

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-456/92012(DRSS); 50-457/92012(DRSS)

Docket Nos. 50-456; 50-457

License Nos. 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: May 26-29, 1992

Inspector: *A.A. Kunowski*  
M. A. Kunowski  
Senior Radiation Specialist  
*N. Shah*  
N. Shah  
Radiation Specialist

6-29-92  
Date

6-29-92  
Date

Approved By: *M. C. Schumacher*  
M. C. Schumacher, Chief  
Radiological Controls  
Section 1

6-29-92  
Date

Inspection Summary

Inspection on May 26-29, 1992 (Report Nos. 50-456/92012(DRSS) and 50-457/92012(DRSS)).

Areas Inspected: Routine, unannounced inspection of the gaseous and liquid radioactive waste programs (Inspection Procedure (IP) 84750) and the radiation protection program (IP 83750). The inspectors also reviewed several Licensee Event Reports (LERs) and a previous inspection finding (IP 86750).

Results: The implementation of the liquid and gaseous radioactive waste programs was adequate, with overall reduction in total effluent doses and in activity released via liquid effluents (Sections 6-8). Waste reduction efforts continue through the "Curie Reduction Program" and better control of plant water usage (Sections 5-6). Noble gas releases reported in 1991 increased, owing possibly to a change in licensee quantification methodology (Section 6). One non-cited violation was identified and reviewed during this inspection period (Section 3).

## DETAILS

### 1. Persons Contacted

- +L. Alexander, Lead Chemist
- +M. Auer, Tech Staff, Electrical Group Leader
- +K. Bartes, Quality Nuclear Services Administrator
- S. Brandt, Chemistry Engineering Assistant
- S. Clemons, Health Physicist
- +D. Cooper, Assistant Superintendent Operations
- J. Gosnell, Radwaste Planner
- +L. Guthrie, Assistant Superintendent Maintenance
- +P. Habel, Unit 0 Operating Engineer
- +A. Haeger, Regulatory Assurance Supervisor
- +J. Lewand, Regulatory Assurance
- +G. Masters, Project Manager
- M. McInerney, Lab Supervisor, Chemistry
- +R. Owen, Tech Staff, Auxiliary Systems Group Leader
- +J. Petro, Superintendent Plant Chemistry
- D. Poi, Health Physicist
- +M. Prospero, Assistant Technical Staff Supervisor
- +A. Pusztai, Nuclear Quality Programs Group Leader, Operations
- +E. Roche, Health Physics Supervisor and Radiation Protection Manager (RPM)
- M. Sayers, ALARA Coordinator
- +R. Thacker, Lead Health Physicist, Technical Group
- +M. Yousuf, Nuclear Chemistry Services

The inspector also spoke with other licensee employees.

- +S. G. Dupont, Senior Resident Inspector, NRC
- +D. Hartland, Reactor Engineer, NRC

+Attended the exit meeting on May 29, 1992.

### 2. Licensee Action on Previous Inspection Findings (IP 86750)

(Closed) Open Item (456/92006-01; 457/92006-01): The inspector will examine the results of a consultant's review of the station's relatively high scaling factor for Fe-55. The consultant evaluated Fe-55 data for all waste streams at the station and recommended a factor more consistent with factors used at other nuclear plants. The recommendation appeared reasonable. In addition to the evaluation of Braidwood's Fe-55 scaling factor, the consultant, an industry expert, reviewed the 10 CFR 61 program at all six Commonwealth Edison stations, gave a training session to station representatives after the review, and will submit a written report with the results of his review at program

enhancement recommendations. According to the licensee, recommendations were made on scaling factors, the use of smears to sample radioactive material on process filters, and discontinuation of the use of a Cobalt-60 to Cesium-137 ratio to assess changes in radioisotope makeup of waste streams. Corporate guidance and Braidwood Station procedures on 10 CFR 61 will be revised to include the consultant's recommendations, as appropriate.

3. Licensee Event Report Followup

(Closed) LER 91-001, Unit 2: "Containment Ventilation Isolation Signal Due to Spurious Spiking from 2RT-AR012 as a Result of Component Failure." On March 8 and 9, 1991, transient spiking to the high alarm setpoint on the containment fuel handling incident area radiation monitor resulted in containment ventilation isolation signals. A faulty radiation detector was replaced and a similar problem with this monitor has not recurred. As discussed in Section 7, the licensee has had recurrent problems with these monitors in both Units.

(Closed) LER 91-002, Unit 1: "Failure to Restore Service Water Radiation Monitors Caused by Procedure Deficiency." The service water radiation monitors (1RE-PR002 and 1RE-PR003) were left out-of-service (OOS) from February 23 to 26, 1991 and missed after containment leak rate testing was completed on February 23. Corrective actions included revising the service water operating procedures and the leak rate surveillance to highlight the requirement for restoration of operability. The T/S for this monitor was subsequently deleted and the procedural details were relocated to the ODCM pursuant to Generic Letter 89-01.

(Closed) LER 91-009, Unit 2: "Gas Decay Tank Sample Not Obtained Due to Procedure Deficiency" On August 8, 1991, radwaste operators transferred cover gas from the hold-up tanks to the "C" waste gas decay tank (WGDT). The transfer was performed under Braidwood Operating Procedure (BWOP) GW-06 and was one of several WGDT evolutions occurring that day. On August 27, 1991, a plant chemist identified that operators had failed to notify chemistry of the transfer, as required by BWOP GW-06 and consequently the tank had not been sampled in accordance with T/S 4.11.2. Subsequent sampling indicated that the tank contents (0.51 curies) were below the 50,000-curie limit allowed per tank by T/S 3.11.2.6. Corrective actions included revising BWOP GW-06 to ensure that chemistry is notified prior to changing tank status. The inspectors verified that the status of the remaining WGDTs had been reported to chemistry and no releases from the "C" WGDT had occurred between August 8-27, 1991 (Section 6).

This licensee-identified violation is not being cited because the criteria specified in Section VII.B.1 of the "General Statement of Policy and Procedures for NRC Enforcement Actions," (Enforcement Policy, 10 CFR Part 2, Appendix C (1992)), were satisfied.

One non-cited violation was identified.

4. Audits and Appraisals (IPs 84750 and 86750)

The inspectors reviewed audit No. 20-91-14 conducted by the onsite Nuclear Quality Programs (NQP) group of the station's radioactive waste (radwaste) and environmental monitoring programs. The audit appeared to be performance-based and conducted by knowledgeable personnel. No major problems were identified by the auditors.

NQP management indicated that several auditors would be sent to a training course on radwaste shipping and burial site requirements to enhance the technical quality of future audits and surveillances in this area. Currently, auditors are not required to take this course, although some have.

No violations of NRC requirements were identified.

5. Liquid Radioactive Waste (IP 84750)

Since this area was last inspected in early 1991 (Inspection Report No. 50-456/91005(DRSS); 50-457/91005(DRSS)), the licensee has implemented a "curie reduction program" to reduce radioactivity releases. It included using process filters with the smallest practical pore size, previously unused plant equipment, such as radwaste and boron recycle evaporator feed demineralizers and filters, and closely monitoring demineralizer performance to maximize the activity removed.

To date, moderate reduction has been achieved: fission and activation products activity for 1991 (5.8 Ci) was a factor of two less than in 1988 and tritium activity (923 Ci) was 50% of that seen in 1990. Offsite dose from effluent releases continued to be well below technical specification limits. The inspectors' review of records for selected releases indicated that procedural requirements and technical specifications for radiation monitoring were met.

An important outgrowth of the curie reduction program was increased oversight of water management to minimize river water use, which resulted in the identification and repair of secondary (non-radioactive) system components that had

seen leakage from contaminated drain systems. Additional plans include routine use of the boron recycle evaporators and the boron thermal regeneration system later in 1992.

No violations of NRC requirements were identified.

6. Gaseous Radioactive Waste (IP 84750)

A general description of the gaseous effluent program and release path was provided in inspection reports 50-456/91005(DRSS) and 50-457/91005(DRSS). As part of the curie reduction program discussed above, the licensee uses waste gas as cover gas for other tanks prior to storage in the WGDT, thereby allowing for additional decay and reducing the activity from batch releases. However, while this effort was successful, reported releases via ventilation discharge increased from 2269 curies in 1990 to 10531 curies in 1991. Doses from the 1991 releases remained well below technical specification limits. The licensee did not identify any equipment maintenance problems or operational practices from the previous year that could account for the increase and suspect a change in release sample size (250 ml - 4.7 liters) made in 1990 may be the cause. The licensee's progress in evaluation of this matter was discussed at the exit meeting and will be reviewed in a future inspection (Inspection Follow-up Item (IFI) No. 50-456/92012-01; 50-457/92012-01).

No violations of NRC requirements were identified.

7. Effluent Control Instrumentation (IP 84750)

Through an evaluation of records and facility tours, the inspectors determined that effluent monitors were maintained operable and required surveillances and calibrations were being performed. A review of several radwaste releases indicated that the licensee verified effluent monitor alarm and trip setpoints prior to initiating a release.

Inspection reports No. 50-456/91005(DRSS); 50-457/91005 (DRSS), described operability problems with the WGDT radiation monitor (ORE-PR002) due to water intrusion. The licensee plans to install a new detector in the WGDT vent pipe that will retain the alarm, annunciation and interlock capabilities of the present system and will be shielded from moisture. The inspectors verified sampling occurred in accordance with T/S 3.3.3.10 prior to each release of the WGDT when the monitor was considered inoperable. Progress on this modification will be reviewed in future inspections (IFI No. 50-456/92012-02; 50-457/92012-02).

The report also discussed recurrent detector failures of the Unit 2 containment fuel handling incident area monitor, which have caused containment ventilation isolation signals. Another failure has since occurred on Unit 2 (LER 91-001) as have similar failures on Unit 1. An analysis by the monitor's vendor was inconclusive, but the licensee's evaluation indicated that the failures were limited to a group of detectors received during a certain time period. These detectors were replaced and the problem has not recurred.

The inspectors reviewed a special report describing the inoperability of the Unit 2 auxiliary building vent stack wide range noble gas (WRGM) monitor (2PR30J) used to quantify gaseous releases. On October 26, 1991, the monitor was declared inoperable in order to perform Braidwood Instrument Surveillance (Bwis) 3.3.6-211, an 18-month channel calibration. During the calibration, two problems developed which delayed the return of the monitor to service. First, the low channel sample pump failed requiring replacement and subsequent re-performance of several conditions of Bwis 3.3.6-211; second, the Unit 2 stack was found inoperable such that a temporary change to Bwis 3.3.6-211 was initiated allowing an electrical signal to simulate stack flow. Although the licensee routinely cycles flow through the Unit 1 or Unit 2 stack depending on plant conditions, this information was not communicated to the Instrument Maintenance department. The calibration was eventually completed on November 7, 1991.

As required by technical specification 3.3.3.6, a special report was submitted to the NRC on November 12, 1991. In addition, the 2PR028 monitor was used to quantify releases through the Unit 2 stack in accordance with Braidwood Radiation Procedure (BWRP) 1280-1. As a corrective measure, the temporary change to Bwis 3.3.6-211 was made permanent. The inspectors' review of this event did not identify any additional concerns; however, a comment was made at the exit meeting regarding communications between the operations and instrument maintenance departments (Section 12).

No violations of NRC requirements were identified.

8. Dose Assessment (IP 84750)

A selective review of dose calculations for effluent releases since the previous inspection, and a comparison calculation by the inspector using the licensee's Offsite Dose Calculation Manual (ODCM), did not identify any problems or significant trends. Quarterly dose data from semi-annual effluent reports indicated that station effluent doses were less than technical specification limits. The

inspectors also verified that sampling and analysis for determination of dose rates from tritium, radionuclides in particulate form, and iodine-131 and -133 in gaseous effluents, occurred as required by technical specification 4.11.2.1.2.

No violations of NRC requirements were identified.

9. Exposure and Contamination Control (IP 83750)

The inspector also briefly reviewed exposure and contamination control for several jobs. The work, discussed below, appeared to be well planned and implemented.

On May 22, 1992, an unscheduled maintenance outage began on Unit 2 to repair a pressurizer safety valve (2RY8010A) that was not seating properly. Earlier containment entries at reduced reactor power had been made before the need to repair the valve was determined. The 1500-pound valve was removed and a replacement previously obtained from the Marble Hill station was installed. In addition to this work, two rupture discs on the pressurizer relief tank were replaced. Dose from the eight day outage and earlier containment entries was approximately 1 person-rem.

In late May 1992, the licensee completed a modification of the fuel transfer system for both Units. During the work, contamination levels in the transfer canal were in excess of  $5E+6$  dpm per  $100 \text{ cm}^2$  and general area dose rates ranged from 50-100 millirem per hour. No personnel were contaminated during the job and total exposure was 2 person-rem, compared to a pre-job estimate of 3.2 person-rem.

No violations of NRC requirements were identified.

10. Plant Tours

The inspectors made several facility tours to make dose rate measurements and to observe postings and labeling, personnel performing various jobs, equipment condition, and housekeeping. No problems were identified.

11. Inspection Follow-up Items

Inspection follow-up items (IFIs) are matters which have been discussed with the licensee, will be reviewed further by the inspector, and which involve some action on the part of the NRC, licensee, or both. Inspection follow-up items disclosed during the inspection are discussed in Sections 6 and 7.

12. Exit Interview

The scope and findings of the inspection were reviewed with licensee representatives (Section 1) at the conclusion of the inspection on May 29, 1992. The licensee did not identify any documents as proprietary. One non-cited violation was identified and reviewed during this inspection. The following matters were specifically discussed by the inspectors:

- a. failure to sample "C" WGDT in accordance with technical specifications (Section 3);
- b. activity released through gaseous effluents for 1991 (Section 6);
- c. special report to NRC concerning inoperable WRGM and the modification of the WGDT monitor (Section 7); and
- d. offsite dose confirmatory calculation (Section 8).