's evaluation of a radiation spike received on October 6, 1990, on the control room ventilation monitor, ORE-PRO31, as described in LER 456/90-019. A detector in this monitor had previously failed and been replaced in December 1989 (LER 456/89-017). The licensee determined that the more recent problem was a spurious spike. The detector was not replaced and a similar problem has not reoccurred.

In LER 456/90-015, the licensee reported that a noble gas grab sample of the Unit 1 Auxiliary Building Vent Stack was not taken at the 12-hour frequency specified in the action statement of Technical Specification 3.3.3.10 (the action was required because of an OOS monitor associated with the Stack). Because of personnel miscommunications in the health physics group during shift turnover, the sample was not taken until approximately 4 hours after it was required. No abnormal releases occurred during the 4-hour period. The licensee provided training to all health physics staff on this event, and has modified department turnover sheets to highlight the need to complete similar, non-routine Technical Specification action statements. The apparent similarity of this problem to several other recent missed surveillances in other departments will be reviewed by the NRC Resident Inspectors (Inspection Reports No. 456/90016(DRP); 457/90019(DRP)).

No violations of NRC requirements were identified by the inspector.

7. Liquid Radwaste

The inspector reviewed the licensee's liquid radwaste management program to determine compliance with effluent requirements. The portion of the program regarding the release of tritium has also recently been reviewed (Inspection Reports No. 456/90022(DRSS); 457/90024(DRSS)). No major problems were identified. Liquid radwaste is released from the station in batches from one of two 30,000-gallon capacity release tanks. Each batch is sampled and the sample is isotopically analyzed prior to release of the batch. During a previous inspection (Inspection Reports No. 456/89024(DRSS); 457/89024(DRSS)), it was noted that in 1988 the licensee released approximately 11.5 curies of activation and fission products (excluding tritium) from both reactors, compared to the 10 CFR 50 Appendix I design objective of 5 curies per year per reactor at a site. The license attributed the relatively high quantity released to maintenance on Unit 1 and startup of Unit 2. Since then, the licensee (with chemistry, health physics, radwaste operations, and the Tech staff working together) has reduced the quantity released through tighter control of plant operations and of the onsite vendor who processes the liquid radwaste through portable demineralizers. In 1989 and 1990, 5 and 3.6 curies of fission and activation products, respectively, were released from both reactors.

Fission and activation products accounted for only a small fraction of the total activity released in liquid radwaste; the major isotope being tritium. In 1989, 1115 curies of tritium were released, and in 1990, 1300 curies were released. Licensee records indicated that the concentration of radioactive material, including tritium, in the liquid effluents and the offsite dose from this material for 1989 and 1990 were within regulatory limits.

No violations of NRC requirements were identified.

8. Gaseous Radwaste

The inspector reviewed the licensee's gaseous radwaste management program to determine compliance with effluent requirements. No problems were identified. Gaseous radwaste is released from the two unit stacks and consists of mainly batch releases from the waste cas decay tanks, and containment atmosphere purges. Each batch is sampled and the sample is isotopically analyzed prior to release of the batch. As with liquid radwaste, the licensee is making a notable effort to reduce the quantity of radioactive material released in gaseous effluents through maximizing the hold-up time in decay tanks. This effort was only recently begun, and so has not affected the year-end totals for 1990. However, the reduction that can be attained can be seen in a comparison of a typical 1990 decay tank release in which hold-up time after tank isolation was one day or less and resulted in the release of 5 curies of Xe-133, and a release in early February 1991 in which the tank had been isolated for a approximately one month, allowing the Xe-133 to decay to 0.1 curie at the time of release.

In 1989, the licensee released approximately 1680 curies of fission and activation gas products, 0.5 millicuries of I-131, and 12.6 curies of tritium. In 1990, approximately 2490 curies of fission and activation gas products, 0.3 millicuries of I-131, and 86 curies of tritium were released. The quantity of radioactive material released via the gaseous effluents is typical of other pressurized water reactors. Licensee records indicated that the concentration of radioactive material and the calculated offsite doses from this materia' were below regulatory limits. No violations of NRC requirements were identified.

S. Effluent Reports

The inspector selectively reviewed radiological effluent analysis results and the Semiannual Radioactive Effluent Reports for 1989 and 1990 to determine the accuracy of the data. No major problems were identified; however, several minor problems were noted in the report for the first half of 1990. The summary page for the Unit 2 gaseous releases incorrectly listed the total quantity of fission and activation gas products released in the 2nd calendar quarter as 98.3 curies. Licensee records indicated the correct value was 50.2 curies. In addition, the inspector identified two other minor discrepancies with Unit 1 gaseous release data. The licensee agreed to submit a corrected report.

The review of the effluent reports and discussions with personnel also indicated that the licensee has included gaseous tritium totals for batch mode releases (i.e., waste gas decay tank releases and containment purges) in with tritium totals for the continuous mode release (i.e., auxiliary and radwaste building ventilation exhaust). For future effluent reports, the licensee agreed to report the totals separately.

The problems discussed above were not significant from a health and safety perspective. The licensee's corrective actions will be reviewed at a future inspection.

No violations of NRC requirements were identified.

10. Preparation for the Unit 1 Refueling Outage (IP 83750)

The licensee recently began its cycle 2 refueling outage for Unit 1. As with the previous Units 1 and 2 refueling outages, the licensee prepared a booklet describing radiological controls for major outage tasks, such as reactor coolant pump seal work, steam generator tube plugging, and inservice inspection. Also included were lessons-learned from problems encountered during the previous outages. The inspector's review of the booklet indicated that it represented a good effort by the licensee.

No violations of NRC requirements were identified.

11. Exit Meeting

A meeting was held with the individuals denoted in Section 1 at the conclusion of the inspection to discuss the tentative findings of the inspection. Specifically, the inspector discussed the coordinated effort by operations and specialist groups to reduce the number of curies released in the liquid and gaseous radwaste (Sections 7 and 8), discussed the recurrent problems with the Unit 2 containment isolation radiation monitor (Section 6), and the problems with the effluent reports (Section 9). The licensee acknowledged the inspector's

ndings and did not identify any tentative inspection report material as proprietary.